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## 1984 WORLD'S SUBMARINE TELEPHONE CABLE SYSTEMS



# contractor reports

U.S. DEPARTMENT OF COMMERCE 

National Telecommunications and Information Administration

NTIA-CR-84-31

## 1984 WORLD'S SUBMARINE TELEPHONE CABLE SYSTEMS

PROJECT MANAGER: RICHARD J. O'RORKE, JR.

This compendium was prepared by Herbert H. Schenck and Dr. Leo Waldrick of Underseas Cable Engineers, Inc. under contract to, in support of, and funded by the Office of International Affairs, National Telecommunications and Information Administration



U.S. DEPARTMENT OF COMMERCE Malcolm Baldrige, Secretary

David J. Markey, Assistant Secretary for Communications and Information

November 1984



Repeater Away!

As a seacable system is installed the cable is paid out at the stern of the cableship. The submerged electronic devices, repeaters or regenerators, spliced into the cable at intervals, are sequentially discharged with the cable.

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#### Inception

Although many listings of submarine telephone cable systems existed prior to 1975, none was sufficiently extensive nor authoritative to serve as a reference work for those interested in the role of submarine telephone cables in the world's telecommunication network. Consequently the United States Department of Commerce sponsored the publication in 1975 of <u>World's Subma</u>rine Telephone Cable Systems.

#### Criteria for Inclusion

Inclusion of a seacable system project in the first two editions required that the cable system make use of submerged electronic amplifiers (repeaters).

Underwater cables (of course without repeaters) were used in the late 1800s for extending telephone service to off-shore islands and across bays and estuaries. These were adaptations of land cables and were electrically akin, using dedicated pairs of copper conductors for transmission of the telephone signals. Later, in the 1920s advances in electronics enabled the range of offshore service to be extended, by the use of repeaters at the shore terminal points. Further improvements made use of coaxial cable construction, a center copper wire surrounded by insulating material and encased in a copper outer conductor, strengthened by steel armor wires on the outside, with the application of carrier-frequency multiplexing techniques as developed for land systems, resulting in the capability to accommodate more than one telephone circuit, a notable example being the cables from Key West, Florida to Havana, Cuba, a distance of about 90 miles. There the march of technology paused.

Though amplification and carrier-frequency applications on land systems permitted mulit-circuit service to span thousands of miles, the adaptation of these procedures to long trans-oceanic cable work was inhibited by the lack of trustworthy long-life thermionic vacuum tubes and reliably-impervious enclosures to permit the electronic units to be installed in the submerged cable at regular intervals, necessary for the requirements of satisfactory telephonic transmission. The break-through, not dramatic but gradual, occurred concurrently in the United States, the United Kingdom, and in Europe, where development of trustworthy vacuum tubes was taking place, and in 1943 an amplifier designed and constructed by the then-British Post Office laboratories was inserted in a previously-laid 44-mile coaxial telephone cable between Holyhead, Wales and Port Erin on the Isle of Man, improving the capabilities of that facility from 24 to 48 simultaneously-operating circuits.

From that point onward, development was steady, and led to an important milestone event of this century, the installation of the first trans-atlantic telephone cable system in 1956. At that time no less than 24 other undersea telephone cable projects using submerged repeaters had been successfully installed.

As mentioned, there was (and is) a plethora of underwater telephone cables without submerged repeaters, so numerous that if listed would tend to mask the importance of systems of sufficient significance to require repeaters. Thus the threshold for a project's inclusion in World's Submarine Telephone Cable Systems was established to exclude the hundreds of cables not requiring submerged electronics.

The first edition of this work omitted mention of projects that were no longer in use as of the end of 1974, leaving some tantalizing gaps in the history of the submarine telephone cable art. This exclusion was removed for the second edition (1980) so that all known systems of consequence were chronicled, including even experimental systems, many of which reflect important bench-marks in the history of development. This present edition continues to describe all known projects, allowing even the mention of experiments in the open sea not touching land at any point (except the sea-bottom!), of which there have been several, heralding the arrival of the fiber-optic revolution. Of such importance is this revolution, an exception has been made to the rule of exclusion, allowing mention of some experimental fiber-optic systems deployed in the sea without repeaters.

The first edition (1975) contained discussion of many aspects of the submarine cable industry with illustrations. The second edition (1980) contaimed an expanded commentary and more illustrations. It has been the intent in this present edition to amplify the discussion of the most striking development in the submarine cable industry--the use of the fiber-optic mode for transoceanic service.

#### Analog and Digital

In the mid-1970s successful commercial utilization of the technique variously called lightguide, light-wave, or fiber-optic, which allowed the transmission of intelligence by means of pulses of light carried by optically-suitable glass fibers, became a reality. Of course studies to adapt this new technology to long undersea cables were initiated in the laboratories of the traditional submarine telephone cable makers and the principal users.

Until that time, all submarine telephone cable systems utilized frequency-division-multiplex techniques for obtaining multi-channel operation in coaxial cables. The electrical signals were analogous to the acoustic properties of human speech, message telephone service being the primary purpose of the international submarine telephone cable systems.

The advent of the fiber-optic mode of transmission brought the desirability if not the necessity for digitization of the transmissions, whereby the acoustic waves of the telephone user's voice were first changed into analogous electric currents, and then converted to the digital mode, so that the instantaneous value of an analog electrical signal becomes converted to a coded stream of successive pulses, each pulse having one or the other of only two conditions: on, or off. This, when used in the optical mode, becomes--light, or no light.

Much more discussion of this will be found in the section dealing with fiber optics. Suffice it to say here that henceforward we must distinguish between all submarine telephone cable systems in commercial service today, all of which are analog systems, and those of the future, some of which may still use the traditional analog mode and with the rest to be digital, operating in the optical mode.

#### Information Contained

Detailed data profiles are given for all systems known to have been placed into service through the end of 1983. For those projects due for completion in 1984, there are descriptions containing as much information as is available in mid-1984. Finally the status -- insofar as is known -- of other projects: those pending, deferred, and indefinite, is given. As before, there is a listing of system-owning entities, mostly governmental but some investor-owned, and manufacturers and system construction contractors are listed. Also as before, there are maps showing the general cable situation in areas of the world's oceans and seas, a glossary, and a bibliography. An appendix lists all cableships of consequence since 1900 with dates of commissioning and retirement.

#### 

As for the previous editions, this volume could not be satisfactorily completed without the kind coöperation and assistance of numerous officers in the owning entities and in the manufacturing and contracting community. To those who helped, grateful acknowledgement is hereby warmly given.

> Herbert H. Schenck Washington, D.C. October 1984

#### SUBMARINE TELEPHONE CABLE SYSTEMS

## Modes: Terrestrial and Spatial

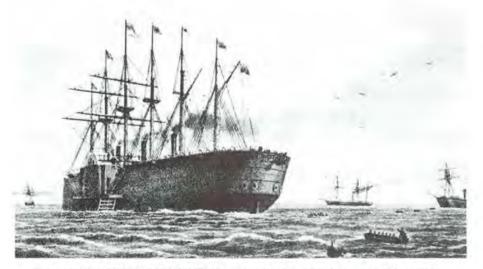
Two modes for intercontinental telecommunication exist: the terrestrial, and the spatial. The relative merits and costs of these modes were still being widely debated in 1980, but in the most recent years, the astounding capabilities expected of submarine cables operating in the optical or light-wave mode, will soon be realized. However, it is not the purpose of this publication to join the debate but to describe the terrestrial mode, the submarine cable -- and to explain what it does, how it does it, and how it is created, mobilized. deployed, and used. We shall chronicle the developments of the world-wide submarine telephone cable network of today, and present a compendium of data covering the cable systems that have been installed.

#### Precursors

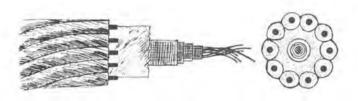
It is generally known that the steamship GREAT EASTERN with Mr. Cyrus W. Field and Dr. William Thomson (who later became Lord Kelvin) aboard, at last successfully laid a telegraph cable across the Atlantic from Ireland to Newfoundland in 1866, nine years after their first abortive attempt. It is also generally known that the "electric telegraph" as it was called, had been in overland use in Europe and America since early in the 19th century, credited by Americans to Samuel Morse and in Europe to other contemporary inventors. In the ensuing 90 years after the first success, telegraph cables spanned every ocean to bring communication to every place of civilization and commerce. In the course of those 90 years, there were many technical triumphs--development of duplex operation, inductive loading, and signal regeneration. It is curious that today, after the last telegraph cable has been retired, the principle of signal regeneration is the heart of the new triumph in oceanic telecommunication--the fiber-optic submarine telephone cable.

In simple terms, duplex operation utilized electrical circuit principals enabling the simultaneous flow of information in both directions through a single facility. Inductive loading permitted an increase in the speed of the flow of information in a cable, and signal regeneration allowed the transmission of intelligible signals over distances initially impossible, by the successive reconstruction of the signals from their deteriorated condition as a result of attenuation and distortion.

The early submarine telegraph cable systems consisted of a single-wire direct-current earth-return circuit using a stranded copper con ductor sheathed with an insulant, predominantly the organic resin gutta percha. The cable was strengthened with external steel wires to prevent it from parting when laid or recovered in deep water, and with additional steel wires ap-



Steamship GREAT EASTERN, then by far the largest ship ever constructed, was converted from her original configuration as a passenger liner to a cable-laying ship and used for attempts to place a telegraph cable between Ireland and Newfoundland. The first success in 1859 was shortlived, the cable failing after only a few weeks in operation. An attempt later, in 1866, resulted in a completely-successful link that operated for many years. plied for the shallow-water portion to resist rupture when snagged by anchors and trawls, and to retard abrasion. The deep-water portion of the 1866 transatlantic is shown. Its outside diameter was about 1.1 inch.



Sketch of the structure of the 1866 transatlantic telegraph cable. The conductor consisted of stranded copper; it was sheathed in several applications of gutta-percha which were then surrounded with hemp. Over this, helically wound, were steel wires covered with hemp and saturated with tar.

#### Radio versus Wire

Submarine cable telegraphy was challenged by radio telegraphy in the early 1900s and despite predictions from both quarters that one would drive the other out of business, both prospered side by side. Only in recent years was the last submarine telegraph cable abandoned, and international radiotelegraphy in its many forms is still in surprisingly-widespread use.

Of course technology advances in radio provided the ability to make telephone transmissions, and for the 30 years following 1927 the world's overseas telephone service was carried almost entirely by radio. Meanwhile telephony by submarine cable, at first limited to short distances, came into broader usefulness with the development and installation of a submerged amplifier (repeater) in 1943, the success of the first deep-water repeatered system in 1950, and the first transatlantic telephone cable system in 1956.

#### Carrier-Frequency Telephone Cables

Multichannel carrier-frequency coaxial telephone cables came into use on land in the late 1920s; before long, use was made of this technique for submarine cables for short distances not requiring intermediate electronic amplification. A notable extreme example was the installation of frequency-division-multiplex coaxial cable systems under the 90 miles of deep water between Key West and Havana in the 1930s "Frequency-division-multiplex" is synonymous with"analog", as currently used to distinguish between analog and digital transmission.

#### Repeaters

The fundamental requisite for long distance multichannel telephonic transmission by coaxial cable (the analog mode) is the provision of recurrent steps of amplification along the cable. The cable attenuation rises roughly with the square root of frequency, and attenuation is a direct function of cable length. It is obvious that increments of amplifier gain must be successively introduced in long systems to compensate for cable loss so that workable relationships between loss and gain, signal power levels, amplifier noise thresholds, and other factors, are obtained.

Since submarine cable repeaters are not, to say the least, readily accessible lying on the bottom of the ocean, their ability to function continuously for many years is imperative. The initial success of transoceanic telephone cable systems hinged on the availability of long-life electronic components, particularly vacuum tubes. Lengthy and costly development in America and Europe resulted in highly-reliable tubes--"trustworthy valves". Later, reliance fell upon trustworthy transistors, of which there was satisfactory production in England, France, and Japan, as well as in the United States.

#### Early Cables

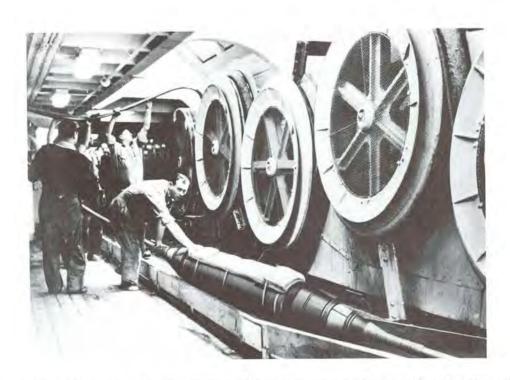
The insulant employed for the old telegraph cables was gutta-percha, a natural resin, later improved by compounding with organic rubber to be called para-gutta. Thus, when carrier-frequency submarine cables were initiated, mostly paragutta was used. An historic discovery in the chemistry of synthetic insulants occurred in England, resulting in the polymeric resin called polythene.

Wheras gutta-percha was vulnerable to marine biologic attack, polyethylene (to use the American name) appears to be immune to degradation in sea water. Therefore all analog submarine telephone cable systems were designed around the use of polyethylene.

#### Early Submerged Repeaters

It should be noted that a telegraphic regenerative repeater was installed in one of the transatlantic cables in the 1930s, resulting in increased signalling speed. However, at the time, more serious attention was being given to the development of analog amplifiers for submerged service for frequency-division-multiplex telephone cable systems, and the submerged telegraph regenerator never came into extensive use. It is an interesting commentary that regeneration of digitized signals in the form of light pulses is the heart of the fiber-optic revolution more than 50 years after the first submarine telegraph regenerator was installed.

The first use of a submerged telephone repeater (analog, of course) was in 1943 and involved the insertion of a repeater near the midpoint of a previously-laid 44-mile submarine coaxial carrier cable between Anglesey and Fort Frin in the Irish Sea, thereby raising the usable upper limit of the transmission band from about 250 to over 500 kHz, permitting the doubling of the number of circuits, from 24 to 48.

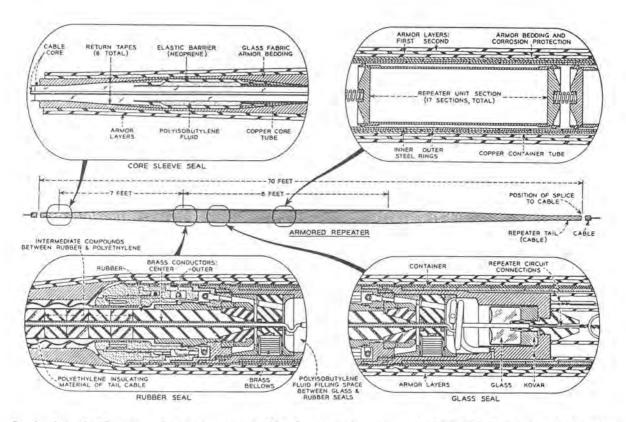


Three philosophies regarding repeater configuration grew side-by-side. In Britain it was preferred to re-equip cable-laying ships with replacement cable payout engines that would allow the British repeater, a long rigid cylinder without gimbals for the cable attachment, to be by-passed alongside the engine, as seen here. The cable normally was controlled by friction as it passed over and under a line of five large grooved wheels. When a repeater was to be discharged, a by-pass rope was led into the engine and tautened, thereby giving slack in the bight of cable which was then diverted, and the repeater trundled past the engine. In America and in France and Germany, different designs emerged.

#### Early Cable Laying

The 1943 repeater housing was not designed to withstand much more than the moderate pressure at the depth of about 17 fathoms, nor was it suitable for pre-insertion in a cable for overboarding along with the cable as part of the cable laying operation. This latter restraint was under attack, however, and by 1950 a repeater enclosure suitable for deployment with the cable as a practically-continous but seemingly awkward procedure, was produced and used by British interests. The awkwardness stemmed from the physical characteristics of the enclosure, a cylindrical steel casing less than a foot in diameter and about 9 feet long, with almost inflexible cable attachments at the ends as seen in the illustration. No pre-1950 cableship, of which there were many, could satisfactorily pay out cable with such objects spliced into it. Therefore a new mechanism for controlling the laying of cable was devised with a means for by-passing the repeater around the line of sheaves, over and under which the cable ran during payout. This eliminated the necessity to stop the ship entirely, which is undesirable during cable laying, but it did require a reduction in speed when-

ever a repeater was to be overboarded. Later developments in cableship machinery allow the discharge of a repeater without alteration of ship's speed.



In the late 1940s plans for transatlantic No. 1 were advancing, and AT&T decided to contigure their repeater so as to be satisfactorily paid out by cableships with the then-current payout engine design, a large drum-style winch on a horizontal thwartships axis, located at the altership. The design, as seen here, is a very long string of articulated capsules all covered by the cable's armor wires, behaving as though it were part of the cable, although somewhat fatter and stiffer. Space inside the capsules was insufficient to accommodate components for directional filters and thus the system design called for twin coaxial cables, one for each direction of transmission. The prototype system, designated SA, was placed between Key West and Havana in 1950, system reference number 5. Transatlantic No. 1, an SB system having greater circuit capacity, system reference number 30, was laid in 1956.

#### Transatlantic No. 1

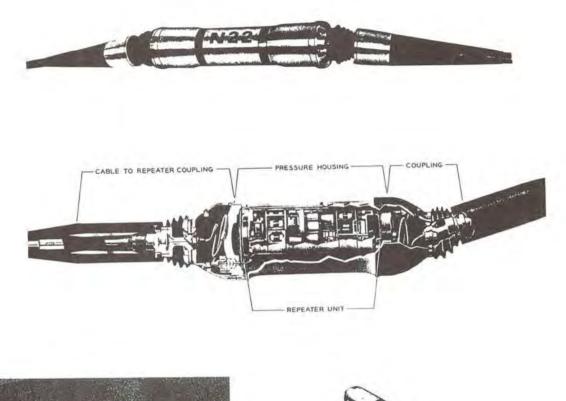
Well before the prototype Key West - Havana system was installed. British, Canadian, and U. S. interests were planning for the first transatlantic telephone cable attempt. The story of TAT I has been told often, and its success in 1956 gave the impetus to the telecommunications industry to proceed to lace the oceans with submarine telephone cable systems, totalling by 1984 approximately 250 projects, connecting over 60 countries, representing investment of nearly five billion dollars.

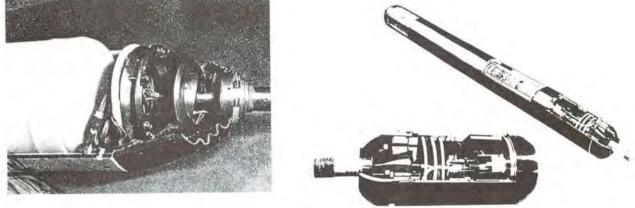
#### France, Germany, and Japan

Paralleling the developments in Britain and the U.S., work was underway in France and Germany, related first to shallow-water projects, with later designs suitable for any ocean depth. Meanwhile, in Britain the long rigid repeater enclosure was modified for deep water use.

The British concept of bi-directional repeaters, permitting full-duplex operation on a single coaxial, was followed initially by the German and French developers, adopted in the early 1960s by AT&T, and by the Japanese industry in their first designs in 1970. From that late beginning Japan

has progressed to be fully competitive in all aspects of submarine cable technology.





In France and Germany designers also favored some means to allow repeaters to be laid by conventional cableship machinery. After Fellen & Guilleaume in Germany and Compagnie Industrielle de Télécommunications in France had produced multicontainer designs, articulated strings of capsules but larger in diameter than the SB repeater of AT&T, each group produced monocontainer designs with short, fat dimensions, about 3 feet long by about a foot in diameter, with flexible cable attachments by gimbals. By the time AT&T produced their second generation design, the SD, they had dropped the unidirectional characteristic of the SB and adopted the monocontainer with gimbals. Seen here, not to scale, are, from the top, Japanese and U.S. repeaters, and below left, a cut-away view of the cable attachment arrangement of the French repeater, and cut-aways of the British design.

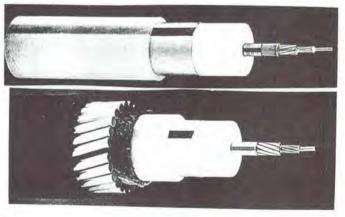
## New Cables

The new art of transocean cable telephony that blossomed in the decade of the 1950s required not only the development of the submerged repeater but also new cable designs. Old telegraph cable configurations were not satisfactory for the elevated frequencies required for multi-channel carrier telephony, which need optimized coaxials with homogeneous dielectric materials. Some very sophisticated compromises were made, and thanks to the fortuitous properties of polyethylene, the result, the then-called conventional armored cable was an unqualified success that has seen over 50,000 miles laid in the oceans.

Cable destined for the ocean depths had to have sufficient tensile strength so that the weight in water of a length of cable equal to the distance from the surface to the bottom will not exceed the cable's breaking strength. In the conventional cable design used for TAT 1, the SB, this strength was supplied by helically-applied steel armor wires, 24 high-tensile, 0.086-inch-diameter strands being used.

Thirty years ago this was the situation: systems for transocean service of only 36-channel capability, shallow-water systems of only 60-channel size, some repeaters dischargeable from conventionally-equipped cableships; some requiring special cable machinery not previously used on cableships.

But even while the designs for TAT 1 were crystallizing, engineers on both sides of the Atlantic were busy with ideas for improvements. Cable with steel armor on the outside has some inherent disadvantages: it twists when tensioned. it may be difficult to coil down during recovery. and the steel is sooner or later likely to be exposed to sea water. The designers' answer in the late 1950s was a new configuration called lightweight or armorless. This cable represented a number of departures: there was a steel strength member at the very heart of the cable, surrounded by a copper sheath forming the coaxial inner member, insulated with an extrusion of ployethylene to a diameter of about 1 inch, encased in a copper or aluminum sheath forming the outer conductor, and the whole then jacketed with a covering of high-density abrasion-resistant polyethylene. This configuration has been used, in increasingly larger diameters, in all of the analog systems installed to the present day. And in the twilight of the analog era, the basics of the armorless design are being followed in the configurations emerging in the new fiber-optic cables.







There has been only one significant change in submarine telephone cable configuration: from the so-called conventional armored design such as the SB style shown at top left to the lightweight or armorless designs. Below the SB is the first British lightweight design with 0.99-inch dielectric, and next the French armorless configuration at 1.00 inch, produced to the AT&T SD specification. Larger sizes are represented on the right (obviously not to scale): top, British 1.47-inch lightweight, and 1.47-inch cable with external armor for hazardous locations. At bottom right is the AT&T armorless 1.7-inch SG design. The SF, not shown, had 1.5 inches over the dielectric, and was similar in all respects.

#### History Resumed

In the period just following 1956 the improvement in user satisfaction of the TAT 1 system over the previous radiotelephone services resulted in greater-than-anticipated traffic growth. So, without waiting for the secondgeneration of improved designs, TAT 2, as an SB system, was rushed into being in 1959, followed closely by the Britain - Canada system called CANTAT, in 1961.

While TAT 2 was a close copy of TAT 1, CANTAT was all new, representing the latest British developments such as the lightweight cable, deep-water bi-directional repeaters for 60 circuits, plus a further British development providing 120-circuit repeaters for the 400-mile portion called CANTAT B between Grosses Roches, Quebec and Corner Brook, Newfoundland, executed as a separate project.

By this time a new American system labeled SD was nearing readiness. Just as the British designers had done, the U.S. cable configuration had the strength member on the inside. Also, the SD system used a repeater housing quite different from the SB, the articulated one-way repeater requiring twin cables for a single system. SD used a monocontainer style with cable attachments by gimbals at the end, resulting in an effective flexibility which allowed a repeater to be passed around a conventional cable engine's drum.

#### \* \* \* \* \*

Although attention has been leveled thus far on-British and U.S. activities, developments in Germany and France had not stood still. In 1956 the French industry placed a 59-mile 120-circuit system in the Mediterranean between two Tunisian points, Qelibia and Bou Ficha, using cable very much like the SB, and in 1957 a trans-Mediterranean system between Marseille and Algiers was installed. In 1957 and 1958 some short 120-circuit systems were placed in shallow waters around the British Isles, and a German-built 120-circuit link appeared in a system between Denmark and Poland in 1960. In 1962 a second French system crossed the Mediterranean. The French and German repeaters were the pioneer monocontainer types, having flexible cable attachment at the ends, which was followed, as noted, by the American SD , and later by the Japanese industry.

In the following table the typical cable styles that have dominated the analog era are given. The Generic Type indicates the style of the coaxial and Code refers to the nature of the armor as expressed by the manufacturers and principal users. In cases of SB cable, Code D indicates the configuration used for the deep-water portion of a system. For SD, SF, and SG, L1 is the code for deep water, indicating no external armor. Diameters are in inches and weights are in long tons.

Generic Type	Code	Insulant Diameter	Outside Diameter	Long tons in air	per NM in sea- water	Breaking Strength lbs x 1000	Cu. ft. per N.M.
Туре	0000	- D A MANON & V.V.					
SB	LPAA	0.620	3.20	40.8	30.2	180	512
SB	AA	0.620	2.67	26.9	19.0	130	356
	A	0.620	1.83	11.1	7.6	167	167
SB SB	D	0.620	1.25	3.5	1.7	25	78
SD	L5A	1.00	3.50	40.0	31.0	169	612
SD	L4A	1.00	2.72	19.7	14.3	71	370
SD	L3A	1.00	2.21	14.3	9.6	56	244
SD	L1	1.00	1.25	2.0	0.9	17	78
BLW	Mk II	0.99	1.25	2.0	0.58	17	78
SF	L1	1.50	1.75	3.8	0.89	17	153
SG	L1	1.70	2.08	5.7	1.6	37	216

#### TYPICAL CABLE CHARACTERISTICS

#### Cable Makers

Of the many hundreds of manufacturers of electrical wire and cable, only a handful have ever essayed the production of cable suitable for submarine telecommunications use. In Great Britain the many manufacturers of the telegraph cable era were consolidated finally in Submarine Cables Limited, in turn taken over by Standard Telephones and Cables Limited in 1970, today the sole producers of submarine cable in the U.K. In the United States, throughout the telegraph cable era, only Simplex Wire and Cable Company, then of Cambridge, Massachusetts produced this commodity. Then when AT&T designed their lightweight SD cable, a plant in Baltimore was set up by Western Electric to make it.

AT&T encouraged others to prepare to produce this design, which called for considerable modifications to existing manufacturing facilities, and while Simplex and Submarine Cables declined, Norddeutsche Seekabelwerke, Les Cables de Lyon, and Ocean Cable Company all subscribed to the specifications and prepared to produce SD.

About this time the Western Electric plant in Baltimore was shut down and the machinery was acquired by ITT and set up in a new plant in San Diego in 1972. Only a very few substantial orders were forthcoming, however, and in 1977 the plant was closed and the machinery has become dispersed.

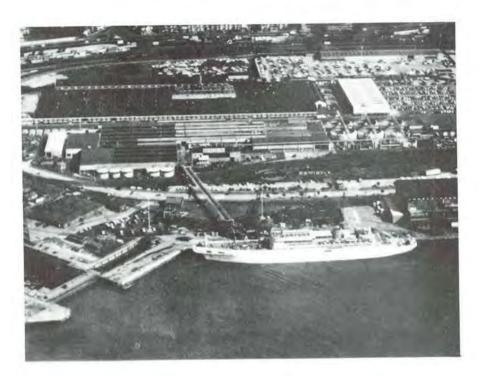
Norddeutsche Seekabelwerke similarly did not receive sufficient orders to sustain their new plant, and after several years of idleness, the machinery was acquired by Simplex and set up in their new plant at Newington, New Hampshire. Meanwhile Norddeutsche suffered a serious fire which destroyed their facility for conventional armored cable. Restored by the insurance underwriters, the plant has been mostly idle forever since. Norddeutsche did, however, produce several significant orders of cable for the analog cable era: Denmark - Poland, ICE-CAN, Grand Turk - Antigua.

In France, Les Cables de Lyon enjoys total eminence in the submarine cable field since its beginning, and until 1979, when by reciprocal agreement a British system joined France and England, no cable ever landed on French soil that was not produced by Les Cables de Lyon.

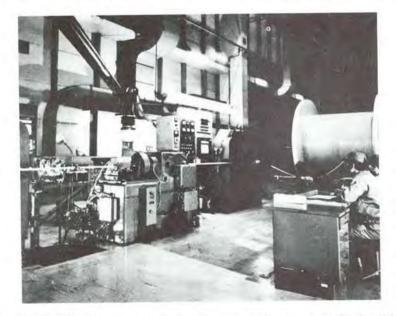
It does not tax the imagination that the island nation of Japan has had over the years an extensive and active submarine cable industry, producing all types of cable for inter-island service. But it was only after Ocean Cable Company established lightweight cable-making capability at Yokohama that production of cable suitable for submarine telephone cable systems has taken place.



Aerial view of the Simplex Wire and Cable Company plant at Newington, New Hampshire, with cableship NEPTUN(3), then the property of United States Underseas Cable Corporation, loading cable for a U.S. military project in Southeast Asia. Since then, Simplex has added an allweather enclosure to the cable-loading facility so that operations are not impeded by accumulation of ice or snow. Also a new multi-million-dollar addition to the plant was dedicated in 1980 for the development and production of fiber-optic light-guide cable under contract to AT&T.



Aerial view of the cable plant of the then-named Standard Telephones and Cables PLC, recently re-designated STC Submarine Systems Ltd., at Berth 109, Western Docks, Southampton. Loading cable alongside is cableship MERCURY belonging to Cable and Wireless Ltd. STC and antecedents were pioneers in the dawn of the submarine telephone cable era, and have provided and installed more systems than any other entity.



Organized in the late 1960s by a consortium of several large electrical cable makers, Ocean Cable Company Limited's new plant for the production of coaxial submarine telephone cable was established in Yokohama. Under the patronage of Kokusai Denshin Denwa, Japan's international telecommunications carrier, and Nippon Telegraph and Telephone Public Corporation, the domestic carrier, OCC has produced thousands of miles of cable for scores of projects. Seen here is the control center for one of the automated lines for fabrication of the copper and steel center member of the armorless cable.



Still the largest-capacity cable-laying ship afloat, CABLE VENTURE, ex NEPTUN(3), is engaged in 1984 in placing the ANZCAN cable from Canada to Australia. Formerly the flagship of United States Underseas Cable Corporation, NEPTUN later served ITT Cable/Hydrospace Division before being sold to Cable and Wireless in 1975. Following refit and extensive modification, she was re-named CABLE VENTURE and in 1977 became the flagship of her new owner's fleet of six cableships.

#### Terminals, Repeaters, and Equalizers

Up until the present time all submarine telephone cable systems have operated in the analog mode. They connect at their ends with electronic and power supply equipments which provide for the generation of pilot and carrier frequencies, and for frequency translation (modulation and demodulation). They also contain directional and power separation filters, equalizers, transmit and receive amplifiers, repeater monitoring facilities, and constant-current power supplies for energization of the repeaters.

Typically, traffic is fed to and from the inland network in the four-wire condition utilizing the CCIT supergroup allocations, with the same frequencies for both directions of transmission. At the cable terminals these bands are translated into two groups of frequencies, one positioned above the other so that full duplex operation is achieved with the single coaxial.

Analog repeaters have within themselves directional filters which allow, in some instances, both bands to be amplified by a single amplifier. They also contain power separation filters which divert the signal bands around the direct-current supply circuitry, and they contain fixed equalization. As discussed in detail in a further section, the advent of light-wave fiber-optic technology, with digital transmission, results in the substitution of digital regenerators for analog amplifiers, and many other mutations.

For both analog repeaters and digital regenerators the power feed is a constant direct current fed into the cable with earth return, and all the repeater amplifiers are energized in series, the value of the current being established usually below one-half Ampere. The repeaters' amplifier potential requirements are obtained from the voltage drop through each repeater, usually well below 50 Volts. Thus a hypothetical system with 100 repeaters might have a 5kV drop from end to end, requiring a source of +2.5 kV at one end against earth, and -2.5 kV against earth at the other end. The supplies are duplicated and self-regulating with respect to line current, and arranged for nobreak operation from floated batteries through inverters and rectifiers.

#### The Equalizer

Long analog cable systems with many repeaters are subject to cumulative effects which can be undesirable, and therefore equalizers must be employed. In an analog system the gain-frequency characteristic of a repeater is intended to exactly match the loss-frequency characteristic of the adjacent cable section. It might be thought that such characteristics could be predicted with sufficient accuracy to permit an exact match in repeater gain to be achieved. And if only one repeater were to be needed, the match between cable loss and repeater gain could be made easily within acceptable limits. But ocean systems have scores or even hundreds of repeaters in tandem and the cumulative mismatches must be dealt with by the insertion of passive circuitry at specified intervals, typically every 10 to 20 repeater sections. The equalizers are intend+ ed to compensate precisely for the difference between the forecast attenuation-versus-frequency characteristics and the characteristics actually measured during the progress of cable laying. The equalizer circuitry is sometimes assembled during cable laying, and inserted into an enclosure, to be welded shut shortly before discharge. In some other designs the circuitry may be switched electrically from outside a sealed enclosure just before overboarding, and in other instances, it may be controlled remotely through the system from the terminal stations. In yet other developments, the gain of certain repeaters is made self-adjusting in response to changes in the temperature of the surrounding water.

So much for analog systems. Digitized fiber optic systems do not require equalizers.

#### Supervision

It is necessary to be able to observe certain performance characteristics of each individual repeater or regenerator in a system, and provisions are made in the fundamental system design to allow for the examination of each unit's performance under command from the terminal station.

#### Sea-Proof Housings

Repeater and equalizer enclosures obviously must be designed for long submerged life at seabottom pressures. In general, the repeater or equalizer is encased in a composite high-tensile and stainless steel cylindrical capsule a little less than 3 feet long and about a foot in diameter and having knuckle-joints or gimbals at the ends to which the cable tensile member is attached. There is a moisture-proof electrical penetration at each end for the center conductor of the coaxial cable. In some instances the enclosures have been made of beryllium copper, notable for its resistance to attack by sea water.

#### Analog System Characteristics

Over the years there have been nearly thirty different analog submarine telephone cable system designs, with ever-increasing capacities for telecommunication service, employing cable and repeaters of various sizes and shapes. The table on the opposite page shows the principal characteristics of the analog systems, and the explanations of the captions are as here below:

#### Name

The most generally recognized designation for the system design; not necessarily the style of cable

## Country

F	France		
GB	Great Britain		
J	Japan		
FRG	Federal Republic of Germany		
US	United States		
Maker			
ATT	American Telephone & Telegraph		
	Company		
BPO	British Post Office		
CIT	Cie. Industrielle de Télécommunica- tions		
F&G	Felten & Guilleaume Carlswerk AG		
FUJ	Fafitsu Ltd.		
NEC	Nippon Electric Company Ltd.		
NTTPC	Nippon Telegraph and Telephone		
	Public Corporation		
SCL	Submarine Cables Ltd.		
STC	Standard Telephones and Cables Ltd.		
USU	United States Underseas Cable Corporation		

### Size

A supergroup (of circuits) occupies 240 kHz of bandwidth in each direction, and can consist

60 individual circuits at 4 kHz spacing or 80 circuits at 3 kHz spacing.

## Coaxial Size

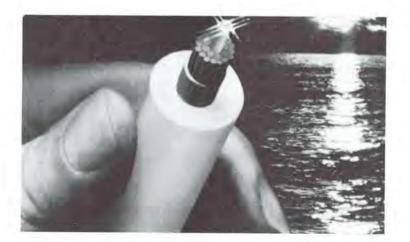
The diameter in inches of the coaxial insulant

Nominal Repeater Spacing The length of cable usually occurring between successive repeaters, in cable miles.

#### Repeater Style

A

- Articulated, a string of cylindrical metallic enclosures joined by gimbals or a succession of cylinders arranged to flex as cable would, with tension carried by armor wires over the outside of the string.
- M Monocontainer, a single cylindrical metallic enclosure with cable attached through gimbals.
- R Rigid, a monocontainer without gimbals
- UA Unidirectional Articulated, a succession of cylinders arranged to flex as cable would, with tension carried by armor wires on the outside, of a diameter not much larger than the cable, and electrically unidirectional, requiring two cables to make a system.



Dawn of a new era. In 1979 this picture was prepared for an advertisement of Bell Laboratories in which it was to be revealed that an experimental glass fiber cable had been under test in a simulated ocean environment at the Holmdel. New Jersey facility of the Laboratories. Tests were at near  $0^{\circ}$  Celsius and 10,000 pounds per square inch pressure, corresponding to a depth of four miles in the sea. Simplex Wire and Cable Company made the first cable models as designed by Bell Labs.

Name	Country	Maker	Year	Size, Super- groups	Nominal Coaxial Size	Nominal Repeater Spacing	Repeater Style
E Mark I	GB	BPO	1953	1	0.62	19	R
Mark I	GB	BFO	1755				
SB	US	ATT	1956	0.6	Twin 0.62	38	UA
Z 60 S	FRG	F&G	1956	1	0.62	22	А
French 60	F	CIT	1956	1	0.62	25	А
French 120	F	CIT	1956	2	0.62	14	М
M Mark I	GB	STC	1957	2	0.935 0.99	20	R
Z 120 S	FRG	F&G	1960	2	0.62	10	М
SD	US	ATT	1963	1.6	1.00	20	м
French SD	F	CIT	1966	1.6	1.00	20	м
T Mark I	GB	SCL	1967	8	0.935 0.99	7.5	R
SF	US	ATT	1968	9	1.50	10	М
U 120 S	US	USU	1969	2	1.00	17	М
NC	GB	STC	1969	8	0.99 1.47	7 10	R
CS 10 M	J	FUJ NEC	1969	15	0.70	3.3	М
S 1	F	CIT	1970	2	1.00 <sup>Cu</sup> A1	19 18	М
ND	GB	STC	1976	15	0.99	5	R
S 5	F	CIT	1970	8	1.00	9	м
NE	GB	STC	1971	23	1.47	6.5	R
CS 36 M	J	NTT	1971	45	1.50	2.6	М
CS 12 M	J	NTT	1972	20	1.50	6.5	М
S25	F	CIT	1975	43	1.50	5.0	М
SG	US	ATT	1976	50	1.70	5.1	М
NG	GB	BPO	1976	65	1.47 1.70	2.9 3.3	R
CS 140 M	4 J	NTT	1979	180	1.70	1.8	М

## CHARACTERISTICS OF THE PRINCIPAL ANALOG SYSTEMS

#### Electronic Manufacturing

Analog repeaters and equalizers are intended to function flawlessly for at least 20 years; some of the later designs targeted 25 years.

In pursuit of this level of reliability, the units were always fabricated under stringent clean-room conditions in plants dedicated solely to production of repeaters and equalizers, and nothing else. Though there may be scores or hundreds of organizations with the level of skill necessary for submerged repeater fabrication, very few repeater-making plants were ever established. Today's survivors are:

Standard Telephones and Cables Limited Cie. Industrielle de Télécommunications NEC Corporation (formerly Nippon Electric Co.)

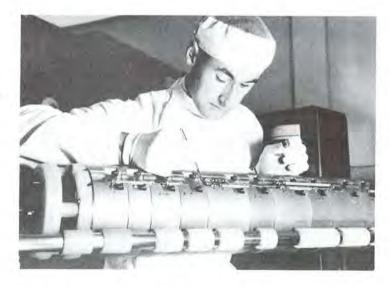
#### Fujitsu Limited

Western Electric Company

Unlike repeaters and equalizers, terminal station apparatus is easily accessible for repair, and faulty operation in the station is a lesser catastrophe than a repeater fault. Nevertheless, the apparatus supplied for the terminal station requirements is of the highest obtainable order of quality, and practically all functions are duplicated. Again, there may be numerous firms capable of producing electronic equipment of the suitable level of excellence, but only those plants listed above as making repeaters are in the business of making terminal station equipment.

> Left: The interior portion of a repeater is being inserted into the pressure-proof enclosure in the Felten & Guilleaume Carlswerk AG facility in Cologne. In the 1950s F & G arranged with French interests to develop thermionic vacuum tubes suitable for submerged repeaters, setting up Cie. Europeën des Tubes Téléphoniques near Grenoble. The products were acceptable, and both France and Germany launched submarine telephone cable enterprises. In 1965 the F & G facility in Cologne was acquired by United States Underseas Cable Corporation.

Right: The interior unit of a British repeater undergoes visual inspection. Two entities vied for dominance in the submarine telephone cable field: Submarine Cables Ltd. and Standard Telephones & Cables Ltd. In the end STC acquired SCL, and today STC continues the British traditions of innovation, excellence of product, and agressive marketing.





Testing Amplifier and Filter Assemblies



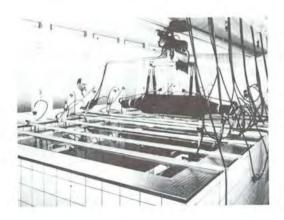
Assembling an Amplifier



Calibration of Components of a Repeater



Repeater in Fressure Housing Ready for Helium Leak Test at 750 Atmospheres



Repeater Prepared for 15-Day Submerged Confidence Test



Repeater Ready for Enclosure in Shipping Container

#### **Growth Statistics**

The growth in circuit capacity in slightly more than 30 years speaks elequently of the forward march of analog seacable technology. Bandwidths such as now are available allow for transmission of two or more television channels simultaneously with hundreds of message circuits, all in the analog mode. The digitized fiber-optic systems will be at least a quantum step beyond this.

A familiar unit of telecommunications statistics is the circuit-mile. The following table shows the status at selected years:

Year	Circuit-Miles in Operation
1960	600,000
1965	4,800,000
1970	14,700,000
1975	39,500,000
1980	91,900,000
1984	148,600,000

Currency instability tends to mask the significance of cost figures, and no attempt has been made to translate costs back to any particular epoch. System costs were taken as what they were at time of contract:

Year	Then-current U.S. Dollars
1960	180,000,000
1965	672,000,000
1970	1,077,000,000
1975	1,715,000,000
1980	2,977,000,000
1984	4,850,000,000

Investment per circuit-mile:

Year	Then-current U.S. Dollars
1960	300
1965	140
1970	73
1975	43
1980	32
1984	39

The reversal in trend may be attributable to inflation.

By contrast, the above figures, all representing analog systems, will seem to be very high, when, in 1988, TAT 8 is put into service. In its initial configuration with only 1890 circuits per fiber pair, it will encompass about 20 million circuit-miles. At a cost of \$326 million, the circuitmile quotient is about \$17. In its fully-exploited condition, with 40,000 circuits per fiber pair, the cost will plummet to an astounding figure of less than a dollar per circuit-mile.

#### Life Expectancy

The earlier submarine telephone cable systems having submerged repeaters with vacuum tubes were built with a design objective of 20 years of useful service, it being acceptable that cable faults (from whatever cause) be found and cleared, and that submerged repeaters could be replaced, albeit at some considerable difficulty and expense. It is a vindication of the engineering and manufacturing arts that the 20-year useful life objective has been generously exceeded. Although some of the earlier systems have been retired, this has been brought about mostly by the paralleling of the old cables by newer ones of many times the circuit capacity.

As may be seen from the individual Seacable System Data Profiles, many systems are still in service after more than 20 years, and most of those retired served more than 20 years.

Even a hundred years ago when cable materials and manufacturing techniques were truly appalling by today's standards, a cable failure without some physical disturbance to cause it was agreeably rare. Then, as now, the interrupt lons were mainly caused by some human activity or to a lesser degree by some upheaval of nature or traceable to defects in workmanship or mater ials once the cable was successfully deployed.

All too frequently in the earlier days, and even to the present, important cables have been faulted by fishing trawls and dredges, ship's anchors, or other similar means. Fortunately it was feasible though not easy nor cheap, to find the fault, bring it to the cableship's foredeck, re pair the damage, and restore the service. In this respect, things had not changed very much until recently: for some years now important cables are protected by placing them beneath the seafloor for a portion of the route, out to a depth beyond which it would be unlikely to encounter man-directed sea-bottom activity. Year by year this depth has had to be extended as off-shore activities have increased. Even so, it is still practical to consider that most of a cable's sea transit in deep water will be on undisturbed bottom.

The burial of seacable has become a common undertaking, and the techniques are quite refined. If the bottom is "plowable" the cable can be buried as laid, in a single pass by the cable-laying ship towing a plow astern.

#### Project Planning

The decision to construct a submarine telephone cable system will have been made on the basis of predicted traffic loads and on predicted capital and operating costs. These predictions are often made by the international telecommunications operating agencies of the countries to be joined, relying on the existing technical expertise within the organizations of the larger countries. In the instances of nations or entities with lesser internal technical establishments, the assistance of independent consulting engineering firms specializing in undersea cable technology is often useful. Planning, then, encompasses determination of what size system shall be placed between which coastal locations.

## Project Sequence

Typically the project activity could be somewhat as follows:

Correspondent countries or entities consider desirability of mutual ownership of a submarine telephone cable system

Consideration may have been initiated by overtures from the manufacturing and contracting community

The potential owners negotiate an agreement to build

Potential owners select the entity that shall supervise project execution

Project requirements as to system capacity and terminal locations are determined

Detailed seacable system specifications are prepared and approved

Invitations for tender are prepared and issued

Tenders are received and evaluated

Manufacturing and installation contract(s) are negotiated and awarded

The system is manufactured and installed, tested, and accepted

The system is commissioned for service.

#### Route Survey

It has been stated that there are very few coastal locations in the world that could not be the site of a submarine cable landing, but it goes without saying that some are vastly more desirable than others. It requires an engineering determination to take into account the numerous factors bearing on the desirability and cost for proper choice of possible cable landings. Some considerations, among many, are: geography of the coast line (bays, inlets, bars, shoals, reefs prevailing currents, swell, and surf conditions, depth contour, composition of the bottom, intensity and nature of surface traffic and underwater activity, relative distances and land goegraphy (roads, towns, streams, etc) with respect to possible terminal station locations, and the relation of these to the nodal points of the inland telecommunications network, the location of other cables already in the waters to be crossed, and so on and on.

The work leading to the choice of sites and route is divided into two activities: first, the route and site study, made by research into published charts, records, and other existing data, and then the route and site survey, made actually at the sites and over the route. The survey will produce near-shore depth contours and will record the results of examinations of the bottom by divers. If burial of some part of the cable is required, sub-bottom acoustic profiling will be done, cores taken, and reefs and ledges examined and charted. A trial pass with an empty plow may be performed in some instances. Several possible landing sites at each end are chosen and ranked in degree of desirability.

Concurrently with the shallow-water surveys several possible sites for the location of the terminal stations will have been examined and ranked in order of desirability. Then the two rosters of landings and station sites are compared and the best compromises are chosen for both ends of the system, to tentatively crystallize the landing points and the departure points for the deep-water portion of the route. The route survey voyage will then commence at one departure point and proceed to the other end.

For the route survey, a vessel suitable for safely steaming between the ends of the projected system is required, equipped to produce a bathymetric profile to a satisfactory degree of precision and to measure the temperature of the water at the sea-bottom at selected points along the route. Navigation aids will be used to the extent necessary to achieve the degree of precision required.

In the course of the route survey the depth profile will disclose the gradients of the bottom and formations such as trenches and seamounts. Any such anomalies of importance will be developed and charted, for decisions respecting avoidance of them in the chosen route. The recorded results of the route survey permit the final choice of the route, and they form an essential input for the system design.

#### System Design

The system design encompasses determination of the size and characteristics of the cable and the repeater and equalizer spacing, in the case of analog systems. The route survey results will also allow for the definitization of the cable manufacturing order: the quantities of land cable required to reach from the water's edge to the terminal stations, and the quantities of cable having protective armoring. Shielding against radio-frequency intrusion is essential for analog systems, bearing in mind that the operating frequencies of analog systems do indeed lie in the MF, HF, and VHF radio regions, and the quantity of cable having radiofrequency shielding will also be definitized. Then the quantity of the main cable to be produced, and

the precise lengths of repeater sections, will be determined. For fiber-optic projects regenerators instead of repeaters will be provided, and equalizers will not be required.

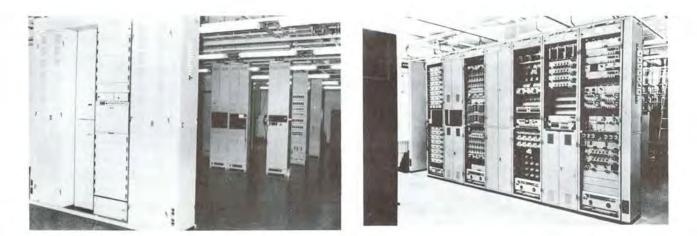
From the combined results of the route survey and the system design the cable-laying slack schedule may be established. Since it is desired that the cable lie un-stressed on the sea-bottom, an amount of cable in excess of the calculated absolute distance over the bottom is included and paid out. The amount of slack is an engineering determination and will vary for various portions of the route, relating to factors such as water depth and slope of the bottom.



KDD MARU anchored off shore at Chinen, Okinawa and paying out the shore end of the Guam - Okinawa portion of Transpacific No.2. As the cable passes out of the ship over the bow sheaves, floats are attached to the cable at regular intervals with short rope pennants, the floats then keeping the cable a more or less fixed distance below the surface of the water and free of the bottom. When the shore end is properly affixed to an anchoring arrangement the cable is gently tautened to straighten out the line from ship to shore. Then when it is properly located, tension is slacked and divers cut free the floats, letting the cable settle into the desired position.



The terminal station building for the Integrated Joint Communication System cable at Camp McCauley, Taiwan, is typical of installations designed and constructed for military submarine telephone cable systems. The IJCS cable connecting Taiwan to Okinawa ceased to be required and was shut down in 1980.



In appearance, submarine telephone cable system terminal station equipment resembles conventional telecommunication equipment enclosures, racks, cable-ways, and cabinets. With the surge in system channel capacity in recent years, the multitude of circuit terminations--per-circuit items-- would have been burdensome except for miniaturization stemming from solid-state technology, integrated circuit items, circuit-card techniques, etc.

#### **Project** Execution

During the course of manufacture of cable and electronic equipment the terminal station buildings will have been prepared, and the completion of the manufacture of the terminal station apparatus may coincide with the readiness of the buildings. It is necessary that the terminal station equipment (at least at the starting end of the cable-laying operation) be installed and working before cable-laying begins. Also the land cable from the buildings to the shore must be in place, and, if required, the shallow-water portion of the cable from the beach to a point off shore will have been placed. If burial of the near-shore part is called for, this will have been done.

The cableship will have had all or part of the cable loaded aboard together with the associated repeaters (or regenerators) which will have been connected into the cable prior to the start of cable-laying.

If circumstances have not called for prior installation of the shore- end portion of the cable the cableship will be positioned at the departure point and will pay out the shore end with floats attached. The shore end will be drawn to the beach, its armor made fast to a beach anchor, and its signal-carrying portion joined to the land cable reaching to the terminal station. When this is done, there will be continuity from the terminal station to a cable end available on the ship, and tests will commence. The ship may then steam away on the course to pay out the cable on the pre-determined track.

Cable laying will proceed at the scheduled rate and repeaters (or regenerators) will be discharged without alteration of the ship's speed. A successful cable-laying voyage comes to a conclusion when the ship approaches the shore at the end of the lay and either joins the end of the cable to the previously-placed shoreend cable, or, in some cases, passes the shore end of the cable to the beach on floats. In either event, when the final splice is made, signal continuity should exist from terminal station to terminal station, and the end-to-end tests will insure that the system, which was continually under test during cable laying, is indeed still in satisfactory operating condition.



Traditional ceremony on the ship to commemorate the conclusion of a successful cable installation voyage. Here on the foredeck of cableship NEPTUN (3) the final splice of a military cable project for the U.S. Air Force, connecting the Philippines and Viet Nam, has been made and the bight of cable is held by a length of grappling rope seen leading to the right past the flag. When this rope is severed the cable bight will be released and will settle to the bottom. Air Force representatives and officials of United States Underseas Cable corporation, the system contractor, took part in the ceremony. The system was named WET WASH A (System reference No. 71).

#### Present and Future

Up until the present time the steady rise in the traffic-carrying capacity of submarine telephone cable systems has been permitted principally by improvements in trustworthy solidstate components and circuitry in the repeaters. Cable coaxial dimensions have increased, lowering the cable attenuation, and repeater intervals were shortened. In the instance of the British NG system operating at 46 MHz, the repeaters occur every 3.3 miles in 1.7-inch cable. A rough extrapolation would indicate that a 360supergroup analog system would require a cable of nearly 4 inches over the dielectric for repeaters spaced at 3-mile intervals, or, with 3-inch cable, repeaters at 2.5-mile spacing. While these dimensions are extreme, they are not impossible, but thanks to the fiber-optic arrival.

cable dimensions are radically reduced and the distance between submerged electronic units has been dramatically extended.

In the long and illustrious history of the analog systems, failure of electronic circuitry in the submerged repeaters was gratifyingly rare--almost non-existant, in fact. Now, in view of the awesome circuit capacities of the new fiber-optic systems, contemplation of a system interruption involving as many as 40,000 circuits (versus about 4,000 today) simultaneously out of service due to an electronic malfunction is unacceptable. Therefore for the first time we are observing the principle of circuit redundancy with remote-controlled switching being adopted as a design concept for the submerged units.



Ever since submarine cables have been employed, first for world-girdling telegraph services in the late 1880s, and for similarly-extensive telephone service since the 1950s, cables were subject to damage from man-initiated activity--from trawling for fish on the sea-bottom, or anchoring ships on the cable route, or dredging for shellfish, to name a few. As more circuit capacity developed in the telephone cables, from a handful (36 in two cables) to thousands in a single cable today, the costly but effective expedient of putting the cable out of harm's way--buried several feet deep in the seafloor, has been resorted to. The burial can be accomplished simultaneously with the initial laying of the cable or performed on previously-laid installations. Here is an underwater view of the first Bell System sea plow as employed by AT&T to sequester the coming-ashore ends of the transatlantic cables from the landing points out through the hazardous zones on the continental shelf.



Cableship LONG LINES, in many respects the world's largest cable-layer, is seen here passing a well-known landmark, Diamond Head, Oahu, Hawaii. Commissioned in 1963, LONG LINES has laid most of the submarine telephone cable systems that land in U.S. territory. Soon she will be elevated to the position of flagship of the AT&T cableship fleet, as SALERNUM, seen below, just recently acquired by AT&T to supplement the activities of LONG LINES, is undergoing refit and modifications at the Tracor Marine yard in Florida.



#### The Cableship

In the telegraph cable era, in the last century, cableships always started out as something else. Typical was GREAT EASTERN which was a passenger ship before becoming a cable-layer. Being the largest man-made article afloat, she was ideally suited for laying the first transatlantic telegraph cable over a hundred years ago. It was not until near the end of the last century that the unique requirements of cable laying plus the prosperity of the telegraph companies combined to produce a special breed of vessel: the cableship.

#### Cable Layers and Cable Repair Ships

Cableships may be broadly categorized as cable layers and cable repair ships. Cable layers are mostly larger and of course capable of making cable repairs. On the other hand, cable repair ships are generally smaller and are often built with particular requirements in mind, such as areas of operation, type of cables to look after, and so on. But some cable repair ships are adaptable to cable laying, particularly for short runs.

For cable laying of long transocean systems the ability to continue in the face of worsening weather dictates the size of the ship, and most layers are around 400 feet length-over-all or larger, with full-load displacement of 10,000 tons and upward.

The cable tanks--cylindrical holds into which cable is coiled--usually are the width of the ship in diameter and extend from the inner bottom of the ship to just below the main or operations deck. Three, four, or as many as five of these tanks enable the larger cable layers to stow thousands of miles of cable--the quantity of course being related to the size of the cable.

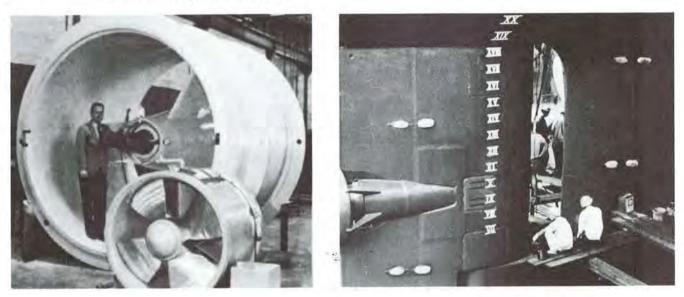
As implied above, all cableships are cable repair ships, and in the exercise of this task must have a high order of maneuverability at low speed, or stopped. Thus cableships have various maneuvering aids in the form of thrusters of one kind or another, means to move the bow or the stern of the ship from side to side when stopped or when backing, taking the form in some instances of tunnel thrusters, and in some, steerable propellers, and even water jets discharging in air. Some of the smaller repair ships make use of cycloidal propellers, allowing infinite range of direction of propulsion, and thrust.



Cable is carried in the ship's holds, usually circular in horizontal section, called tanks, with a structure in the center around which the layers (flakes) of cable are spirally formed. Cable is guided into place by hand even to this day, coming aboard at a rate of one or two knots. Here is seen the interior of a tank in CABLE VENTURE (ex NEPTUN), who possesses the largest cablecarrying capacity of all cableships, having five tanks near the size if this one. While some larger ships have been steam-turbine powered, direct and turbo-electric, there is a trend toward diesel propulsion, both direct and diesel-electric, with the latter being ac-dc, meaning diesel-driven alternators, rectifiers, and dc motors on the shafts. Cableships generally are content to steam at speeds not over about 16 knots, and the average would be around fourteen. Cableships have large bunkers, for they have to steam from cable manufacturing plants to the location of a cable installation, often halfway around the world, and cable repair ships have to maintain themselves at sea sometimes for weeks without bunkering.

All cableships have large winches called drums mounted at the foreship on horizontal

axes, always two side by side, variously powered, capable of lifting cable over the wheels called sheaves at the bow at tensions greater than the breaking strength of the heaviest armor. To retrieve a cable from the sea-bottom the ship deploys a grapnel at the end of a rope long enough to lie on the bottom, and steams slowly across the track of the cable. When the cable is engaged, it is drawn up and inboarded at the bow in cases where there is sufficient slack, and in cases without sufficient slack the cable is cut and only one end brought up at a time. Suffice to say that this abbreviated account leaves wide gaps in the intricate details of cableship operation in effecting repairs.



Every cableship needs maneuvering aids--means to exert thrust from side to side at bow and stern, or ways of exerting thrust at directions other than directly ahead or astern. At left may be seen two sizes of tunnel thrusters on the factory floor. These may be fitted in transverse tunnels completely through the hull from port to starboard, often at both bow and stern. At right, another aid, the active rudder, wherein a powerful motor is embedded in the rudder blade, with a propeller to exert thrust in the direction of the plane of the rudder. Other special maneuvering ability accrues to ships with steerable, retractable propellers, or the cycloidal propeller.

Most ships used for cable laying have special machinery for controlling the discharge of cable mounted in the aftership. Though some early cable-layers had drum-type payout engines, all recently-built layers have linear machines, intended to allow the continuous payout of cable and repeaters (or regenerators) at fixed speed, usually about 6 knots.

Several of the larger cableships are specifically equipped to deploy and tow cable plows. To overboard and recover the plow, usually a sledlike device weighing up to 20 tons, the ship must have a crane or A-frame at the fantail. The plow has a share extending downward, which, when the plow is towed forward, incises a trench in the seabottom. The share is arranged so that the cable, passing down from the ship into the plow, will run through the share and be deposited in the bottom of the trench, Z or 3 feet deep into the sea floor.

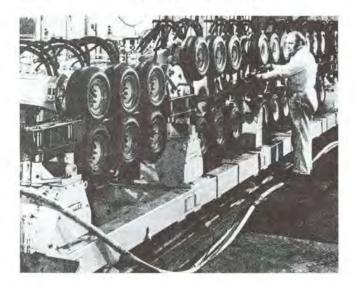
Plowing is done at slow speed--1 or 2 knots-and requires a hefty pull from the ship, as much as 50 tons or more.

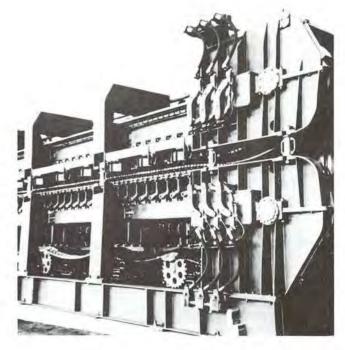
The development by the offshore petroleum industry of underwater work vehicles, manned and un-manned, has encouraged the use of such devices by the submarine cable community to deal with plowing and inspection of the result of plowing, as well as the recovery of plowed-in cable in the fortunately rare instances that this is required. The stowage and deployment of the vehicles usually requires special facilities as well as dedicated control consoles for guiding and actuating the vehicles.

Modern cableships, exemplified by the U.S. Navy's newest, USNS ZEUS, T-ARC 7, are extensively automated with respect to the engine room and for maneuvering. By the centralized and computerized facilities the ship can be maneuvered to hold position over a fixed point on the bottom as an example, by the hand of one man, and the engine room is totally unoccupied. Japanese cableship KUROSHIO MARU performs computerized cable laying, even to plowing, through pre-programmed instructions, and the ship plows and deposits cable in a complete hands-off condition.

Many cable projects involve lengths of cable greater than the capacity of the cableship or ships available for the task. Therefore it has become almost routine for a layer to deposit say a thousand miles, buoy off the end, return to the cable factory, load the second thousand, steam out, pick up the buoy, splice on, and lay the next length. It was mentioned that the new fiberoptic cables are small compared to the later sizes of analog cables. What this means in terms of cableship utilization can only be welcomed warmly by all concerned, allowing the more modest-capacity cable-layers to accomplish great feats of cable mileage carried and laid.

It was--and is--desirable to conduct cablelaying at constant speed and until the linear cable payout engine appeared this was generally impossible. At right: The AT&T-developed linear engine seen on the factory floor at Western Gear Corporation before being fitted to cableship LONG LINES. Two engines were built; none others have been ordered.





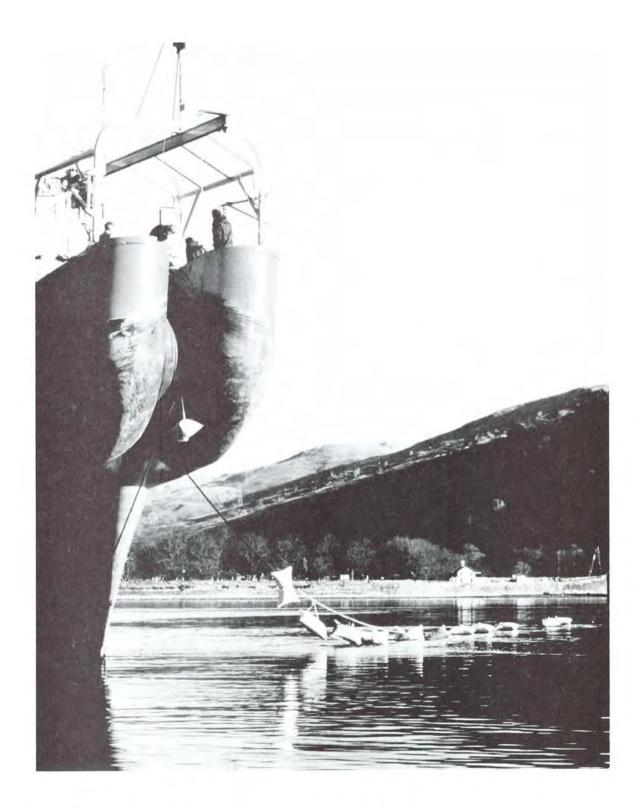
At left: Developed jointly by the British Post Office and Dowty Boulton Paul Ltd., the Dowty engine has enjoyed wide acceptance, having been supplied for seven ships: British, French, Canadian, and Soviet.



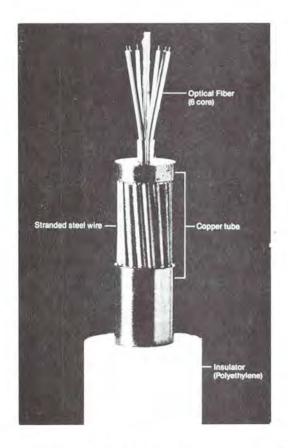
Cableship RAYMOND CROZE with sister-ship LEON THEVENIN have recently been completed and commissioned in France. In 1981 the government of France had ordered construction of a new cableship to repalce the aging AMPERE, when a disasterous fire occurred on their cableship MARCEL BAYARD in harbor at Toulon, rendering her a total loss. This prompted the government to cancel the order for AMPERE's replacement and order instead two more ships slightly smaller. These new vessels represent the state-of-the-art in cableship design and construction.

#### SIGNIFICANT CABLESHIPS OF THE WORLD IN ORDER OF LENGTH OVER ALL

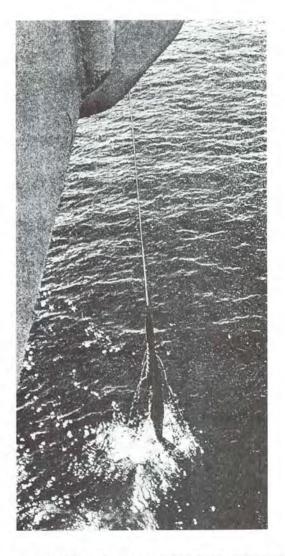
	IN ORDER OF BENGIN	Peference	
	434 535 6	Reference Number	<b>F</b> 1
L.O.A.	436-525 ft.	Number	Flag
511.5	ZEUS (T ARC-7)	8005	U.S.A.
511.5	LONG LINES	6011	U.S.A.
493.9	CABLE VENTURE	6009	U. K.
473.8	MERCURY	6008	U. K.
436.3	VERCORS	7008	France
	380-436 ft.		
429.1	MUROTO	8001	Japan
427.9	DONETS	6020	U. S. S. R.
427.9	ZEYA	6021	U.S.S.R.
427.8	INGUL	6006	U. S. S. R.
427.8	JANA	6007	U. S. S. R.
427.8	KATUNJ	7001	U. S. S. R.
427.8	TAVDA	7005	U. S. S. R.
427.8	INGURI	7006	U.S.S.R.
426.5	ALERT	6002	U. K.
391.3	KUROSHIO MARU	7011	Japan
	350-380 ft.		
377.3	PACIFIC GUARDIAN	8007	U.K.
373.5	KDD MARU	6016	Japan
371.4	CABLE ENTERPRISE	6012	U.K.
370.0	RETRIEVER	6005	U. K.
370.0	NEPTUNE (T ARC-2)	4019	U. S. A.
362.0	ALBERT J MYER	4020	U. S. A.
351.0	RAYMOND CROZE	8011	France
351.0	LEON THEVENIN	8012	France
	300-350 ft.		
340.5	RECORDER	5005	U.K.
339.6	SALERNUM	5009	U.S.A.
323.0	NEWTON	7009	U. K.
319.0	MONARCH	7002	U. K.
319.0	IRIS	7003	U. K.
318.2	FUTAMI	7021	
313.4	JOHN CABOT	6013	Japan Canada
515.4	JOHN CABOI	0015	Canada
	245-300 ft.		
299.5	AMPERE	5002	France
277.4	TSUGARU MARU	6019	Japan
271.5	NORTHERN	6010	Denmark
263.0	ST MARGARETS	4016	U. K.
257.0	PETER FABER	8006	Denmark
252.0	CABLE RESTORER	4012	South Africa
249.0	EMBA	8002	U. S. S. R.
249.0	NEPRYADVA	8003	U.S.S.R.
249.0	SETUN	8004	U.S.S.R.



The first sea-trial of a fiber-optic submarine telephone cable system took place at Loch Fyne, Scotland in February 1980. Here the shore end of the cable is being paid out from the bow of cableship IRIS(3). The project was a joint enterprise of British Telecom International and Standard Telephones and Cables Ltd.



Close-up view of a fiber-optic submarine telephone cable design produced jointly in Japan by KDD, NTTPC, and Ocean Cable Company Ltd.



Fiber-optic cable and regenerator being inboarded at the bow of cableship LONG LINES following successful deep-sea trials by AT&T in September 1982.



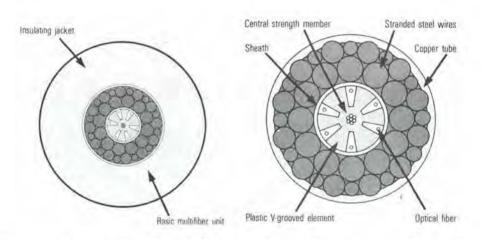
Close-up view of a fiber-optic cable design developed in France by CNET and Les Cables de Lyon

the fibers, is relatively small. Since the cable has to satisfy certain mechanical requirements regardless of the size of the transmission part its dimensions cannot be reduced beyond a certain limit. Since the fibers are extremely small (less than 1 mm) it is safe to say that even in the event of a high number of fiber pairs the cable dimensions are dictated by mechanical considerations.

Various entities have developed a number of cable designs. A typical design, one of many, has stranded steel wires in the center, just as the lightweight armorless cable design, then a ring of fiber pairs, typically 6, around the center member, and fillers and protective sheaths on top of the core. Other developments show the fiber pairs in the center and protective elements, armor wires, on the outside. All designs provide a copper tube somewhere in the cable structure which has electrical (power-feed) and mechanical (water-tightness) functions.

There are several modes of light transmission which have been investigated with regard to advantages and disadvantages, and there seems to be a consensus to employ single-mode (SM) configuration. A typical single-mode design consists of a fiber of 0.9 mm diameter and a "cladding" out to a diameter of 2.5 mm for each fiber.

One of the problems with fibers is splicing. The fibers are thin and brittle and require careful handling, making fiber splicing far more delicate than the conventional coaxial procedure of joining robust copper conductors and the injection of polyethylene.



Transverse section views of a design of fiber-optic submarine telephone cable produced in France as a joint enterprise of CNET and Les Cables de Lyon. Left, the whole cable; right, enlarged section of the core.

# The Housings for the Submerged Units

The mechanical housing as it was developed for conventional analog systems had to meet a number of requirements, among which were:

It must not collapse under the pressure of deep sea;

It must be water-tight;

It must be able to transmit the cable tension under laying and recovery activity;

It must be corrosion-resistant:

The electrical part of the cable must penetrate the bulkhead of the housing;

It must be installable with various types of cableship machinery.

It is safe to say that the traditional manufacturers of underwater repeaters had these requirements very much under control; reliability of the housing has been no problem for many years. Fortunately the housing requirements for fiber-optic regenerators are similar to those of the analog repeaters as listed above. The most prominent difference is the penetration of the individual fibers to the internal electro-optical circuitry. In the case of three pairs (6 fibers), there are six penetrations at each end. The problem is aggravated by the smallness and brittleness of the fibers. Thus it is not surprising that the size of the splice chambers inside the mechanical housing is much greater for the fiber-optic regenerators than for the conventional analog repeaters, where only one robust coaxial had to penetrate the bulkheads.

### Regenerators

Basically, digital regenerators and analog repeaters have the same purpose: to refresh or restore the transmission signal before it deteriorates to a degree that might affect the overall transmission quality. In the case of analog repeaters the nature of the deterioration is the excessive accumulation of noise; in the case of digital regenerators it is the error rate when it exceeds acceptable limits.

Compared to fiber-optic regenerators, analog repeaters are relatively simple; just a remotelyenergized, bidirectional amplifier with some more-or-less sophisticated supervisory circuitry.

Digital regenerators are inherently more complex, having to perform quite a number of important tasks:

Restore the signal;

Select the working regenerator (when regenerator redundancy is provided); Select the working transmitter (when transmitter redundancy is provided);

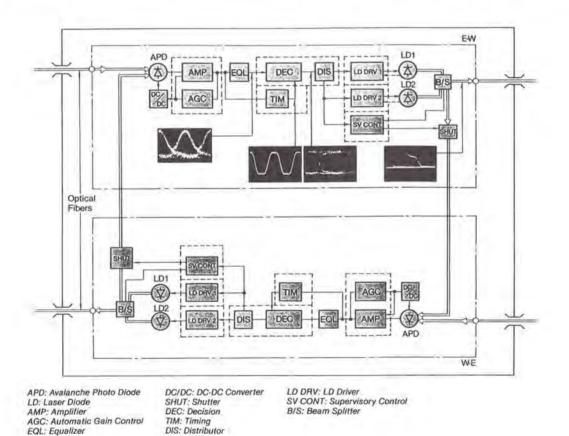
Monitor its own performance;

Respond to supervisory commands;

Provide for energizing the electronic circuitry.

In particular, it is the various types of redundancy that separates the regenerative function from its analog counterpart. In the case of the AT&T technology there is an extra fiber pair available (in addition to the two regular pairs) which can replace either of the working fiber pairs. As soon as a malfunction is detected, a switch-over to the stand-by pair can be effected.

Based on the assumption that the optical transmitter is the weakest link in the regenerator chain, a switched, four-transmitter redundancy is provided. By means of a power switch, any of the four transmitters can be inserted when the detecting device is triggered.



Block diagram of a submersible regenerator as developed in Japan in a joint project of NTTPC, KDD, NEC Corporation, and Fujitsu Ltd.

# System Data

The established seacable system manufacturers have published data showing the characteristics of their systems. As can be seen from the following tabulation, there are no drastic differences. This is particularly true for the transmission speed which is almost always a multiple of the 140 MBS as recommended by CCITT.

# FIBER OPTIC SYSTEM DESIGNS

Country	France	Japan	Japan	U. K.	U.S.A.	Japan	
Entity	SUBMARCOM IT-ALCATEL	NEC Corp.	NTTPC	STC Submarine Systems Ltd.	AT&T	KDD	
Designation	5.280	280 M	<i>b</i> r	NL1	SL	OS-280 M	
Transmission Rate per pair	280 Mb/s	280 Mb/s	280 Mb/s	280 Mb/s	295.6	280 Mb/s	
Channel Capacity	4000	4032	*	12,000	40,000	3780	
Multiplication Factor	58	-ste	de	3	5	5	
System Length	7,500 km	10,000	1,000	7,500	8,000	10,000	
Regenerator Spacing	45 km	50	25	2530	3035	3050	
Maximum Sea Depth	6,500 m	8,000	8,000	7,500	7,500	8,000	
Bit Error Rate	$4 \approx 10^{-8}$	10 <sup>-8</sup>				10 <sup>-8</sup>	
Design Life	25 years	25	15	15	25	2.5	
System MTBF	2 in lifetime	more than 10 years	10	10	3 in lifetime	10	
Fiber Size	40	0.9 mm	27	Core: 8.5 µm	Core 2.6 mm	530	
Number of Fibers	2 pairs	3 pairs	24	3 pairs	12 TAT 8:6	2 pairs	
Fiber Mode	SM	SM	SM	SM	SM	SM	
Wavelength	1,3um	1.3	1.3	1.3	1,3	1,3	
Cable Design	Center steel 2	King wire; copper tubes	<i>4</i> 5	100	*	Center steel	
Cable Loss	0.42 dB/km	0.5	*	0.5	0.38	0.5	
Cable Diameter	- 15 mm	19	*		21	4	

\* Not reported

#### Experimental Systems

Although many steps in the development of a new seacable technology can be performed in the laboratory or by test facilities simulating the ambiance for which the system is intended, there is no substitute for actual sea trials where the environmental parameters are as realistic as possible.

The ideal situation would be an experimental link between two terminal stations so that the characteristics of the link can be monitored as long as desired. If such an experimental link can be used for traffic, so much the better. A good example of this philosophy was the installation of the Key West - Havana submarine telephone cable that was commissioned in 1950 (System Reference No. 5). It served as a precursor to what later became known as the AT&T SB system, used for the pioneer transatlantic project "TAT 1" (System Reference No. 30) in 1956.

If a two-terminal experimental system cannot be implemented for whatever reason, the next best configuration is a loop where at the end of the laying operation both cable ends are on board the ship and the cable can be tested. A variant of this configuration is a loop with both ends connected to a terrestrial terminal station and thus available for long-term testing and observation.

As of mid-1984 a total of 13 experimental systems (and sea trials) have been implemented.

#### FIBER OPTIC EXPERIMENTAL SYSTEMS

239 Japan NTT 1981	Un- numbered Japan KDD	242 Japan KDD	243 Japan NTT	244 U. S. A.	247 France	256 U. K.	265	273	274	Un- numbered
Japan NTT	Japan	Japan	Japan					215		numbered
NTT			(1997) 	U.S.A.	France	II K				
	KDD	KDD	NTT			U. K.	France	Spain	France	Japan
1981				AT&T	CNET CGE	STC	CNET CGE	CTNE AT&T	CNET CGE	KDD
	1981	1982	1982	1982	1982	1983	1984	1985	1985	
Sagami Bay	Sagami Bay	Sagami Bay	Sagami Bay	500 nm ENE of Bermuda	Mediter- ranean		Mediter- ranean	Canary Islands	Mediter- ranean	200 km SE Okinawa
(15)		Ninomiya Loop	Yahatano	Ship Loop	Cagnes-Sur Mer and Juan Les-Pins		Port Gri- maud, An- tibes	Las Can- teras, Las Calletilas	Marseille Ajaccio	Ship Loop
1.3	4.5	50	45	18.2	20		80	104	400	24
6 fibers	6 SM	6 SM	4 SM	12 SM	2 SM 4 MM			6 MM	2 fiber pairs	
700	500, 1000, 1500	1300	1000	5000	1000	Deep	1300		2500	5000- 7000
1	1	2	2	2	none		2	4 + 2	8	2
	SM	SM	SM	SM	as above		SM		SM	
			2	6	3		2		2	
1.3	1.3	1.3	1.3		1.3		1.3		1.3	
400	280	300	400	274, 420	34		280	295.6	280	
	1.3 6 fibers 700 1	1.3 4.5 6 fibers 6 SM 500, 1000, 1500 1 1 SM 1.3 1.3	Ninomiya           1.3         4.5         50           6 fibers         6 SM         6 SM           700         1000, 1500         1300           1         1         2           SM         SM           1.3         1.3	Ninomiya         Yahatano           1.3         4.5         50         45           6 fibers         6 SM         6 SM         4 SM           700         1000, 1500         1300         1000           1         2         2           SM         SM         SM         2           1.3         1.3         1.3         1.3	Ninomiya         Yahatano         Ship Loop           1.3         4.5         50         45         18.2           6 fibers         6 SM         6 SM         4 SM         12 SM           700         1000, 1500         1300         1000         5000           1         1         2         2         2           SM         SM         SM         SM         SM           1.3         1.3         1.3         2         6	Bay         Bay         Bay         Bay         Bay         Bermuda           Ninomiya         Yahatano         Ship         Cagnes-Sur           1.3         4.5         50         45         18.2         20           2 SM         6 SM         6 SM         4 SM         12 SM         4 MM           700         1000, 1500         1300         1000         5000         1000           1         2         2         2         none           SM         SM         SM         SM         as           2         6         3         1.3         1.3         1.3	Bay         Bay         Bay         Bay         Bermuda         Cagnes-Sur Mer and Juan- Les-Pins           1.3         4.5         50         45         18.2         20           1.3         4.5         50         45         18.2         20           6 fibers         6 SM         6 SM         4 SM         12 SM         4 MM           700         1000, 1500         1300         1000         5000         1000         Deep           1         1         2         2         none         2         3           1.3         1.3         1.3         1.3         1.3         1.3         1.3	BayBayBayBayBermudaCagnes-Sur Mer and Juan- Les-PinsPort Gri- maud, An- tibes1.34.5504518.220806 fibers6 SM6 SM4 SM12 SM4 MM10007001000, 15001300100050001000Deep13001122none2SMSMSMSMSMSMas aboveSM21.31.31.31.31.31.31.3	Bay         Bay         Bay         Bay         Bermuda         Cagnes-Sur Mer and Juan- Les-Pins         Port Gri- maud, An- tibes         Las Can- tibes           1.3         4.5         50         45         18.2         20         80         104           6 fibers         6 SM         6 SM         4 SM         12 SM         4 MM         6 MM           700         1000, 1500         1300         1000         5000         1000         Deep         1300           1         1         2         2         none         2         4+2           SM         SM         SM         SM         SM         2         1.3         1.3         1.3         2           1.3         1.3         1.3         1.3         2.74,         34         36         30         205 (	BayBayBayBayBermudaCagnes-Sur Mer and Juan- Les-PinsPort Gri- maud, And tibesLas Can- tera, Las CalletilasMarseille Ajaccio1.34.5504518.220801044006 fibers6 SM6 SM4 SM12 SM4 MM $2 SM$ 6 MM2 fiber pairs7001000, 15001300100050001000Deep130025001122none24+28SMSMSMSMas aboveSM25M1.31.31.31.31.31.31.3

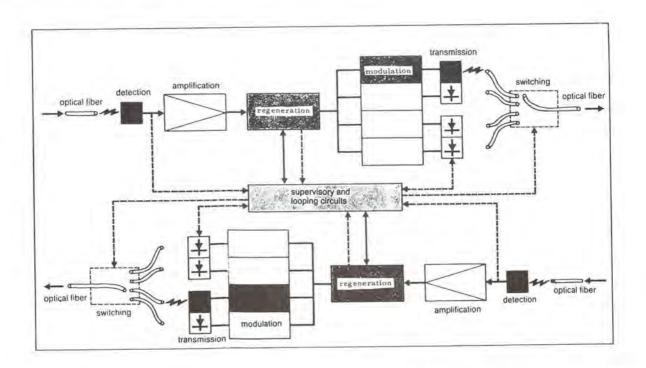
# Branching

Virtually all currently-operating seacable systems are configured as a single line from one landing point to another landing point. Since traffic requirements for different countries are not identical, it would be advantageous to be able to implement a tree configuration where the various branches go to different countries. Such configurations have been proposed over the years again and again but were never realized.

To a certain extent the ICECAN system (Reference No. 55) landing at the southern end of Greenland at Frederiksdal has a branched configuration. There are two sets of shore-end cables connected to two underwater switching devices, so that in case of damage to one cable from, say, grounding icebergs, a common threat there, the other branch can be activated by sending an appropriate signal from the landing station.

The new digital fiber-optic technology makes branching easy by dedicating certain fiber pairs to certain sub-systems. The next transatlantic project, TAT 8, under contract for service in 1988, is being built principally by AT&T. It provides for branching on the European end, where an underwater branching unit will rest on the bottom near the edge of the continental shelf. From there a modified British NL system produced by STC Submarine Systems Ltd. will link the branching unit to the Cornish coast, while a similarlymodified French system made by SUBMARCOM will come ashore in France.

It is to be expected that in the future there will be numerous situations in which branching will be desirable, and now technically convenient.



Block diagram of a submersible regenerator as developed in France as a joint enterprise of CNET and SUBMARCOM/CIT-ALCATEL.

#### Manufacturing

The same firms that are today the producers of analog submarine telephone cable systems are those who so far have entered the fiber optic field.

In the United States, AT&T pioneered the development of lightwave transmission a decade or more ago, and today is the only source for the development and production of electronics and optics for the new technology for submarine service. Simplex Wire and Cable Company has the only production facility for submarine telephone cable-coaxial or fiber optic--and they produced the prototype cable to be used for TAT 8 under AT&T sponsorship. AT&T has also the project management capability and the cableships, and are the systems contractors for TAT 8.

In Great Britain, British Telecom International and Standard Telephones and Cables PLC have both engaged their laboratories in simultaneous development work on fiber optic technology, both electronic-optic and cable. The submarine telephone cable work of STC is done today under the rubric of STC Submarine Systems Ltd. Though STC SSL have no operative cableship of their own, they have whole-project management capability and may access the cableships of Cable and Wireless and BTI, STC SSL are the contractors for the U.K. - Belgium No.5, a fiber-optic system due for service in 1985. The only source for submarine telephone cable--coaxial or fiber-- is the STC SSL plant at Southampton.

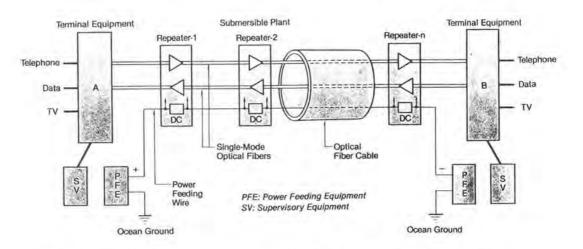
In France, the two members of the family of Compagnie General de Electricité, Les Cables de Lyon and Compagnie Industrielle des Télécommunications CIT-ALCATEL, are joined in an enterprise named SUBMARCOM which undertakes whole-project management. CIT-ALCATEL and Cables de Lyon are the sole makers respectively of electro-optics and cable for submarine service in France. Though having no cableship of their own, SUBMARCOM has access to the fleet of the French government. Under sponsorship by the Centre National d'Etudes des Télécommunications the French developments in fiber-optic submarine systems have been tested by SUBMARCOM, and they are to be the contractors for a system connecting the mainland to Corsica in 1985.

In Japan, the laboratories of Nippon Telegraph and Telephone Public Corporation, the purveyors of the national telecommunications services, and of Kokusai Denshin Denwa Co. Ltd., the same for the international service, have worked with NEC Corporation and Fujitsu Ltd. in the development of the optical and electronic requirements for fiber optic submarine telephone cable systems. Ocean Cable Company Ltd. has produced designs of fiber optic cable by both.

NTTPC and KDD have project management capability, as do also both NEC Corporation and Fujitsu Ltd. Both NTTPC and KDD have cableships.

# Conclusion

The scene has now changed dramatically because of the arrival of the new technology, fiber optics. The bandwidth advantage of satellite communication no longer exists, cable transmission delay remains unnoticeable, seacable networks are more versatile because of the new branching feature, and finally, cables have no troubles with geostationary parking space and consume zero of the precious radio-frequency spectrum.



General layout of the fiber-optic submarine telephone cable system as developed in Japan. The system layout for all present designs--British, French, Japanese, and American--are very similar.

# LIST OF THE WORLD'S SUBMARINE TELEPHONE CABLE SYSTEMS 1943 - 1983

This list names all of the known undersea telephone cable systems that have contained at least one submerged electronic device (repeater or regenerator)<sup>\*</sup>, and that were in service at least sometime during the period from the first installation of a submerged repeater in 1943 through the end of 1983.

Data files maintained by various entities in the seacable industry--manufacturers, owners, historians--have been exposed from time to time but until the first edition of this publication appeared in 1975, there was no single source of complete and verified data.

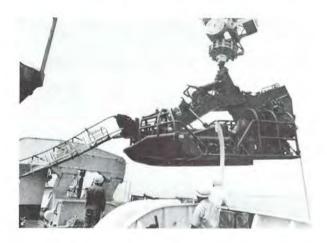
\* An exception has been permitted to allow the listing of experimental fiber-optic submarine cable installations leading to subsequent installations with submerged electronics. The first edition was prepared from the seacable system data file of this contractor, reinforced with inputs from builders and owners. The present edition has been compiled using the same methods as for the first, with recourse to some additional sources.

The list has been arranged in approximate chronological order and the System Reference Numbers are those of the contractor's data file beginning with what is generally recognized as the first application of a submerged repeater in a submarine telephone cable in 1943.

Immediately following the list is an alphabetic tabulation of the systems by countries, terminal points, and landing sites, as well as acronyms and system names.



More and more submarine telephone cable projects are turning to cable burial in the seafloor for reducing the likelihood that the cable will be disturbed by some man-initiated surface activity--trawling, for instance. Here KDD MARU, assisted by a tug, is simultaneously laying and burying the Japan-to-Mainland China cable for the part of the route having depth less than approximately 100 fathoms.



At left, the plow is hoisted out from the ship preparatory to lowering to the bottom. The cage-like structure reaches from the plow up to the stern of the ship and guides the cable and repeaters into the maw of the plow.

At right, the view from the stern of the ship shows the cage leading from the ship to the plow on the sea-bottom.



# LIST OF THE WORLD'S SUBMARINE TELEPHONE CABLE SYSTEMS WITH SUBMERGED REPEATERS

# 1943 - 1983

SYSTEM REFEREN NUMBER	NCE	DATE (S)
1	UNITED KINGDOM HOLYHEAD - PORT ERIN (RETIRED)	1943 (1951)
2	U.K GERMANY, FED. REPUBLIC (MIL) LOWESTOFT - BORKUM (RETIRED)	1946 (1969)
3	FRANCE TOULON - AJACCIO (RETIRED)	1946 (1946)
4	FRANCE NICE - CANNES (RETIRED)	1950 (1951)
5	U.S CUBA KEY WEST - HAVANA	1950
б	NETHERLANDS - DENMARK 1 OOSTMAHORN - ROMO 1 (UP-GRADED TO BECOME NO 31)	1951 (1957)
7	NETHERLANDS - DENMARK 2 OOSTMAHORN - ROMO 2 (UP-GRADED TO BECOME NO 46)	1951 (1961)
В	U.K NETHERLANDS 1 ALDEBURGH - DOMBURG 4 (RETIRED)	1951 (1972)
9	U.K NETHERLANDS 2 ALDEBURGH - DOMBURG 5 (RETIRED)	1951 (1972)
10	NUMBER UNASSIGNED	
11	NUMBER UNASSIGNED	
12	U.K DENMARK (GNT) WEYBOURNE - FANO (UP-GRADED TO BECOME NO 37)	1952 (1957)
13	U.K GUERNSEY 2 DARTMOUTH - FORT DOYLE 1 (RETIRED)	1952 (1972)
14	U.K GUERNSEY 3 DARTMOUTH - FORT DOYLE 2 (RETIRED)	1952 (1972)
15	NUMBER UNASSIGNED	
16	U.K IRELAND HOLYHEAD - DUBLIN A	1953
17	U.K IRELAND HOLYHEAD - DUBLIN B	1953
18	U.K NETHERLANDS 3 LOWESTOFT - SCHEVENINGEN 1 (RETIRED)	1954 (1977)
19	U.K NETHERLANDS 4 LOWESTOFT - SCHEVENINGEN 2 (RETIRED)	1954 (1977)
20	U.K NORWAY 1 ABERDEEN - BERGEN	1954
21	ITALY - MALTA "MED 1" POZZALO - ST GEORGES	1955
22	NUMBER UNASSIGNED	
23	TUNISIA KELIBIA - BOU FICHA	1956
24	NORWAY - DENMARK 1 KRISTIANSAND - THISTED 1	1956
25	NUMBER UNASSIGNED	
26	ITALY - TUNISIA MAZARRA - PANTELLERIA - KELIBIA	1956
27	UNITED STATES PORT ANGELES - KETCHIKAN (RETIRED)	1956 (1979)
88	DENMARK - NORWAY 2 HJORRING - ARENDAL (RETIRED)	1956 (1979)
29	NETHERLANDS - DENMARK 3 WESTTERSCHELLING - MAADE	1956

SYSTEM REFEREN NUMBER	CE IDENTIFICATION	DATE (S)
30	U.K CANADA "TAT 1" OBAN - CLARENVILLE - SYDNEY MINES (RETIRED)	1956 (1978)
31	NETHERLANDS - DENMARK 4 DOSTMAHORN - ROMO 3 (UPGRADE OF SYSTEM ND 6) (RETIRED)	1957 (1983)
32	U.K NETHERLANDS 5 ALDEBURGH - DOMBURG 6 (RETIRED)	1957 (1983)
33	UNITED STATES "HAW 1" PDINT ARENA - HANRUMA BAY	1957
34	FRANCE - ALGERIA 1 MARSEILLE - BORDJ-EL-KIFFAN 1	1957
35	CANADA - GREENLAND CAPE DYER - THULE (RE-CONFIGURED TO BECOME NO 65)	1957 (1964)
36	ITALY CIVITAVECCHIA - GOLFO D'ARANCI 1 (RETIRED)	1957 (1982)
37	U.K DENMARK (GNT) WEYBOURNE - FANO (UPGRADE OF SYSTEM ND 12)	1957
38	U.K JERSEY 1 TUCKTON BRIDGE - ST HELIER 1	1958
39	U.K BELGIUM 1 DUMPTON GAP - MIDDELKERKE	1958
40	NUMBER UNASSIGNED	
41	FRANCE - CANADA "TAT 2" PENMARC'H - CLARENVILLE (RETIRED)	1959 (1982)
42	UNITED STATES "FLORICO" WEST PALM BEACH - SAN JUAN	1960
43	SWEDEN - U.K. GOTEBORG - MIDDLESBROUGH (RETIRED)	1960 (1983)
44	DENMARK - POLAND COPENHAGEN - BORNHOLM - MIELNO	1960
45	NUMBER UNASSIGNED	
46	NETHERLANDS - DENMARK 5 DOTMAHORN - ROMO 4 (UPGRADE OF SYSTEM NO 7) (RETIRED)	1961 (1983)
47	CANADA CAPE DYER - WHITE BAY (RE-CONFIGURED TO RECOME NO 65)	1961 (1964)
48	CANADA - U.K. "CANTAT 1" CORNER BROOK - OBAN	1961
49	DENMARK FREDERIKSHAVN - LAESO (RETIRED)	1961 (1975)
50	DENMARK GRENA - ANHOLT (RETIRED)	1961 (1975)
51	UNITED KINGDOM COLWYN BAY - DOUGLAS	1962
52	ITALY TRAPANI - CAGLIARI (RETIRED)	1962 (1982)
53	ITALY - GREECE 1 "MED 2" CATANIA - KHANIA (RETIRED)	1962 (1976)
54	U.K FARDES - ICELAND "SCOTICE" GAIRLOCH - VELBESTAD - VESTMANNAEYJ	AR 1962
55	ICELAND - GREENLAND - CANADA "ICECAN" VESTMANNAEYJAR - FREDERIKSDAL - CORNER BROOK	1962
56	FRANCE - ALGERIA 2 CANET PLAGE - MERS-EL-KEBIR	1962
57	U.S BERMUDA "BER 1" MANAHAWKIN - FLATTS	1962

SYSTE REFEI NUMBE	RENCE	DATE (S)
58	UNITED KINGDOM COLWYN BAY - LANCASTER	1962
59	CANADA - HAWAII - FIJI - NEW ZEALAND -	
	AUSTRALIA "COMPAC" (CANADA - HAWAII AND NEW ZEALAND - AUSTRALIA PORTIONS RETIRED)	1963
60		(1983)
60 61	NUMBER UNASSIGNED U.S JAMAICA - CANAL ZONE	
01	FLORIDA CITY - KINGSTON - FORT SHERMA	N 1963
62	U.S U.K. "TAT 3" TUCKERTON - WIDEMOUTH	1963
63	GRAND TURK - PUERTO RICO - ANTIGUA GRAND TURK - RAMEY - ANTIGUA	1963
64	U.K GERMANY, FED. REPUBLIC 1 WINTERTON - LEER 1	1964
65	CANADA - GREENLAND WHITE BAY - THULE	1964
	(RETIRED)	(1976)
66	U.K GERMANY, FED. REPUBLIC 2 WINTERTON - LEER 2	1964
67	U.K BELGIUM 2 ST MARGARETS BAY - LA PANNE (RETIRED)	1964 (1983)
68	U.S JAPAN "TPC 1" HAWAII - GUAM - JAPAN	1964
69	UNITED STATES "HAW 2" SAN LUIS OBISPO - MAKAHA	1964
70	U.S PHILIPPINE REPUBLIC "TPC 1" GUAM - BALER	1964
71	PHILIPPINR REPUBLIC - REPUBLIC OF	
	VIET NAM (484N-A) SAN MIGUEL - NHA TRANG (INACTIVE)	1964 (1975)
72	UNITED STATES "ST T 1" VERO BEACH - ST THOMAS	1964
73	SINGAPORE - MALAYSIA - HONG KONG - U.S. (GUAM) - MADANG - CAIRNS	
		5/1967
	PORTION RETIRED)	(1983)
74	U.K DENMARK 1 WINTERTON - MAADE	1964
75	UNITED STATES "OAHU T,IE" HANAUMA BAY - MAKAHA	1964
76	U.K NETHERLANDS 6 COVEHITHE - KATWIJK 1	1964
77	SPAIN "PENCAN 1" SAN FERNANDD - SANTA CRUZ	1965
78	U.S FRANCE "TAT 4" TUCKERTON - ST HILAIRE-DE-RIEZ	1965
79	NUMBER UNASSIGNED	
80	UNITED STATES "WET WASH C" MAKUA - JOHNSTON ISLAND	1966
81	FRANCE CANNES - ILE ROUSSE	1966
82	TORTOLA - BERMUDA BREWERS BAY - DEVONSHIRE BAY	1966
83	U.S VENEZUELA 1 ST THOMAS - MAIQUETIA	1966
84	NUMBER UNASSIGNED	
85	NUMBER UNASSIGNED	
86	NORWAY - DENMARK 3 KRISTIANSAND - THISTED 2	1967
87	U.S BAHAMAS - TURKS "AFETR" CAPE CANAVERAL - G.B.I GRAND TURK	1967
88	REPUBLIC OF VIET NAM DA NANG - QUI NHON - NHA TRANG - CAM RANH BAY - VUNG TAU (INACTIVE)	1967 (1975)

	R IDENTIFICATION	
89	REPUBLIC OF VIET NAM - THAILAND (439 VUNG TAU - BAN SATTAHIP (INACTIVE)	L-G) 1967 (1975)
90	FRANCE - MOROCCO 1 CANET PLAGE - TETOUAN	1967
91	UNITED KINGDOM GAIRLOCH - STORNOWAY	1967
92	UNITED STATES "ST T 2" JACKSONVILLE BEACH - ST THOMAS	1968
93	U.K JERSEY 2 TUCKTON BR2DGE - ST HELIER 2	1968
94	NETHERLANDS - U.K. 7 KATWIJK - COVENITHE 2 (RETIRED)	1968 (1983)
95	NORWAY - U.K. 2 KRISTIANSAND - SCARBOROUGH	1968
96	FRANCE - ISRAEL "MARTEL" MARSEILLE - TEL AVIV	1968
97	DENMARK RONNE - NYKOBING	1968
98	U.S DOMINICAN REPUBLIC ST THOMAS - STO DOMINGO	1968
99	ITALY - GREECE 2 "MED 3" CATANZARO - LEKHAINA (RETIRED)	1969 (1979)
00	ITALY CIVITAVECCHIA - GOLFO D'ARANCI 2	1969
Ø1	ITALY - LIBYA AGRIGENTO - TRIPOLI	1969
02	JAPAN - U.S.S.R. "JASC" NAOETSU - NAKHODKA	1969
03	GERMANY - SWEDEN 1 BURG - MALMO	1969
04	SPAIN - ITALY 1 "BAPI" BARCELONA - PISA	1969
.05	PORTUGAL - SOUTH AFRICA "SAT 1" SESIMBRA - STA CRUZ - BAIA DE MORD GEORGETOWN - MELKBOSSTRAND	
06	U.K PORTUGAL GOONHILLY - SESIMBRA	1969
07	FRANCE - TUNISIA 1 MARSEILLE - BIZERTE	1969
Ø8	JAPAN MORI - MURORAN 1	1969
09	FRANCE ST RAPHAEL - ST TROPEZ	1970
10	FRANCE - LEBANON MARSEILLE - BEIRUT	1970
11	U.S SPAIN "TAT 5" GREEN HILL - CONIL	1970
12	DENMARK STJERNESKANSEN - HALSSKOV	1970
13	SPAIN - ITALY 2 "MAT 1" ESTEPONA - PALO	1970
14	DENMARK COPENHAGEN - AARHUS	1970
15	JAPAN KURE - MATSUYAMA 1 & 2	1971
16	JAPAN SAGAMI BAY 1 (RETIRED)	1971 (1976)
17	JAPAN - REPUBLIC OF CHINA "IJCS" OKINAWA - TAIWAN (RETIRED)	1971 (1980)
18	CANADA - BERMUDA "CANBER" MILL VILLAGE - FLATTS	1971
19	U.K SPAIN 1 GOONHILLY - BILBAD	1970

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120	SPAIN "TRANSCAN" LAS PALMAS - PUERTO DEL ROSARIO - ARRECIFE	1971
121	JAMAICA - CAYMAN IS KINGSTON - GEORGETOWN	1971
122	SPAIN "PENBAL 1" BARCELONA - PALMA	1971
123	JAPAN DKINAWA - ZAMAMI - KUMEJIMA	1972
124	U.K GERMANY, FED. REPUBLIC 3 WINTERTON - FEDDERWARDEN	1972
125	ITALY - ALGERIA PISA - BORDJ-EL-KIFFAN	1972
126	SPAIN "PENCAN 2" CONIL - LAS PALMAS - TENERIFE	1972
127	U.K NETHERLANDS 8 ALDEBURGH - DOMBURG 7	1972
128	U.K BELGIUM 3 BROADSTAIRS - MIDDELKERKE	1972
129	FRANCE - ALGERIA 3 MARSEILLE - BORDJ-EL-KIFFAN 2	1972
130	U.K GUERNSEY 4 TUCKTON BRIDGE - ST PETER PORT	1972
131	PORTUGAL "CAM 1" SESIMBRA - FUNCHAL	1972
132	U.S BAHAMAS WEST PALM BEACH - EIGHT MILE ROCK -	1070
133	NASSAU U.K DENMARK "SHEFA" KIRKWELL - LERWICK - TORSHAVN	1972 1972
134	ITALY - EGYPT CATANZARO - ALEXANDRIA	1972
135	JAPAN SAGAMI BAY 2 (RE-LOCATED TO BECOME NO 148)	1972 (1974)
136	U.K DENMARK 2 SCARBORDUGH - THISTED	1973
137	EGYPT - LEBANON ALEXANDRIA - BEIRUT	1973
138	U.S NETHERLANDS ANTILLES ST THOMAS - ST MAARTEN - CURACAD	1973
139	BRAZIL - SPAIN "BRACAN 1" RECIFE - GRAN CANARIA	1973
140	FRANCE - MOROCCO 2 PENMARC'H - CASABLANCA	1973
141	JAPAN ADMORI - HAKODATE	1973
142	JAPAN MIURA - IBARAKI	1973
143	NUMBER UNASSIGNED	
144	U.K CANADA "CANTAT 2" WIDEMOUTH - HALIFAX	1974
145	UNITED STATES "HAW 3" SAN LUIS OBISPO - MAKAHA	1974
146	ITALY - SPAIN 3 "BARO 1" BARCELONA - ROME 1	1974
147	ITALY CIVITAVECCHIA - CAGLIARI	1974
148	JAPAN SAGAMI BAY 2 (RELOCATION OF NO. 135)	1974
149	CHINA, REP. OF - RESTRICTED PROJECT	
150	JAPAN MORI - MURORAN 2	1974
151	FRANCE - GREECE - CYPRUS - LEBANON "ARIANE - APHRODITE - ADONIS"	1974

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152	FRANCE SAN RAPHAEL - LA FOUX	1975
153	U.S JAPAN "TPC 2" HAWAII - GUAM - DKINAWA	1975
154	GREECE "AEGEUS" AMNISSOS - LAGONISSI	1975
155	GERMANY - SWEDEN 2 BURG - TRELLEBORG	1975
156	ISRAEL - ITALY "TELPAL" TEL AVIV - PALD	1975
157	FRANCE - TUNISIA 2 "ANNIBAL" CANET PLAGE - BIZERTE	1975
158	U.K SPAIN 2 GOONHILLY - SOPELANA	1975
159	NETHERLANDS - U.K. 9 DOMBURG - BROADSTAIRS	1976
160	ALGERIA - SPAIN "ALPAL" BORDJ-EL-KIFFAN - PALMA	1975
161	CHINA, PEOPLE'S REPUBLIC TIENTSIN - TAILEN	1975
162	FRANCE - ITALY "MARPAL" MARSEILLE - PALO	1976
163	JAPAN - CHINA, PEOPLE'S REPUBLIC REIHOKU - NANHUI HSIEN	1976
164	DKINAWA - MIYAKO JIMA	1976
165	SWEDEN HORNSUDDE - FRIDTORP	1976
166	AUSTRALIA - NEW ZEALAND "TASMAN" BONDI - MURIWAI	1976
167	FRANCE - U.S. "TAT 6" ST HILAIRE-DE-RIEZ - GREEN HILL	1976
168	FRANCE - U.K. 1 COURSEULLES - EASTBOURNE	1976
169	NUMBER UNASSIGNED	
170	NUMBER UNASSIGNED	
171	JAPAN MIYAZAKI - CHINEN	1976
172	NUMBER UNASSIGNED	
173	AUSTRALIA - PAPUA "A PNG" CAIRNS - PORT MORESBY	1976
174	ITALY - TURKEY CATANIA - ANTALYA	1976
175	NUMBER UNASSIGNED	
176	NUMBER UNASSIGNED	
177	ITALY ROME - PALERMO	1977
178	U.K BELGIUM 4 ST MARGARETS BAY - ST IDESBALD	1977
179	JAPAN - PHILIPPINE REPUBLIC - HONG KONG "OLUHO" GUSHIKAMI - CURRIMAO - DEEP WATER	BAY 1977
180	FRANCE LA SEYNE - BASTIA	1977
181	SENEGAL - MOROCCO "ANTINEA" DAKAR - CASABLANCA	1977
182	NUMBER UNASSIGNED	
183	SPAIN - VENEZUELA "COLUMBUS" AGUIMES - CAMURI CHICO	1977
184	SPAIN "PENBAL 2" VALENCIA - PALMA	1977
185	NUMBER UNASSIGNED	
186	DENMARK - NORWAY 4 HJORRING - ARENDAL 2	1977

NUMBE	R IDENTIFICATION	DATE
187	JAPAN KYUSHU - IKI - TSUSHIMA	1978
188	JAPAN	
189	TSUSHIMA BY-PASS SENEGAL - IVORY COAST "FRATERNITE"	1978
	DAKAR - ABIDJAN	1978
190	GERMANY, FED. REPUBLIC GROSSENBRODE - BURG	1978
191	GERMANY - SWEDEN 3 GROSSENBRODE - MALMO	1978
192	SPAIN "PENCAN 3" CHIPIONA - LAS PALMAS	1978
193	JAPAN SAGAMI BAY 3 (RETIRED)	1978
194	NUMBER UNASSIGNED	
195	FRANCE - MOROCCO 3 "AMITIE" MARSEILLE - TETOUAN	1978
196	PHILIPPINE REPUBLIC - REPUBLIC OF SINGAPORE "PHILSIN" "ASEAN P S" , CURRIMAD - SINGAPORE	1978
197	U.S.S.R. DKHOTSK - NIKOLAYEVSK	1979
198	NUMBER UNASSIGNED	
199	NUMBER UNASSIGNED	
200	NUMBER UNASSIGNED	
201	NUMBER UNASIGNED	
202	JAPAN FUTO - OSHIMA - MIYAKE JIMA	1979
203	FRANCE - U.K. 2 ST VALERIE-EN-CAUX - EASTBOURNE	1979
204	JAPAN MIYAKE JIMA - HACHIJO JIMA	1979
205	LIBYA TRIPOLI - BENGHAZI	1979
206	ITALY GENDA - SASSARI	1979
207	FRANCE - LIBYA "EL FATAH" LA SEYNE - TRIPOLI	1979
865	NUMBER UNASSIGNED	
209	JAPAN - CHINA, REPUBLIC OF "DKITA!" GUGHIKAMI - TOUCHENG	1979
210	SPAIN - ITALY 4 "BARGEN" BARCELONA - GENDA	1979
211	NUMBER UNASSIGNED	
212	JAPAN SAGAMI BAY 4	1979
213	FRANCE - PORTUGAL "TAGIDE" PENMARC'H - SESIMBRA	1979
214	U.K NETHERLANDS 10 LOWESTDFT - ALKMAAR	1979
215	FRANCE - ALGERIA 4 MARTIGUES - EL DJEMILA	1980
216	BRAZIL - U.S. "BRUS" FORTALEZA - ST THOMAS	1980
217	U.S VENEZUELA 2 ST THOMAS - CAMURI	1980
218	JAPAN SAKURAI - HAKATA	1980
219	JAPAN KUSHIKINO - NAKAKOSHIKI	1980
250	CHINA, REPUBLIC OF - PHILIPPINE REPUBLIC "TAILU"	
	TOUCHENG - CURRIMAD	1980

		DATE (S)	
23			
	ROMD - WINTERTON	1980	
22	2 INDONESIA - BINGAPORE "ASEAN I S" JAKARTA - BINGAPORE	1980	
22	MALAYSIA KUANTAN - KUCHING	1980	
22	JAPAN KAKIDOMARI - FUKUE	1980	
25	5 UNITED KINGDOM LOCH FYNE SEA TRIAL, FIBER OPTIC	1980	
55	S JAPAN NTTPC FIRST TRIAL, FIBER OPTIC INATORI - KAWAZU	1980	
22	JAPAN NAGAHAMA - HIGASHINO	1980	
22	JAPAN NASE - TOKUNOSHIMA	1980	
22	SPAIN - U.K. 3 RODILES - LANDS END	1980	
23	IVORY COAST - NIGERIA ABIDJAN - LABOS	1980	
23	JAPAN UENO - TOURI	1981	
23		1981	
23		1981	
234		1981	
23		1981	
236		1981	
237		1981	
236	U.S. (GUAM) - CHINA, REP OF "TAIGU" AGANA - TOUCHENG	1981	
239	JAPAN NTTPC FIRST SEA TRIAL SAGAMI BAY, FIBER OPTIC	1981	
290	JAPAN NAHA - MIYAKO JIMA	1982	
241	ITALY		
242	JAPAN	1982	
243	JAPAN	1982	
244	UNITED STATES	1982	
245		1982	
246		1982	
247	FRANCE CAGNES-SUR-MER - JUAN-LES-PINS,		
248	DENMARK - NETHERLANDS 4	1982	
249	FRANCE - TUNISIA 3 "DIDON"	1983	
250	UNITED STATES	1983	
251	MALAYSIA - SINGAPORE - THAILAND	1983	
	"ASEAN M-3-T" KUANTAN - KATONG - SONGKHLA - PHETCHABURI	1983	

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252	MOROCCO - PORTUGAL "ATLAS" ASILAH - BURGAU	1983	
253	JAPAN KAGOSHIMA - NAZE	1983	
254	EGYPT - GREECE "ALEXANDROS" ALEXANDRIA - LAGONISSI	1983	
255	U.S U.K. "TAT 7" TUCKERTON - LANDS END	1983	
256	UNITED KINGDOM DEEP SEA TRIALS, FIBER OPTIC	1983	
257	UNITED KINGDOM LARNE - PORT PATRICK	1983	



Sometimes the amount of cable to be laid for a given project is more than can be accommodated by even the largest cable-layers. Moreover, when the project site is, as frequently the case, half-way round the world from the cable manufacturing plant, it becomes worthwhile to arrange for special services by a freighter modified to act as a cable transporter. Here LONG LINES, upper right, is seen receiving cable from a transport ship at San Francisco in preparation for laying the second segment of Transpacific No. 2.



Cableship PETER FABER belongs to the government of Denmark. The third Danish cableship of the same name, she commemorates the notable Dane of that name who served as head of the post and telegraph administration in the late 1800s. A glance at the map of cables in the North Sea will make it clear immediately why Britain, the Netherlands, and Denmark all have several cable repair ships. PETER FABER (3) is modern in all respects, a capable ship with many advanced features.

# INDEX OF THE WORLD'S SUBMARINE TELEPHONE CABLE SYSTEMS 1943 - 1983

From the List commencing on page 39 the geographic data fields of each of the systems have been dissected, alphabetized, and cross-listed in the following index.

To use the index it is necessary only to know and enter with one word, for example "Italy", to find, in alphabetic order, all systems that serve Italy. Terminal station locations, landing points, and acronyms as well as names of countries are listed and cross-listed also.

The index is not intended for browsing, since space limitations prevent the inclusion of additional identification of a system listing under a given word. For instance, finding the entry "Catania-Khaniá" will give the system reference number which can then be found with more details, either in the List or in the Seacable System Data Profiles.

Thus the index is not cluttered with further identification of the system between Catania and Khaniá by any additional identification of the link as Sicily-Crete or Italy-Greece at that location. Of course the index will give the proper identification, i.e., the system reference number or numbers, by entering with any of the words Sicily, Crete, Italy, or Greece.

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		WEST PALM BEACH - EIGHT MILE ROC NASSAU	K - 132
		инаано	Lac
u.s.	Ĩ	BERMUDA MANAHAWKIN - FLATTS	57
U. S.	Î	BRAZIL ST THOMAS - FORTALEZA	216
u. s.	1	- CHINA, REPUBLIC DF AGANA - TOUCHENG	238
U. S.	1	DOMINICAN REPUBLIC ST THOMAS - SANTO DOMINGO	98
u.s.	1	FRANCE GREEN HILL - ST HILAIRE-DE-RIEZ TUCKERTON - ST HILAIRE-DE-RIEZ	167 78
U.S.	-	JAMAICA - CANAL ZONE FLORIDA CITY - KINGSTON - FORT S	
U. S.	ş	JAPAN MAKAHA - AGANA - NINOMIYA	68
		CHINEN	153
U. S.	1	- PHILIPPINE REPUBLIC AGANA - BALER	70
U. S.	÷	- NETHERLANDS ANTILLES ST THOMAS - ST MAARTEN - CURACAD	138
U.S.	ł	- NEW GUINEA - AUSTRALIA AGANA - MADANG - CAIRNS	85

U.S SPAIN BREEN HILL - CONIL	111
U.S U.K. TUCKERTON - LANDS END WIDEMOUTH	255 62
U.S VENEZUELA ST THOMAS - MAIQUETIA CAMURI	83 217
U.S.S.R. DKHOTSK - NIKOLAYEVSK	197
U.S.S.R JAPAN NAKHODKA - NAOETSU	102

#### v SYSTEM REFERENCE GEOGRAPHIC IDENTIFICATION NUMBER VALENCIA - PALMA 184 VELBESTAD - GAIRLOCH 54 VEBTMANNAEYJAR VENEZUELA - SPAIN CAMURI - AGUIMES 183 VENEZUELA - U.S. CAMURI - ST THOMAS MAIQUETIA - ST THOMAS 217 83 VERO BEACH - ST THOMAS 72,250 VESTMANNAEYJAR - FREDERIKSDAL - HAMPDEN -CORNER BROOK 55 VESTMANNAEYJAR - VELBESTAD - GAIRLDCH 54 VESTRO HAVN - SAEBY 49 VEURNE - ST MARGARETS BAY 178 VIET NAM COASTAL SYSTEM 88 VIET NAM - PHILIPPINE REPUBLIC NHA TRANG - SAN MIGUEL 71 VIET NAM - THAILAND VUNG TAU - BAN SATTAHIP 89 VIRGIN ISLANDS - DOMINICAN REPUBLIC ST THOMAS - SANTO DOMINGO 98 VIRGIN ISLANDS - NETHERLANDS ANTILLES ST THOMAS - ST MAARTEN - CURACAD 138 VIRGIN ISLANDS - U.S. (MAINLAND) MAGENS BAY - VERO BEACH JACKSONVILLE BEACH 72,250 92 VIRGIN ISLANDS - VENEZUELA ST THOMAS - CAMURI MAIQUETIA 217 83 VRAKVIKA - UGGERBY 186 VUNG TAU - BAN SATTAHIP 89 VUNG TAU - VIET NAM COASTAL 88

#### W

ACRONYMS, SYSTEM NAMEB	SYSTEM REFERENCE NUMBER
WET WASH A	71
WET WASH C	80
GEOGRAPHIC IDENTIFICATION	
WAKE - GUAM	68
WALES - ISLE OF MAN HOLYHEAD - PORT ERIN	ï
WESTERDUARFF - HVIDANES	133
WESTTERSCHELLING - FAND MAADE	29 29
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C	80
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WHITE BAY - CAPE DYER	47
THULE	65
WIDEMOUTH - HALIFAX	144
TUCKERTON	62
WILLEMSTAD - SINT MAARTEN	139
WINTERTON - BORKUM	64,66
FANO	74
FEDDERWARDEN	124
LEER	64,66
MAADE	74
ROMO	221

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ACRONYMS; SYSTEM NAMES	SYSTEM REFERENCE NUMBER
YAHATAND LOOP	116,212
GEOGRAPHIC IDENTIFICATION	
YAKUSHIMA - IBASUKI	235
YAMAZAKI - KIKONAI	141
YINSTAY BAY - VOE OF SOUND	133
YOKOSUKA - ITOH	148

	GEOGRAPHIC	IDENTIFICATION	
ZAMAMI			

z

SYSTEM REFERENCE NUMBER 123 123

# SEACABLE SYSTEM DATA PROFILES

# Definitions of Terms

The format in which the data are presented in the following section has been designed to provide information most useful to the scholar and engineer concerned with the study of world telecommunications technology and economics.

Definitions of the data items follow here; definitions of terms in general will be found in the glossary at the end of the book.

#### Official Name of the System

The name generally used by the owners of the system, or the name taken from <u>List of Cables Forming the World Submarine Network</u>, the official publication of the International Telecommunications Union, Geneva, or, in the absence of these, the name descriptive of the system in geographical terms.

#### System Reference Number

Assigned from the data bank of the contractor for this publication, in which numbers are generally in chronological order.

#### Acronym

As found in the above-named <u>List</u>, or as generally used by the owners

# Other Names

Other names are mentioned if in common use and if thought to be helpful to the reader.

# Country

The name of the nation or other political entity in whose territory the cable lands.

#### Terminus

The name of the location of the cable terminal station (where the transmission frequencies are derived and from where system power is fed). The "A" terminus is that from which the lower band of transmission frequencies is sent in a bidirectional coaxial analog system. In the case of multi-link systems the A termini are named in the remarks.

### Landing Point

The name of the place at which the cable comes ashore, if different from the terminus.

#### Coordinates

The latitude and longitude of the landing.

# Owner

The name appearing in the before-mentioned List, or as otherwise determined by the contractor for this publication.

#### I.R.U. Holders

The names of the holders of Indefeasible Rights of Use. To the extent consistent with available space, abbreviations have been avoided, but when abbreviations appear whose meanings are not readily evident, they may be found in the list of abbreviations at the end of the data profiles.

### Circuits Held

The number of circuits held by the owner(s) for his or their own services, or by I. R. U. holders. Circuits held plus circuits leased equal total circuits. The letter "h" denotes half-circuit, representing a one-half interest in the cost of a cable circuit from terminal to terminal.

#### Lessees

The names of the lessees of circuits.

#### Circuits Leased

The number of circuits leased.

# Date in Service

The year in which the system in its current (1984) configuration was placed into operation.

#### Date of Retirement

The year in which the system ceased operation.

#### Nature of Service

Whether commercial, military, experimental, or whatever, as designated by the owner or generally understood in the telecommunications community.

#### Cable Miles

The length of the cable from terminus to terminus, in miles of 6087 feet.

# SEACABLE SYSTEM DATA PROFILES

Definitions of Terms (Continued)

#### Single or Twin

Whether one bi-directional or two uni-directional cable were used, in the case of the older analog coaxial cable systems.

# Number of Equalizers

The number of submerged equalizers in analog coaxial systems.

#### Equalization Method

Brief description of equalization procedures during cable laying.

# Nominal Voice-Circuit Capacity, Non-TASI, as Originally Configured

The number of voice circuits capable of being transmitted at the time of the initiation of service.

#### Channel Spacing, Initial

The spacing in kiloHertz between channel carriers at time of placing into service.

#### Terminal Equipment Manufacturer

The name of the entity or entities producing the major portions of the cable system terminal equipment.

#### Construction Contractor

The name of the entity who had the responsibility to the owners for the satisfactory execution of the whole project and for the guaranteed electrical performance of the system when completed; a "turnkey" or prime contractor, or one of a group of owners acting for the group, or a sole owner acting for himself.

#### Power Feed Mode

Whether fed from one or both ends.

#### Nominal Voltage

The value of the DC potential difference from end to end, expressed as a single number for single-end feed, and as a two-part number for double-end feed.

# System Current

The value of the current fed to the system.

# TASI

If applied, the designation of the TASI system, the number of circuits to which it is applied, and the number of circuits obtained from the TASI application, the total number of circuits available for traffic, and the year in which TASI was applied.

# System Type

The designation given by the system designer or the designation of the repeater type, or other designation generally in use and recognized.

# Cableship(s) Used

Name(s) of the principal cableship(s) used for the installation. Minor auxiliaries or temporarilyimprovised cableships are not named.

#### Cable Description

Description of the "main" or principal portion, as distinct from shallow-water portions or land-cable lengths.

# Cable Size

The outside diameter of the dielectric, in the case of coaxials; the outside diameter of the whole cable structure in the case of fiber optic cables.

#### Cable Manufacturer

the name of the entity or entities producing the major portion of the cable.

# Repeater or Regenerator Physical Description

Whether one or a string of containers; whether flexible in the sense of having joints between containers or because of the attachment of the cable by gimbals, or inflexible, in the case of cable attachments without gimbals; unidirectional or bidirectional, and if transistorized, in the case of the older analog systems.

# Number of Repeaters or Regenerators

The number of repeaters or regenerators in the system from terminus to terminus.

#### SEACABLE SYSTEM DATA PROFILES

# Definitions of Terms (Continued)

#### Repeater or Regenerator Spacing

The nominal, or average, or general cable distance between units.

#### Repeater or Regenerator Manufacturer

The name of the entity or entities producing all or significant numbers of the submerged electronic units.

# **Transmission Frequencies**

The frequencies assigned for the system transmission bands, in the case of analog systems, expressed in kiloHertz.

# Nominal Transmission Bandwidth

The extent in kiloHertz of the A-B and the B-A transmission bands excluding out-of-band pilots and service channels, applicable in instancies of analog systems.

### "Transistorized" and "Solid State"

There have been no commercial submarine telephone cable systems placed in service anywhere in the free world using thermionic vacuum tubes since 1973. A transition in usage of terms was made between the 1975 and the 1980 editions of this book, from "transistorized" to "solid state", but the terms may be used interchangeably. Because all submerged electronics are now universally solid-state, this will not be repeated on the data sheets covering systems coming into service since 1980.

#### Transmission Wavelength (Fiber Optic Systems)

In the case of light-guide fiber-optic systems the nominal wavelength expressed in microns.

#### Transmission Bit Rate (Fiber Optic Systems)

The nominal digital transmission speed in megabits per second.

#### Cost

The reasonably-accurate approximation of the cost of the system at the time it was built, in then-current U.S.dollars, shown as "total", and a reasonably-accurate distribution of the total cost among cable, submerged electronics, terminal and power feed equipment, terminal stations (excluding land), and installation.

#### Cost (Continued)

Precise cost figures are seldom available in published media, but owners and builders will have the most reliable cost data, of course. Sometimes there are reasons for reticence which have been respected.

In some instances in which precise cost data have not been forthcoming, the contractors for this book have generated representative figures based on experience in the industry.

# System Design Life

This is shown by the number of years given by some responsible entity (owner, builder, manufacturer) as the design life objective, or the number of years for which the system has been designed for reasonable maintainability, without serious deterioration of cable or submerged electronics, nor serious degradation of transmission performance.

#### Place Names and Orthography

Place names are generally the English version (i. e., Rome for Roma). Execptions appear in cases of owner preference, or to include widely-known designations. Spelling and usage are intended to follow American idiom.

# SEACABLE SYSTEM DATA PROFILE

REFERENCE

NAME	Holyhead-Port Erin		
COUNTRY A	United Kingdom (Wales)	COUNTRY B	United Kingdom (Isle of Man)
TERMINUS A	Holyhead	TERMINUS B	Port Erin
LANDING POINT A	Holyhead	LANDING POINT B	Port Erin
COORDINATES A	53 <sup>°</sup> 09'N× 04 <sup>°</sup> 38'W	COORDINATES B	54 <sup>0</sup> 05'N x 04 <sup>0</sup> 44'W

OWNER British Post Office

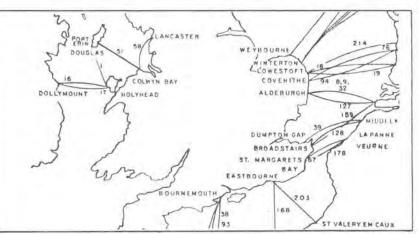
In 1943 one unidirectional repeater amplifying in the upper band only was inserted

in the previously-laid (1937) cable, extending the capacity from 24 to 48 circuits.

This project was carried out by cableship IRIS (2).

DATE IN 1943 SERVICE	SERVICE late	erimental; r commercial	CABLE	44	SINGLE OR TWIN	single	SYSTEM TYPE	А
SABLE DESCRIPTION	armored para	agutta coaxial				CABLE S	ZE 0.620 1	5. 7mm
CABLE MANUFACTURER	Telcon Wo	rks, Submari	ne Cabl	es Limit	ed USED	ESHIP	IRIS (2)	
REPEATER DESCRIPTION	ntainer inflexibl	le asymmestic	cal unidi	rectiona	I NUMBER OF	1	REPEATER SPACING	~
REPEATER MANUFACTU	RER Siemens	Brothers and	British	Post Of	fice			
NOMINAL TRANSMISSIO	N BANDWIDTH 19	2+192kHz	TRANSMI	SSION FR	REQUENCIES	36-2284	312-504kHz	
NUMBER OF EQUALIZER	s none	EQUALIZATION I	METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY, NON	-TASI, INITIAL	48 fi	nal 48	CHANNEL SPACING	INITIAL	4kHz final	4 kHz
IERMINAL EQUIPMENT N	ANU FACTURER	British Post	Office		co co	NSTRUCTIO	N BPO	
OWER FEED MODE SI	ngle end	NOMINAL VOLT	AGE 180	V	SYSTEM	CURREN	r 0.360 A	

COST	\$ MILLION
CABLE	
SUBMERGED ELECTRONICS	
TERMINAL AND POWER FEED	
TERMINAL STATIONS	
INSTALLATION	
TOTAL	
SYSTEM DESIGN LIFE 5	years



2

SYSTEM

REFERENCE

# SEACABLE SYSTEM DATA PROFILE

NAME Lowestoft-Borku	m		
COUNTRY A England		COUNTRY B	Federal Republic of Germany
TERMINUS A Lowestoft, Suffol	k.	TERMINUS B	Borkum, Isle of Borkum
LANDING POINT A Lowestoft	1.	LANDING POINT B	Borkum
COORDINATES A 52 <sup>9</sup> 29'N x	01 <sup>0</sup> 43'E	COORDINATES B	53 <sup>0</sup> 37'N x 06 <sup>0</sup> 39'E

OWNER	British Government	CIRCUITS HELD ALL
	In 1946 the previously-laid (1945) voi	ce-frequency multiplex telegraph cable
	was raised and fitted with a repeater,	increasing the capacity from 24 to
	120 telegraph channels. In 1969 the s	ystem was retired.

DATE IN 1946 NATURE OF mil		BLE 19	7 SINGLE OR TWIN	single	SYSTEM TYPE	В
CABLE DESCRIPTION armored polye	thylene coaxial			CABLE SIZ	E 0.62" 1	5.7mm
CABLE MANUFACTURER Submarin	e Cables Limited		CABL USED	ESHIP AI	ERT (3)	
REPEATER monocontainer inflexil DESCRIPTION	ole asymmetrical	bidirecti	ional NUMBER OF		REPEATER	-
REPEATER MANUFACTURER Post Offic	ce Laboratories a	nd Siem	ens Brothers			
NOMINAL TRANSMISSION BANDWIDTH 2	20+20 kHz TRA	NSM15510	N FREQUENCIES	0-20 + 24	-44 kHz	
	$20+20~{\rm kH_Z}$ tra		N FREQUENCIES	0-20 + 24	4-44 kHz	
NUMBER OF EQUALIZERS none	EQUALIZATION MET	HOD -			4-44 kHz 4 kHz fina	1 4 kHz
	EQUALIZATION MET	HOD - final	5 CHANNEL 5 SPACING CO1			1 4 kHz

COST \$	MILLION	29 3
CABLE	••///	14 CLEER THE
SUBMERGED ELECTRONICS		64 124 OOSTMAHORN
TERMINAL AND POWER FEED	OROUGH	12, 37 WEST
TERMINAL STATIONS	ER A	214 - J PEGHOND
INSTALLATION	WEYBOURNE WINTERTO L'OWESTO	NY IN KATWIJK
TOTAL	COVENI	THE 54 8.9.
SYSTEM DESIGN LIFE 10 yea	rs	139 MIDDELKIRKY

# SEACABLE SYSTEM DATA PROFILE

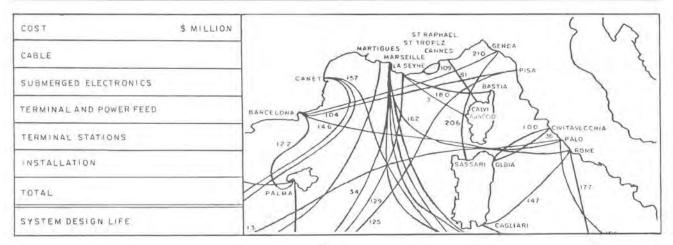


SYSTEM REFERENCE NUMBER

NAME	Toulon-Ajaccio		
COUNTRY A	France (mainland)	COUNTRY B	France (Corsica)
TERMINUS A	Toulon	TERMINUS B	Ajaccio
LANDING POINT A	La Seyne	LANDING POINT B	Ajaccio
COORDINATES A	$43^{0}06'N \ge 5^{0}52'E$	COORDINATES B	41 <sup>°</sup> 55'N x 8 <sup>°</sup> 44'E

OWNER	Administration of Posts and Telecommunications
	In 1946 a repeater was prepared by the Service d'Etudes et de Recherches et des
	Techniques des P.T.T. (S.E.R.T.) for insertion in the previously-laid (1934)
	telegraph cable. After six months of testing in the sea, the repeater was recovered
	for examination and evaluation.

DATE IN 1946 NATURE OF experimental CABLE SERVICE SERVICE MILES	180 (est.) SINGLE OR TWIN single
CABLE DESCRIPTION armored guttapercha "59/59"	
CABLE MANUFACTURER Les Câbles de Lyon	CABLESHIP USED D'ARSONVAL
REPEATER monocontainer inflexible DESCRIPTION	NUMBER OF 1 REPEATER REPEATERS SPACING
REPEATER MANUFACTURER Cie. Industrielle de Télécommu	inications CIT
NOMINAL TRANSMISSION BANDWIDTH TRANSMI	SSION FREQUENCIES
NOMINAL TRANSMISSION BANDWIDTH TRANSMI	SSION FREQUENCIES
	CHANNEL SPACING, INITIAL
NUMBER OF EQUALIZERS none EQUALIZATION METHOD	

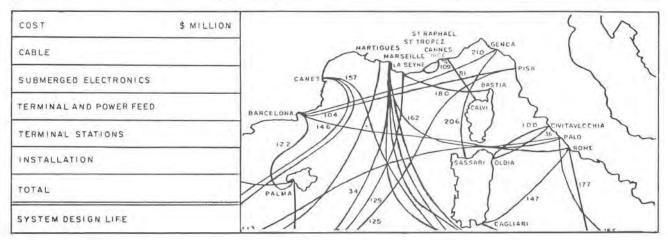


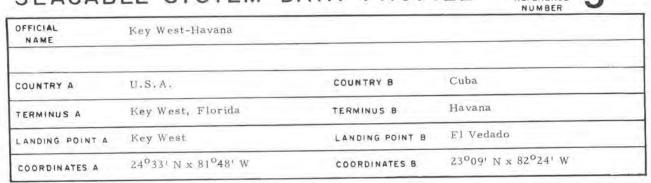
NOT I	N SERVICE	
OFILE	SYSTEM	
JFILE	REFERENCE	l
and the second s	NUMBER	r

Nice-Cannes	
France	COUNTRY B France
Nice	TERMINUS B Cannes
Nice	LANDING POINT B Cannes
$43^{\circ}42'N \ge 7^{\circ}16'E$	COORDINATES B 43°32'N x 7°03'E
	France Nice Nice

OWNER	Administration of Posts and Telecommunications
	In 1950 an experimental installation consisting of one repeater in a 60-mile cable
	was placed in the Mediterranean with its ends at Nice and Cannes, under the
	direction of the Service d'Etudes et des Recherches et des Techniques (S. E. R. T.)

DATE IN 1950 NATURE OF experimental SERVICE SERVICE	CABLE 60 MILES	SINGLE OR TWIN single	
CABLE DESCRIPTION armored polyethylene.coax	tial	CABLE	SIZE 0.65" 16.6mm
CABLE MANUFACTURER Le Cables de Lyon		CABLESHIP USED	D'ARSONVAL
REPEATER multicontainer articulated flexibl DESCRIPTION	le bidirectional	NUMBER OF 1 REPEATERS	REPEATER SPACING
REPEATER MANUFACTURER Cie. Industrielle de T	élécommunicati	ons CIT	
NOMINAL TRANSMISSION BANDWIDTH $16 \pm 16~{\rm kHz}$	TRANSMISSION	FREQUENCIES 12-28	+ 32-64 kHz
NUMBER OF EQUALIZERS NONE EQUALIZATIO	N METHOD -		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	L 4	CHANNEL SPACING, INITIA	L 4
TERMINAL EQUIPMENT MANUFACTURER CI	Т	CONSTRUCT	C T D T
POWER FEED MODE single end NOMINAL VO	LTAGE 200/200	SYSTEM CURRE	NT 0.5 A
	ERIVED	THE REPORT OF STREET	DATE



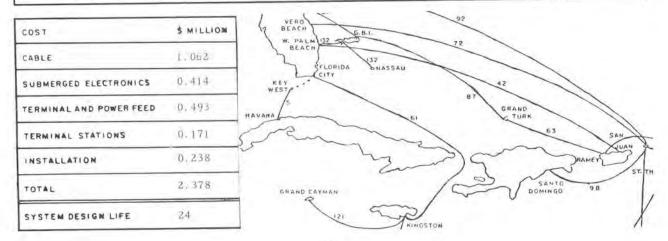


SYSTEM

REFERENCE

Cuban-American Telephone and Telegraph Co.	CIRCUITS HELD all
none	
1. Contract of the second s	
WUI	
1	9
	none

DATE IN SERVICE	1950	NATURE OF	Commercial	CABLE	119 129	SINGLE OR TWIN	twin	SYSTEM TYPE	SA
CABLE DES	CRIPTION	armored	polyethylene c	oaxial		(	CABLE SIZ	E 0.46" 11	. 7 mm
CABLE MAN	UFACTURER	Simplex	Wire & Cable (	Co.		00007	SED	LORD KE	LVIN
REPEATER	DN .	articulat	ed flexible unid	lirection	al	NUMBER OF REPEATERS	3+3	REPEATER	40 nm
REPEATER	MANUFACTU	RER Weste	ern Eléctric Co	6.					
NOMINAL T	RANSMISSIC	N BANDWIDT	н 96+96 kHz	TRANSM	ISSION	FREQUENCIES	12-108	+12-108 kH	Z
NUMBER OF	EQUALIZE	RS none	EQUALIZATIO	N METHOD	)				
NOMINAL	OICE CIRCI	JIT CAPACITY,	NON-TASI, INITIA	L 24	now	24 CHANNEL SPACING,	INITIAL	4kHz now	4 kHz
TERMINAL	QUIPMENT	MANUFACTURE	R Western E	lectric (	Co.		STRUCTION	ATT	
POWER FEI	ED MODE	single end	NOMINAL VO	LTAGE	340	SYSTEM	CURRENT	0.230 A	
TASI TYPE	- CIRCU	ITS USED -	CIRCUITS D	ERIVED	-	TOTAL CIRCUIT	rs -	DATE	÷



#### BECAME NO. 31 IN 1957

# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE NUMBER 6



NAME	Oostmahorn-Rømø 1		
OTHER NAMES	Leeurwarden-Rømø 1		
COUNTRY A	Netherlands	COUNTRY B	Denmark
TERMINUS A	Leeuwarden	TERMINUS B	Rømø
LANDING POINT A	Øostmahorn	LANDING POINT B	Rømø
COORDINATES A	$53^{\circ}24' N \ge 06^{\circ}10'E$	COORDINATES B	$55^{0}05'N \times 08^{0}29'E$

OWNER A	Administration of PTT	CIRCUITS HELD 36h
OWNER 8	Administration of Posts and Telegraphs	CIRCUITS HELD 36h
	In 1957 this system was up-graded by replacing the	e original two repeaters

DATE IN 1951 NATURE OF SERVICE SERVICE comme	ercial CABI		SINGLE OR TWIN <sup>Single</sup>	SYSTEM TYPE	С
CABLE DESCRIPTION armored polyethy	lene coaxial		CABLE S	IZE 0, 935" Z	3.7mm
CABLE MANUFACTURER Telegraph Con	struction & Main	ntenance C	o. Ltd. USED POOL	MONARCH LSTER(2) KR.	(4) ARUP(2
REPEATER monocontainer inflexi			NUMBER OF 2 REPEATERS	REPEATER	40nm
REPEATER MANUFACTURER Standard T	elephones & Cab	oles Limit	ed		
NOMINAL TRANSMISSION BANDWIDTH $144$	+ 144 kHz trans	SMISSION F	REQUENCIES 24-168	+ 208-352 kH	6
	and a second of a state of				
NUMBER OF EQUALIZERS none EQU	ALIZATION METHO	OD -			
		OD -	CHANNEL SPACING, INITIAL	$4 \rm ~kH_{2}$	_
NOMINAL VOICE CIRCUIT CAPACITY, NON-TA	SI, INITIAL 36		SPACING, INITIAL		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TA TERMINAL EQUIPMENT MANUFACTURER Stand	SI, INITIAL 36	: & Cables	SPACING, INITIAL CONSTRUCTION	N STC	

COST	\$ MILLION	STITA SAVEDDRE TRELLEBORG
CABLE		136 2 2 2 2 2 44 NYRKBBING 97
SUBMERGED ELECTRONICS		ESBJERG RBANE RBANG 2000 103,155
TERMINAL AND POWER FEED		Sid and GROSSERBRODE
TERMINAL STATIONS		23 46 44 2
INSTALLATION		FEDDERWARDEN
TOTAL		2, 66 54 124 005TMAHDRN
SYSTEM DESIGN LIFE 10 yea	ars	12. 37 WEST TERSCHELLING

#### BECAME NO. 46 IN 1961

SYSTEM

REFERENCE NUMBER 7

29'E

OWNER A	Administration of PTT	CIRCUITS HELD 36h
OWNER B	Administration of Posts and Telegraphs	CIRCUITS HELD 36h
-		
	In 1961 this system was up-graded by replacing th	e original two repeaters with

DATE IN SERVICE	1951	NATURE OF SERVICE	commercial	CABLE MILES	143	SINGLE OR TWIN	single	SYSTEM TYPE	C
CABLE DESC	RIPTION	armo	red polyethyle	ne coaxial			CABLE SI	ZE 0.935"	23. 7mm
CABLE MANU	FACTURER	Teleş	raph Construc	tion & Ma	intenan	ce Company	Limited		
REPEATER	N	monocontair	ner inflexible b	idirection	al	NUMBER O		REPEATER	40nm
		JRER Standa	rd Telephones	& Cables	Limite	d CABLESF USED		TER(2) CEF	
NOMINAL TR	ANSMISSI	ON BANDWIDTH	144 + 144 kH	Z TRANSM	ISSION	FREQUENCIES	24-168 -	+ 208-352 kl	łz
NUMBER OF	EQUALIZE	RS none	EQUALIZATIO	N METHOD	$\sim$				
NOMINAL VO	DICE CIRC	UIT CAPACITY,	NON-TASI, INITIA	L 36		SPACINO	, INITIAL	4kHz	
TERMINALE	UIPMENT	MANUFACTURE	R Standard Te	lephones	& Cable	es Lid.	INSTRUCTION	STC	
POWER FEE	D MODE	double end	NOMINAL VO	LTAGE 244	/278	SYSTEM	CURRENT	0,467 A	
TASI TYPE	CIRCU	ITS USED	CIRCUITS D	ERIVED		TOTAL CIRCU	ITS	DATE	

COST \$ MILL	I RANNEL A
CABLE	ESBJERG RBM00 BURG
SUBMERGED ELECTRONICS	GROSSENBRODE
TERMINAL AND POWER FEED	
TERMINAL STATIONS	14 FEDDERWARDEN
INSTALLATION	24 66 224 DOOSTMAHORN
TOTAL	12, 37 WESI TERSCHELLING
SYSTEM DESIGN LIFE 10 years	214 53 Эссиноно

OFFICIAL



SYSTEM REFERENCE NUMBER

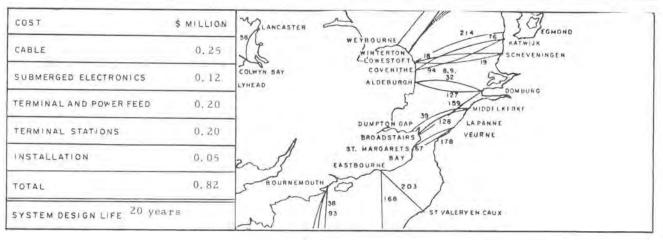
NAME	Aldeburgh - Domburg 4		ACRONYM ALD - DOM 4
COUNTRY A	England	COUNTRY B	Netherlands
TERMINUS A	Aldeburgh, Suffolk	TERMINUS B	Domberg, Walcharen
LANDING POINT A	Aldeburgh	LANDING POINT B	Domburg
COORDINATES A	52 <sup>0</sup> 10'N x 01 <sup>0</sup> 36'E	COORDINATES B	51 <sup>°</sup> 34'n x 03 <sup>°</sup> 30'E

 OWNER A
 British Post Office
 CIRCUITS HELD 60h

 OWNER B
 Administration of PTT
 CIRCUITS HELD 60h

 In 1950 the previously-laid (1937) cable was raised by ALERT (2) and 4 2-way repeaters were inserted.
 Following the installation in 1972 of a new system with 2I-supergroup (1260 voice channel) capacity, this system No. 8 was retired.

DATE IN 1950 NATURE OF SERVICE Commercial	CABLE MILES 83	SINGLE OR TWIN single	SYSTEM TYPE C Mk I
CABLE DESCRIPTION armored paragutta coaxis	al	CABLE	SIZE 0. 62" 15.7mm
CABLE MANUFACTURER Submarine Cables Lim	iited	CABLESHIF USED	ALERT (3)
REPEATER monocontainer inflexible bidire	ectional	NUMBER OF REPEATERS 4	REPEATER SPACING 15.9mm
REPEATER MANUFACTURER Submarine Cables L	imited		
NOMINAL TRANSMISSION BANDWIDTH $240 \pm 240 \text{ kH}$	IZ TRANSMISSION	FREQUENCIES 24-26	4+312-552 kHz
NUMBER OF EQUALIZERS none EQUALIZATIO	ON METHOD -		
OMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITI	AL 60 final 6	O CHANNEL SPACING, INITIA	L 4 kHz final 4 kHz
TERMINAL EQUIPMENT MANUFACTURER Siemens	Brothers	CONSTRUCTI	CCI
POWER FEED MODE single end NOMINAL VC	DLTAGE 1200 V	SYSTEM CURRE	NT 0.715 A
ASI TYPE CIRCUITS USED CIRCUITS D	ERIVED	TOTAL CIRCUITS	DATE



#### RETIRED 1972

### SEACABLE SYSTEM DATA PROFILE

SYSTEM REFERENCE NUMBER

NAME	Aldeburgh-Domburg 5		ACRONYM ALD DOM 5
COUNTRY A	England	COUNTRY B	Netherlands
TERMINUS A	Aldeburgh, Suffolk	TERMINUS B	Domburg, Walcharen
LANDING POINT A	Aldeburgh	LANDING POINT B	Domburg
COORDINATES A	52 <sup>°0</sup> 10 N x 01 <sup>°</sup> 36'E	COORDINATES B	51 <sup>0</sup> 34"N x 03 <sup>0</sup> 30' E

OWNER A	British Post Office	CIRCUITS HELD 60h	
OWNER B	Administration of PTT	CIRCUITS HELD 60h	
In 1951 the pr	eviously-laid (1937) cable was raised by ALERT	(3) and 4 2-way repeaters were inserte	d.
	Following the installation in 1972 of a ne	w system with 23-supergroup (1260 void	:e

channel) capacity, this system No. 9 was retired.

DATE IN 1951 SERVICE	NATURE OF SERVICE COM	nmercial	CABLE	83	SINGLE OR TWIN	single	SYSTEM TYPE	: Mk I
CABLE DESCRIPTION	armored para	gutta coaxial				CABLE SI	ZE 0.6211 15	. 7mm
CABLE MANUFACTURER	Submarine Cal	bles Limited				ESHIP ED	ALERT (3)	
REPEATER DESCRIPTION	monocontainer	r inflexible bio	direction	lal	NUMBER OF	*1	REPEATER SPACING	15.9nm
REPEATER MANUFACTU	RER Submarin	e Cables Lim	ited					
NOMINAL TRANSMISSIO		40 + 240 kHz	A. 3. 7. 1		QUENCIES	24-264+	312-552 kHz	
	15 110110	LOOALIZATION	the first					
	IT CAPACITY, NO	N-TASI, INITIAL	60 fi	nal 60	CHANNEL	INITIAL	4 kHz final	4 kHz
NOMINAL VOICE CIRCU TERMINAL EQUIPMENT N	A. S. A. S.	N-TASI, INITIAL Siemens Bro		nal 60	SPACING	INITIAL NSTRUCTION		4 kHz
NOMINAL VOICE CIRCU	MANUFACTURER		thers	nal 60 00 V	SPACING CO CO	STRUCTION	d.	4 kHz

OST	\$ MILLION	ER WEYBOURNE 214 76 KATWIJK
ABLE	0.25	WINTERTON IN SCHEVENINGEN
UBMERGED ELECTRONICS	0.12 THEAD	ALDEBURGH
ERMINAL AND POWER FEED	0.20	DUMPTON GAP 39 128 LAPANNE
ERMINAL STATIONS	0.01	BROADSTAIRS VEURNE
NSTALLATION	0.052	EASTBOURNE
OTAL	0.63 - BOURN	168 168
YSTEM DESIGN LIFE 20	years m	36 93 ST VALERY EN CAUX

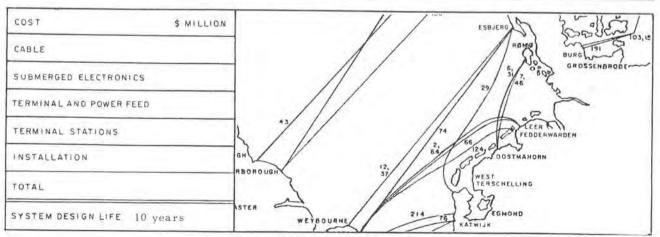
BECAME NO. 37 IN 1957

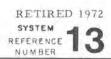


NAME	Weybourne-Fanø		NUMBER
OTHER NAMES			
COUNTRY A	England	COUNTRY B	Denmark
TERMINUS A	Weybourne, Norfolk	TERMINUS B	Esbjerg
LANDING POINT A	Weybourne	LANDING POINT B	Fanø
COORDINATES A	52 <sup>0</sup> 56'N x 1 <sup>0</sup> 09'E	COORDINATES B	55 <sup>°</sup> 22'N x 8 <sup>°</sup> 25'E

OWNER	The Great Northern Telegraph Company Limited CIRCUITS	HELD All
	In 1952 two repeaters were installed in the previously-laid (1950) voic	e frequency
	multiplex telegraph cable, raising the capacity from 24 to 72 telegraph	n channels.
	Then in 1957 the two repeaters were replaced by 5 new ones of greater	capacity
	and the system became No. 37.	

DATE IN 1952 NATURE OF commercial SERVICE	CABLE 30 MILES	)7 SINGLE OR TWIN	single	SYSTEM TYPE	B Mk II
CABLE DESCRIPTION armored polyet	hylent coaxial		CABLE S	IZE 0.62" 1	5.7mm
CABLE MANUFACTURER Submarine Cabl	es Limited	CABL US	1000	EDOUARD	SUENSON
REPEATER DESCRIPTION monocontainer inflexible asym	nmetrical unidire	NUMBER OF REPEATERS	2	REPEATER SPACING	75nnı
REPEATER MANUFACTURER Siemens Brothers	3				
NOMINAL TRANSMISSION BANDWIDTH $12 \pm 12$ k	Hz TRANSMISSI	ON FREQUENCIES	0-12 +	16-28 kHz	
NUMBER OF EQUALIZERS none EQUALIZA	TION METHOD				
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, IN	ITIAL 3	CHANNEL SPACING,	INITIAL	4 kHz	
TERMINAL EQUIPMENT MANUFACTURER Siemen	ns Brothers		STRUCTION	Siemens	Brothers
POWER FEED MODE single end NOMINAL	VOLTAGE 1500	) SYSTEM	CURRENT	0,350	A
TASE TYPE CIRCUITS USED CIRCUITS	S DERIVED	TOTAL CIRCUIT	s	DATE	





NAME	Dartmouth-Guernsey 2		
OTHER NAMES	Dartmouth-Fort Doyle		
COUNTRY A	England	COUNTRY B	Channel Isles
TERMINUS A	Dartmouth	TERMINUS B	Fort Doyle
LANDING POINT A	Compass Cove	LANDING POINT B	Fort Doyle
COORDINATES A	50°20'N x 3°34'W	COORDINATES B	49 <sup>0</sup> 25'N x 2 <sup>0</sup> 32'W

OWNER

British Post Office

CIRCUITS HELD All

In 1952 three repeaters were inserted in the previously-laid (1938) cable. Then in

1972 when the new system No. 130 was installed, No. 13 was retired.

DATE IN 1952 NATURE OF comme SERVICE SERVICE	rcial CABLE 67 MILES	SINGLE OR TWIN	single	SYSTEM D Mk I Type
CABLE DESCRIPTION armored parag	gutta coaxial		CABLE SIZE	0.62" 15.7mm
CABLE MANUFACTURER Submar	ine Cables Limited	CABLESHIP USED:	ALERT	(3)
REPEATER monocontainer inflexible a	symmetrical bidirect	ional NUMBER OF REPEATERS	3	REPEATER 16.4 SPACING
REPEATER MANUFACTURER Siemen	s Brothers Limited			
NOMINAL TRANSMISSION BANDWIDTH $240+$	240 kHz TRANSMISS	ON FREQUENCIES	24-264+31	2-552 kHz
NUMBER OF EQUALIZERS none EQU	JALIZATION METHOD -			
NOMINAL VOICE CIRCUIT CAPACITY, NON-TA	SI, INITIAL 60	CHANNEL SPACING	INITIAL 4k	Hz
TERMINAL EQUIPMENT MANUFACTURER S	iemens Brothers Lin	ited	STRUCTION TRACTOR	вро
POWER FEED MODE single end NO	MINAL VOLTAGE 900 3	SYSTEM	CURRENT	0.350 A
				DATE

COST	\$ MILLION	16	COLWYN BAY		HITHE 94 8.9. 32	127
CABLE		DOLLYMOUNT 17	HOLYHEAD		Jul 127	MIDDELKERK
SUBMERGED ELECTRONICS		{	3	BROAD	STAIRS PITE	LAPANNE
TERMINAL AND POWER FEED		2 4	m	ST. MARGA	BAY	
TERMINAL STATIONS		L	BOURNEMO	UTH OCHT	203	
INSTALLATION			5.5	38	68 ST VALE	RY EN CAUX
TOTAL		۲	13.14,		5	
SYSTEM DESIGN LIFE 20 y	ears	0	GUERNSEY (	2 7	SEULLES	

NAME	Dartmouth-Guernsey 3		
OTHER NAMES	Dartmouth-Fort Doyle		
COUNTRY A	England	COUNTRY B	Channel Isles
TERMINUS A	Dartmouth	TERMINUS B	Fort Doyle
LANDING POINT A	Compass Cove	LANDING POINT B	Fort Doyle
COORDINATES A	50°20'N x 3°34 W	COORDINATES B	49 <sup>°</sup> 25'N x 2 <sup>°</sup> 32'W

OWNER

Britis Post Office

CIRCUITS HELD All

In 1952 three repeaters were inserted in the previously-laid (1940) cable. Then in

1972 when the new system No. 130 was installed, No. 14 was retired.

DATE IN 1952 NATURE OF SERVICE SERVICE COMM	nercial CABLE 69 MILES	SINGLE OR TWIN	SYSTEM D Mk I TYPE
CABLE DESCRIPTION armored	paragutta coaxial	CABLE SIZ	E 0.62" 15.7 mm
CABLE MANUFACTURER Submarine	Cables Limited	CABLESHIP USED	ALERT (3)
REPEATER DESCRIPTION monocontainer inflexible	asymmetrical bidirectio	nal NUMBER OF 3 REPEATERS	REPEATER SPACING
REPEATER MANUFACTURER Siemens B	rothers Limited		
NOMINAL TRANSMISSION BANDWIDTH 240	+ 240 kHz TRANSMISSIO	N FREQUENCIES 24-264 +	312-552 kHz
NUMBER OF EQUALIZERS None EC	UALIZATION METHOD -		
IOMINAL VOICE CIRCUIT CAPACITY, NON-1	ASI, INITIAL 60	CHANNEL SPACING, INITIAL	kHz
	amone Brothers Limited	CONSTRUCTION	BPO
TERMINAL EQUIPMENT MANUFACTURER SI	emens brothers binnied	CONTRACTOR	
	OMINAL VOLTAGE 900 V	CONTRACTOR SYSTEM CURRENT	0,350 A

COST	\$ MILLION	16	COLWYN BAY	c	DEBUNGH	9. 57
CABLE		DOLLYMOUNT	HOLYHEAD			139 MIDDELKERKE
SUBMERGED ELECTRONICS		{	3		PT QH GAP 39 12	B LAPANNE
TERMINAL AND POWER FEED		کہ	Em A	ST. MA	ADSTAIRS REARETS 67	8
TERMINAL STATIONS			BOURNE		203	
INSTALLATION			5.5	30	168 ST V	LERY EN CAUX
TOTAL				130	6	
SYSTEM DESIGN LIFE 20 yes	ars		GUERNS		IRSEULLES	

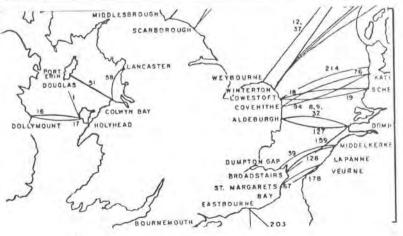
NAME	Holyhead-Dublin A		
OTHER NAMES	Dollymount-Holyhead No, 1	Towyn-Dollymount No.	I Dublin-Holyhead A
COUNTRY A	United Kingdom (Wales)	COUNTRY B	Irish Republic
TERMINUS A	Holyhead, Holy Is., Wales	TERMINUS B	Dublin
LANDING POINT A	Towyn Bay	LANDING POINT B	Dollymount
COORDINATES A	53°18' N x 4°37' W	COORDINATES B	53°21' N x 6°10' W

SYSTEM REFERENCE NUMBER

OWNER A	British Post Office	CIRCUITS HELD 60h
OWNER B	Administration of Posts and Telegraphs	CIRCUITS HELD 60h
IRU HOLDERS	ກວກອ	
CIRCUITS HELD		

DATE IN 1953 SERVICE	NATURE OF SERVICE	commercial	CABLE	62	SINGLE OR TWIN	single	SYSTEM TYPE	E Mk I
CABLE DESCRIPTION	armored p	olyethylene coa:	xial		(	CABLE SIZ	€ 0.62" 15	, 7 mm
CABLE MANUFACTURER	Submarine	Cables Limited	t.			LESHIP SED	ARIEL	
REPEATER	monoconta	iner inflexible t	oidirection	nal	NUMBER OF	Z	REPEATER S PACING	19 nm
REPEATER MANUFACTU	RER Subm	narine Cables L	imited					
NOMINAL TRANSMISSIC	N BANDWIDTH			SSION F	REQUENCIES	24-264+3	312-552 kH	ž
NUMBER OF EQUALIZED	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCL	IT CAPACITY,	NON-TASI, INITIAL	60	now 60	CHANNEL SPACING,	INITIAL	4 kHz no	w 4 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R Submarine C	Cables Ltd	4	CONSTR CONTRA	UCTION CTOR	Submarin	e Cables
POWER FEED MODE :	ingle end	NOMINAL VO	LTAGE 6	00	SYSTEM	CURRENT	0.350 A	
TASI TYPE - CIRCU	TS USED -	CIRCUITS DE	RIVED		OTAL CIRCUIT		DATE	

COST	\$ MILLION
CABLE	0.20
SUBMERGED ELECTRONICS	0.025
TERMINAL AND POWER FEED	0.125
TERMINAL STATIONS	0.010
INSTALLATION	0.005
TOTAL	0,365
SYSTEM DESIGN LIFE 20	years



# SEACABLE SYSTEM DATA PROFILE SYSTEM

NAME	Holyhead - Dublin B		NUMBER W
OTHER NAMES	Towyn Bay - Dollymount 2		
COUNTRY A	United Kingdom (Wales)	COUNTRY B	Irish Republic
TERMINUS A	Holyhead, Holy Is., Wales	TERMINUS B	Dublin
LANDING POINT A	Towyn Bay	LANDING POINT B	Dollymount
COORDINATES A	53 <sup>0</sup> 18' N x 40 37' W	COORDINATES B	53°21' N x 6°10' W

1

		the second se		
OWNER A British Post Office		CIRCUITS HELD	60h	
OWNER B	Administration of Posts and Telegraphs	CIRCUITS HELD	60h	
RU HOLDERS	none			
CIRCUITS HELD				

The 1947 non-repeatered cable was raised and two repeaters installed.

SERVICE 1953	NATURE OF SERVICE	commercial	CABLE	63	SINGLE OR TWIN	single	SYSTEM	FMkI
CABLE DESCRIPTION	armored pol	yethylene coas	sial		á	CABLE SIZ	E 0.62 1	5.7 mm
CABLE MANUFACTURER	Submarine (	Cables Limited				ESHIP	ARIEL	
REPEATER	monocentain	er inflexible b	idirection	al	NUMBER OF	2	REPEATER	19 nm
REPEATER MANUFACTU	RER Subma	rine Cables Li	imited					
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSMI	SION F	REQUENCIES	24-264+3	312-552 kH?	2
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	8				
NOMINAL VOICE CIRCU	IT CAPACITY, N	ON-TASI, INITIAL	60	now 60	CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	Submarine (	Cables Lte	1,	CONSTRI CONTRA		Submarin	e Cable:
OWER FEED MODE	single end	NOMINAL VOL	TAGE 60	0	SYSTEM	CURRENT	0.350 A	
ASI TYPE - CIRCUIT	TS USED -	CIRCUITS DEF	TIVED _	τ¢	TAL CIRCUITS	5 -	DATE	

COST	\$ MILLION
CABLE	0.200
SUBMERGED ELECTRONICS	0.025
TERMINAL AND POWER FEED	0.125
TERMINAL STATIONS	0.010
INSTALLATION	0,005
TOTAL	0,365
SYSTEM DESIGN LIFE 20	years



CIRCUITS HELD

CIRCUITS HELD

60 h

60 h

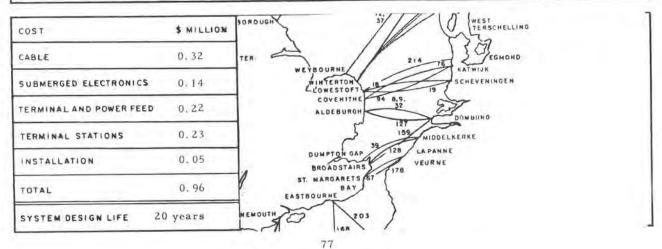
NAME	Lowestoft-Scheveningen No. 1		
OTHER NAMES	Lowestoft-Scheveningen A		
COUNTRY A	England	COUNTRY B	Netherlands
TERMINUS A	Lowestoft, Suffolk	TERMINUS B	Scheveningen, South Holland
LANDING POINT A	Lowestoft	LANDING POINT B	Scheveningen
COORDINATES A	52°29' N x 1°45' E	COORDINATES B	52°5'N x 4°14' E

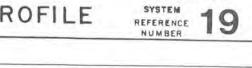
OWNER A	British Post Office
OWNER B	Administration of PTT
IRU HOLDERS	none
CIRCUITS HELD	4

LESSEES none

CIRCUITS LEASED -

DATE IN 1954 SERVICE	SERVICE	commercial	CABLE	97	SINGLE OR TWIN	single	SYSTEM TYPE	E Mk II
CABLE DESCRIPTION	armored poly	yethylene coa:	xial			CABLE SI	ZE 0.62" 1	5.7 mm
CABLE MANUFACTURER	Telegraph Co	onstruction an	nd Mainter	nance (	Company			
REPEATER	monocontain	er inflexible b	oidirectio		NUMBER OF	4	REPEATER	18.8 nn
REPEATER MANUFACTU	RER Siemer	s Brothers L	imited		ED	POOLST	IRIS(2) 'ER(2)	
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSMI	SSION	FREQUENCIES	24-264	-312-552 kH	z
NUMBER OF EQUALIZED	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY, N	ON-TASI, INITIAL	L 60 fi	nal 60	CHANNEL SPACING	INITIAL	4 kHz fina	l 4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Siemens B	rothers 1	imited	CONSTI CONTR	RUCTION ACTCR	BP	C
POWER FEED MODE	single end	NOMINAL VO	LTAGE 12	00	SYSTEM	CURRENT	0.350 A	
TASI TYPE - CIRCU	TS USED -	CIRCUITS DE	ERIVED		TOTAL CIRCUI	TS _	DATE	-





RETIRED 1977

60 h

60 h

CIRCUITS HELD

CIRCUITS HELD

NAME	Lowestoft-Scheveningen No. 2		NUMBER 13
OTHER	Lowestoft-Scheveningen B		
COUNTRY A	England	COUNTRY B	Netherlands
TERMINUS A	Lowestoft, Suffolk	TERMINUS B	Scheveningen, South Holland
LANDING POINT A	Lowestoft	LANDING POINT B	Scheveningen
COORDINATES A	52°29' N x 1°45' E	COORDINATES B	52°5'N x 4°14' E

OWNER A British Post Office OWNER B Administration of PTT

none

-

IRU HOLDERS none

CIRCUITS HELD ÷.

LESSEES

CIRCUITS LEASED

DATE IN SERVICE 1954	NATURE OF SERVICE	commercial	CABLE	97	SINGLE OR TWIN	single	SYSTEM TYPE	E Mk II
CABLE DESCRIPTION	armored pol	yethylene coax	ial			CABLE SIZ	ε 0.62" 1	5.7 mm
CABLE MANUFACTURER	Telegraph C	onstruction and	d Mainte	nance (	Company			
REPEATER	monocontain	er inflexible bi	directio	nal	NUMBER OF	4	REPEATER	18.8 nm
REPEATER MANUFACTU	RER Sieme	ns Brothers li	mited	CABLI			IS (2) STER (2)	
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSMI	SSION	REQUENCIES	24-264+3	12-552 kH	2
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCUI	T CAPACITY, N	ON-TASI, INITIAL	60 fir	al 60	) CHANNEL SPACING,	INITIAL	4 kHz final	4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Siemens Brot	hers Li	nited	CONSTR CONTRA		BPO	
POWER FEED MODE	single end	NOMINAL VOLT	AGE I	200	SYSTEM	CURRENT	0.350 A	
TASI TYPE - CIRCUIT	IS USED -	CIRCUITS DER	IVED -	т	OTAL CIRCUIT	s –	DATE	-

COST	\$ MILLION	OROUGHY	1	WEST
CABLE	0.32	ER A	1 21	
SUBMERGED ELECTRONICS	0.14	Lio	TERTON	SCHEVENINGEN
TERMINAL AND POWER FEED	0.22	AL	DEBURGH	DOWNING
TERMINAL STATIONS	0.01		30	MIDDELKERKE
INSTALLATION	0.05		to tall 1	A PANNE EURNE
TOTAL	0.74	ST. MAI EASTBOUR	BAY BAY	
SYSTEM DESIGN LIFE 20	years	EMOUTH	203	

NAME	Strabathie-Cs				1.1.1.1.1.1.1
OTHER NAMES	Aberdeen-Bergen	Os-Strabathie A	Os-Strabat	thie No. 1	UK-Norway
COUNTRY A	U.K. (Scotland)	COUR	TRY B	Norway	-
TERMINUS A	Strabathie	TERM	INUS B	Bergen	
LANDING POINT A	Strabathie	LANI	ING POINT B	Os	
COORDINATES A	57°12' N x 2°04' W	coo	RDINATES B	60°10' N	x 4 <sup>°</sup> 25' E

RETIRED 1982

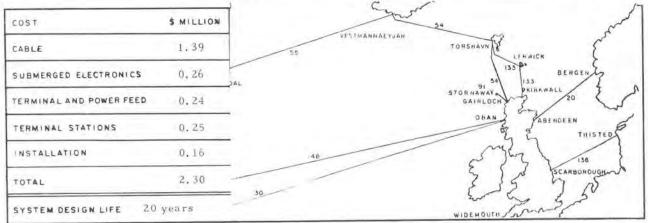
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SYSTEM REFERENCE

NUMBER

OWNER A	British Post Office	CIRCUITS HELD 36 h
OWNER B	Telecommunications Administration	CIRCUITS HELD 36 h
RU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED	4	

DATE IN SERVICE 1954	NATURE OF SERVICE	mixed	CABLE	307	SINGLE OR TWIN	single	SYSTEM TYPE	G Mk I
CABLE DESCRIPT	ON armored po	lyethylene coa	axial		0	ABLE SIZ	E 0.935" 2	3.7 mm
CABLE MANUFACT	RER Submarine	Cables Limite	d		BLESHIP ISED	MONA	RCH (4)	
REPEATER	monocontai	ner inflexible	bidirection	nal	NUMBER OF	7	REPEATER	38.9 nm
REPEATER MANUF	ACTURER Standa	rd Telephones	& Cables	Limite	d			
NOMINAL TRANSM	SSION BANDWIDTH	144+144 kH:	TRANSMI	SSION FR	REQUENCIES	24-168+2	08-352 kH	ē.
NUMBER OF EQUA	LIZERS none	EQUALIZATIO	N METHOD	÷				
NOMINAL VOICE C	IRCUIT CAPACITY, I	NON-TASI, INITIA	L 36	now 36	CHANNEL SPACING,	INITIAL	4 kHz no	w 4 kHz
TERMINAL EQUIPM	ENT MANUFACTURER	Standard T	el. & Cable	es Ltd.	CONSTR CONTRA		Submarin	e Cables
POWER FEED MOI	E double end	NOMINAL VO	LTAGE 55	0/550	SYSTEM	CURRENT	0.311 A	
	The second second							

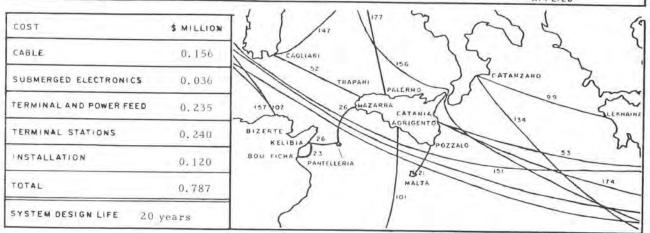


# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 21

NAME	Sicily - Malta		NUMBER
OTHER NAMES	St. Georges - Pozzallo	MED 1	
COUNTRY A	Malta	COUNTRY B	Italy (Sicily)
TERMINUS A	St. Georges	TERMINUS B	Pozzallo
LANDING POINT A	St. Georges	LANDING POINT B	Pozzallo
COORDINATES A	35°55' Nx 14°30' E	COORDINATES B	36°49' N x 14°53' E

OWNER A	TeleMalta Corporation	CIRCUITS HELD	48h
OWNER 8	Administration of Posts and Telecommunications	CIRCUITS HELD	48h
RU HOLDERS	none		
CIRCUITS HELD	- none		
LESSEES	Various		

SERVICE 1	955	SERVICE	commercial	CABLE	53	SINGLE OR TWIN	single	SYSTEM (	I Mk I
CABLE DESCRI	PTION	armored po	lycthylene coas	cial			CABLE SIZE	E 0.62" 15	
CABLE MANUFA	CTURER	Submarine	Cables Limited			LESHIP	ARIE	L	
REPEATER		monocontai	ner inflexible b	idirection		NUMBER OF REPEATERS	1	REPEATER	
REPEATER MAN	UFACTUR	ER Stand	ard Telephones	& Cables	Limite	ed			
NOMINAL TRAN	SMISSION	BANDWIDTH	144+144 kHz	TRANSMIS	SION F	REQUENCIES	24-168+2	08-352 kHz	
NUMBER OF EQ	UALIZER	s none	EQUALIZATION	METHOD	-				1
OMINAL VOIC	E CIRCUI	Т САРАСІТУ,	NON-TASI, INITIAL	36	now 48	CHANNEL SPACING,	INITIAL 4	kHz now	3 kHz
TERMINAL EQUI	PMENTM	ANUFACTURER	Standard Tel.	& Cables	s Ltd.	CONSTRUC		Submarine	Cables
OWER FEED N	NODE 5	ingle end	NOMINAL VOL	TAGE 200	)	SYSTEM	URRENT	0.467 A	
ASI TYPE -	CIRCUIT	SUSED -	CIRCUITS DEI	RIVED -	то	TAL CIRCUITS	5 -	DATE	-



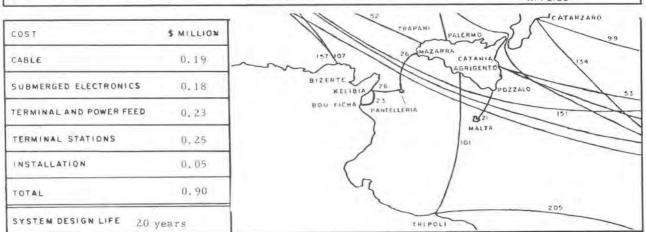
#### 22 unassigned

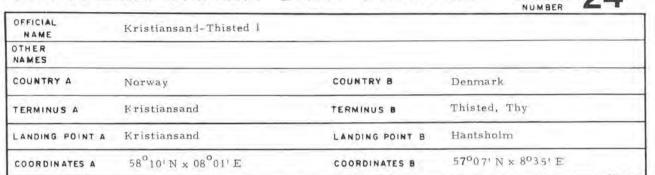
# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 23

			NO MOEN
NAME	Kelibia-Bou Ficha		
OTHER NAMES			
COUNTRY A	Tunisia	COUNTRY B	Tunisia
TERMINUS A	Kelibia	TERMINUS B	Bou Ficha
LANDING POINT A	Kelibia	LANDING POINT B	Bou Ficha
COORDINATES A	36°51' N x 11°6' E	COORDINATES B	36°18' N x 10°27' E

OWNER	Administration of PTT	CIRCUITS HELD all
IRU HOLDERS	None	
CIRCUITS HELD		
LESSEES	None	
CIRCUITS LEASED		

DATE IN SERVICE 1956	NATURE OF SERVICE	commercial	CABLE	59	SINGLE OR TWIN	single	SYSTEM TYPE	F 120
CABLE DESCRIPTION	armored po	lyethylene coa	xial		(	ABLE SIZE	0,65" 1	16.6 mm
CABLE MANUFACTURER	Les Câbles	de Lyon	(	CABLES USE	IRI	S (2), AM	IPERE(3)	
REPEATER DESCRIPTION	monocontai	ner flexible bi	directional	Ç.	NUMBER OF	4	REPEATER SPACING	14 nm
REPEATER MANUFACTU	RER Compa	gnie Industrie	lle de Téle	écommu	inications			
NOMINAL TRANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSMIS	SION FI	REQUENCIES	60-552+67	72-1164 kH	Iz
NUMBER OF EQUALIZE	s none	EQUALIZATION	METHOD	*				
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 120 n	ow 120	CHANNEL SPACING,	INITIAL 4	kHz no	ow 4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	CIT			CONSTR CONTRA		CIT	_
POWER FEED MODE	single end	NOMINAL VO	LTAGE 4	50	SYSTEM	CURRENT	0.445 A	
TASI TYPE _ CIRCUI	TS USED _	CIRCUITS DI	ERIVED -	т	TAL CIRCUIT	s _	DATE	-

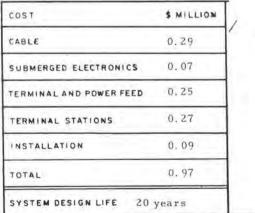


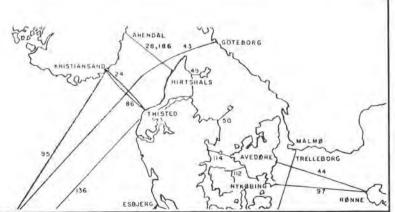


SYSTEM

OWNER A	Administration of Telecommunications	CIRCUITS HELD 60 h
OWNER 8	Administration of Posts and Telegraphs	CIRCUITS HELD 60 h
IRU HOLDERS	none	
CIRCUITS HELD	1+	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1956	SERVICE	commercial	CABLE	69	SINGLE OR TWIN	single	SYSTEM TYPE	HMk I
CABLE DESCRIPTION	armored po	olyethylene coax	ial		3	CABLE SIZE	e 0.935"	23.7 mm
CABLE MANUFACTURER	Submarine	Cables Limited		LESHIP: USED	S OCEA	N LAYER,	CEKRA	ARUP(2)
REPEATER DESCRIPTION	monocontai	ner inflexible b	idirection	nal	NUMBER OF	2	REPEATER	22 nm
REPEATER MANUFACTU	RER Stand	lard Telephones	& Cables	s Limited	đ			
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSMI	SSION FR	EQUENCIES	24-264+3	12-552 kH:	z
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	4				
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIAL	60 r	iow 60	CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT	ANUFACTURE	STC			CONSTR CONTRA	UCTION	STC	
POWER FEED MODE	single	NOMINAL VOL	TAGE	350	SYSTEM	CURRENT	0.310	A
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED	- TO1	AL CIRCUIT	<b>S</b> =	DATE	







	Italy-Tunisia		
NAMES	Maz <b>ara-</b> Pantelleria-Kelib	pia	
COUNTRY &	Italy (Sicily)	COUNTRY B	Italy (Pantelleria)
ERMINUS A	Mazara	TERMINUS B	Pantelleria
ANDING POINT A	Mazara	LANDING POINT B	Pantelleria
TOORDINATES A	38 <sup>0</sup> 1' N x 12 <sup>0</sup> 32' E	COORDINATES B	36°50' N x 11°58' E
LOUNTRY C	Tunisia	COUNTRY D	
ERMINUS C	Kelibia	TERMINUS D	
ANDING POINT C	Kelibia	LANDING POINT D	
QORDINATES C	$36^{\circ}51' \text{ N} \approx 11^{\circ}6' \text{ E}$	COORDINATES D	
OUNTRY E		COUNTRY F	
ERMINUS E		TERMINUS F	
ANDING POINT E		LANDING POINT F	
COORDINATES E		CODRDINATES F	
ABLE DESCRIPT	ON armored polyethylene	coaxial	CABLE SIZE 0. 62" 15. 7 mm
CABLE MANUFACTI	RER Submarine Cables Lim	nited and Les Câbles de Ly	von
BARCELONA 12 2 HA PALMA BCRDJ EL KIPCA	104 162 206 (CALVI SASSAPI SASSAPI 125 125 13700 BIZERT	САБЦАЯЦ САБЦАЯЦ 01.00 00 00 00 00 00 00 00 00 00	ron CATANZARO 99 (134 55 (5) (5) (5) (74

		continued
OWNERS	Administrations of Posts and Telecommunications	
CIRCUITS HELD	A11	
IRU HOLDERS	none	
CIRCUITS HELD	-	
LESSEES	none	
CIRCUITS LEASED	-	
REPEATER DESCRIPT	NON Monocontainer inflexible bidirectional	REPEATER SPACING 19 mm
NUMBER OF A B	3 BC none	
REPEATER MANUFAC	TURER Standard Telephones	& Cables Ltd.
NUMBER OF A E	<sup>3</sup> none <sup>B C</sup> none	
EQUALIZATION ME	FHOD -	
TERMINAL EQUIPMI	ENT MANUFACTURER Compagnie Industrielle de Télécomunica	tions and STC
POWER FEED MODE	AB single	
NOMINAL VOLTAGE	900	SYSTEM CURRENT 0.350 A
NOMINAL TRANSMISS	SION BANDWIDTH $240+240 \text{ kHz}$ transmission frequencies	5 24-264+312-552 kHz
NOMINAL VOICE CIRC	UIT CAPACITY, NON-TASI, INITIAL 60 NOW 60 CHANNEL INITIAL SPACING,	4 kHz now 4 kHz
TASI TYPE + CIRC	CUITS USED - CIRCUITS DERIVED - TOTAL CIRCUITS -	DATE APPLIED -
REMARKS	CABLESHIP USED: IR	IS (2)

CONSTRUCTION CONTRACTOR British Post Office

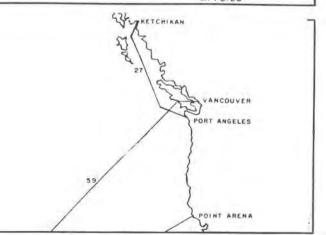
OST	\$	MILLION
CABLE		0.29
SUBMERGED ELECTRONICS		0.11
TERMINAL AND POWER FEED		0.33
TERMINAL STATIONS		0.36
INSTALLATION		0.20
TOTAL		1.29
SYSTEM DESIGN LIFE	2.0	vears

SEACAE	LE SYSTEM D	ATA PROF	LE REFERENCE 27
NAME	Washington-Alaska		
OTHER NAMES	Port Angeles-Ketchikan		
COUNTRY A	U.S.A.	COUNTRY B	U.S.A.
TERMINUS A	Port Angeles, Washington	TERMINUS B	Ketchikan, Alaska
LANDING POINT A	Port Angeles	LANDING POINT B	Ketchikan
COORDINATES A	48°09' N x 123°33' W	COORDINATES B	55°21' N x 131°41' W

OWNER	American Telephone and Telegraph Company	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED	4.	

DATE IN SERVICE	1956	SERVICE	commercial	MILES	761 738	SINGLE OR TWIN	twin	SYSTEM TYPE	SB
CABLE DESC	RIPTION	armored po	olyethylene coa	xial			CABLE SIZ	E 0.62" 15	.7 mm
CABLE MANU	FACTURER	Simplex Wi	ire & Cable Con	mpany	CABLE USED			J MYER LENOIR	
REPEATER	N	articulated	flexible unidir	ectional		NUMBER OF	40	REPEATER	38 nm
REPEATER M	ANUFACTU	IRER Wester	rn Electric Cor	npany					
NOMINAL TRA	ANSMISSIC	N BANDWIDTH	144+144 kHz	TRANSM	SSION FR	EQUENCIES	20-164+	20-164 kHz	
NUMBER OF	EQUALIZE	RS 2+2	EQUALIZATION	METHOD	adjust o	cable lengt	h; select (	equalizers	
NOMINAL VO	ICE CIRCU	IT CAPACITY,	NON-TASI, INITIAL	. 36	final 48	CHANNEL	INITIAL	4 kHz final	3 kHz
TERMINALEQ	UIPMENT	MANUFACTURER	Western Ele	ectric Co	mpany	CONSTR CONTRA	UCTION	ATT	
OWER FEED	MODE	double end	NOMINAL VOL	TAGE LE	600/1600	SYSTEM	CURRENT	0.225 A	
TASI TYPE .	- CIRCUI	TS USED -	CIRCUITS DE	RIVED -	тот	TAL CIRCUI	rs _	DATE	

COST	\$ MILLION
CABLE	10.74
SUBMERGED ELECTRONICS	2.57
TERMINAL AND POWER FEED	0.95
TERMINAL STATIONS	1.14
INSTALLATION	0.80
TOTAL	16.20
SYSTEM DESIGN LIFE 24	years



RETIRED 1977

SYSTEM

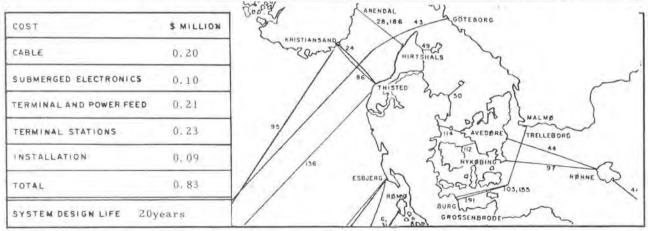
#### RETIRED 1979

SYSTEM REFERENCE NUMBER 28

NAME	Hjørring-Arendal		
OTHER NAMES	Hirtshals-Arendal		
COUNTRY A	Denmark	COUNTRY B	Norway
TERMINUS A	Hjørring, Vendsyssel	TERMINUS B	Arendal
LANDING POINT A	Hirtshals	LANDING POINT B	Arendal
COORDINATES A	57 <sup>0</sup> 35' N x 9 <sup>0</sup> 57' E	COORDINATES B	58°14' N x 8°22'E

OWNER A	Administration of Posts and Telegraphs	CIRCUITS HELD	60 h
OWNERS	Administration of Telecommunications	CIRCUITS HELD	60 h
L	The previuosly-laid polyethylene coaxial cable was rais	ed in three locations	
	and three repeaters were inserted in 1956		

SERVICE 1956	SERVICE	commercial	CABLE	76	SINGLE OR TWIN	single	SYSTEM TYPE	Z60S
CABLE DESCRIPTION	armored po	lyethylene coa	xial		c	ABLE SIZI	E 0.90" 22	. 9 mm
ABLE MANUFACTURER	Norddeutsch	ne Seekabelwei	rke AG		BLESHIP ED	NOR	DENHAM	
REPEATER DESCRIPTION multic	ontainer art	iculated flexib	le bidirec	ional	NUMBER OF	3	REPEATER	22 nm
EPEATER MANUFACTUR	ER Felten	& Guilleaume	Carlswer	k AG				
NOMINAL TRANSMISSION	BANDWIDTH	240+240 kHz	TRANSMIS	SION F	REQUENCIES	24-264+	312-552 kH	Iz
UMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	( <b>-</b>				
IOM INAL VOICE CIRCUI	T CAPACITY, N	ION-TASI, INITIAL	- 60 fin	al 60	CHANNEL SPACING,	INITIAL	4 kHz final	4 kHz
CERMINAL EQUIPMENT M	ANUFACTURER	F&G Fernm	eldeanlage	n GmbH	I CONSTR CONTRA		F&G	
OWER FEED MODE 5	ingle end	NOMINAL VO	LTAGE 400		SYSTEM	CURRENT	0.445	А
ASI TYPE - CIRCUIT	SUSED -	CIRCUITS DE	RIVED -	тс	TAL CIRCUIT	s -	DATE	

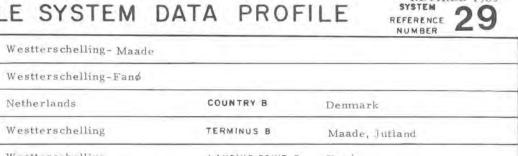


OFFICIAL

NAMES COUNTRY A

NAME OTHER

TERMINUS A

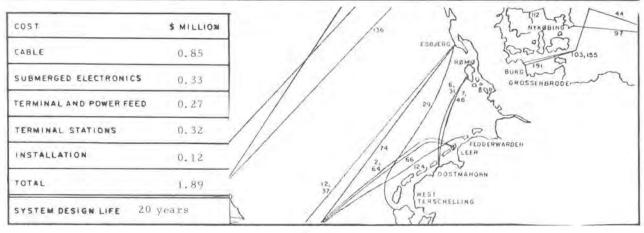


RETIRED 1983

LANDING POINT A Westterschelling LANDING POINT B Fand COORDINATES A 53° 19' N x 5°10' E COORDINATES B 55°22' N x 8°25' E

OWNER A	Administration of PTT	CIRCUITS HELD	60h
OWNERB	Administration of Posts and Telegraphs	CIRCUITS HELD	60h
RU HOLDERS	none		
CIRCUITS HELD	- 4		
LESSEES	none		
CIRCUITS LEASED			

DATE IN NATURE OF CABLE SINGLE SYSTEM 1956 commercial 182 single SERVICE SERVICE OR TWIN F 60 MILES TYPE CABLE DESCRIPTION CABLE SIZE 0.61" 15.6 mm armored polyethylene coaxial CABLESHIP CABLE MANUFACTURER AMPERE (3) Les Câbles de Lyon USED REPEATER NUMBER OF REPEATER articulated flexible bidirectional DESCRIPTION 7 25 nm REPEATERS SPACING REPEATER MANUFACTURER Cie. Industrielle de Télécommunications NOMINAL TRANSMISSION BANDWIDTH 240+240 TRANSMISSION FREQUENCIES 24-264+312-552 kHz NUMBER OF EQUALIZERS none EQUALIZATION METHOD -CHANNEL SPACING, INITIAL 4 kHz NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 60 now 60 now 4 kHz CONSTRUCTION TERMINAL EQUIPMENT MANUFACTURER Cie. Industrielle de Télécomm. CIT CONTRACTOR POWER FEED MODE NOMINAL VOLTAGE SYSTEM CURRENT single end 800 0.439 A DATE TASI TYPE - CIRCUITS USED CIRCUITS DERIVED TOTAL CIRCUITS APPLIED



NAME	Fransatlantic No. 1		ACRONYM TAT-1
OTHER NAMES (	ban-Clarenville-Sydney Mines	TAT-1 (E-W)(W-E)	Clarenville-Sydney Mines 1
COUNTRY A t	Inited Kingdom	COUNTRY B	Canada
TERMINUS A	)ban, Scotland	TERMINUS B	Clarenville, Newfoundland
LANDING POINT A	Dban	LANDING POINT B	Clarenville
CDORDINATES & 5	6 <sup>0</sup> 23' N x 5 <sup>0</sup> 31' W	COORDINATES B	48 <sup>0</sup> 09' N x 53 <sup>0</sup> 57' W
COUNTRY C	Canada	COUNTRY D	Canada
TERMINUS C	Cerrenceville, Newfoundland	TERMINUS D	Sydney Mines, Nova Scotia (
LANDING POINT C 7	Terrenceville	LANDING POINT D	Sydney Mines
COORDINATES C 4	7°40' N x 54 <sup>°</sup> 44' W	COORDINATES D	$46^{0}16' \text{ N} \ge 60^{0}15' \text{ W}$
COUNTRY E		COUNTRY F	
TERMINUS E		TERMINUS F	
LANDING POINT E		LANDING POINT F	
DATE IN SERVICE 1950 GABLE DESCRIPTION	NATURE OF SERVICE commercial armored polyethylene coaxial	SINGLE AB: OR TWIN BCD:-	
W Engen	R Simplex Wire & Cable Co.,	80 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Limited, and Southern United

30
00
continued

OWNERS Britis	n Post Office	A.T.&T. Co.	*Canadian Overseas Telecommunications Corp.
CIRCUITS HELD	33 h	33 h	9
IRU HOLDERS	ITTWC/ BPO	RCAGC/ BPO	WUI/ BPO
CIRCUITS HELD	2	3	3
LESSEES	ITTWC	RCAGC	
CIRCUITS LEASED	1	1	

REPEATER DESCRIPTION AB: articulated flexible unidirectional BD: monocontainer inflexible bidirectional	REPEATER SPACING	38 nn 20 nn
NUMBER OF AB: 51 B.C. 2. CD 14 REPEATERS BA: 51		19
REPEATER MANUFACTURER AB: Western Electric Co. BD: Standard Telephones & Submarine Cables Lim		1,
NUMBER OF AB: 8 BC none CD 1 EQUALIZERS BA: 6		
EQUALIZATION METHOD adjust cable length and select equalizer		
TERMINAL EQUIPMENT MANUFACTURER AB: Western Electric Company BD: Standard Telephones & Cables Limited		
POWER FEED MODE AB: double end BD: double end		
NOMINAL VOLTAGE 1940/1940 1150/1150	CUDDENT	3: 0.225 0: 0.316
BD- 240+240 kHz 20-20	04+20-164 k	kHz
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL AB: 36 1978 50 CHANNEL AB: 4 kH: BD: 60 80 SPACING, INITIAL BD: 4 kH:	AB: 1978 BD:	3 kHz 3 kHz
TEST TYPE A CIRCUITS USED 21% CIRCUITS DERIVED 37 TOTAL CIRCUITS 74 DAT	TE APPLIED 1	960
REMARKS *plus 16 circuits from TAT 3 ** includes TASI and TD-2 microwave to	U.S. border	Sec

CONSTRUCTION CONTRACTOR

CABLESHIPS USED:

AB: A.T.&T. Co.

MONARCH (4) IRIS (2)

COST	\$ MILLION
CABLE	24.89
SUBMERGED ELECTRONICS	8.88
TERMINAL AND POWER FEED	3.70
TERMINAL STATIONS **	10.91
INSTALLATION	1,20
TOTAL	49.58
SYSTEM DESIGN LIFE	24 years

BD: British Post Office

\* now Teleglobe Canada

RETIRED 1983

SYSTEM

SEACAB	LE SYSTEM D	ATA PROF	ILE SYSTEM REFERENCE NUMBER 3	1
NAME	Oostmahorn-Rømø No. 1			
OTHER NAMES	Leeuwarden-Rømø No. 1			
COUNTRY A	Netherlands	COUNTRY B	Denmark	
TERMINUS A	Oostmahorn, Friesland	TERMINUS B	Rømø	
LANDING POINT A	Oostmahorn	LANDING POINT B	Rømø	
COORDINATES A	53 <sup>0</sup> 24 <sup>†</sup> N x 6 <sup>0</sup> 10 <sup>†</sup> E	COORDINATES B	55°05' N × 8°29' E	

OWNER A	Administration of PTT	CIRCUITS HELD 120 h
OWNER B	Administration of Posts and Telegraphs	CIRCUITS WELD 120 h
	This system was created by installing seven 12	0-channel repeaters in place

DATE IN SERVICE 1957	NATURE OF SERVICE	commercial	CABLE	142	SINGLE OR TWIN	single	SYSTEM TYPE	M Mk I
CABLE DESCRIPTION	armored	polyethylene co	axial		c	ABLE SIZ	E 0.935"	23.7 mm
CABLE MANUFACTURER	Submari	ne Cables Limi	ted	C	ABLESHIPS USED		RT (3) LSTER (2)	1.11
REPEATER DESCRIPTION	monoconta	ainer inflexible	bidirectio	nal	NUMBER OF	7	REPEATER	20 nm
REPEATER MANUFACTU	RER Stand	ard Telephones	& Cables	Limite	ed			
NOMINAL TRANSMISSIC	N BANDWIDT	492+492 kHz	TRANSMI	SION F	REQUENCIES	60-552+6	72-1164 k	Hz
NUMBER OF EQUALIZE	RS none	EQUALIZATION	METHOD	+				
NOMINAL VOICE CIRCU	IIT CAPACITY,	NON-TASI, INITIA	L 120 m	ow 120	CHANNEL SPACING,	INITIAL 4	kHz nov	4 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R Standard Te	lephones	& Cable	og I fd	STRUCTION TRACTOR	STC	
POWER FEED MODE	single end	NOMINAL VO	LTAGE 12	00	SYSTEM (	CURRENT	0.340 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	τc	TAL CIRCUITS	5	DATE	

COST	\$ MILLION
CABLE	0.56
SUBMERGED ELECTRONICS	0,26
TERMINAL AND POWER FEED	0.20
TERMINAL STATIONS	0,20
INSTALLATION	0.08
TOTAL	1.30
SYSTEM DESIGN LIFE	20 years

RETIRED 1983

SYSTEM

#### SEACABLE SYSTEM DATA PROFILE

NAME	Aldeburgh Domburg I	No. 6	ACRONYM	ALD - DOM	
OTHER NAMES	U.KNetherlands	Aldeburgh-Domburg A			
COUNTRY A	England	COUNTRY B	Netherlands		
TERMINUS A	Aldeburgh, Suffolk	TERMINUS B	Domburg, Walcheren		
LANDING POINT A	Aldeburgh	LANDING POINT B	Domburg		
COORDINATES A	52010'N x 1 <sup>0</sup> 36' E	COORDINATES B	$51^{0}34' \text{ N} \times 3^{0}3$	0'E	

OWNER A	British Post Office					
OWNER B	Administration of PTT					
I BUL HOLDERS						

CIRCUITS HELD 180 h CIRCUITS HELD 180 h

I R U HOLDERS none

CIRCUITS HELD

A repeater with amplification in the high band only was inserted in the

1947 non-repeatered cable

DATE IN SERVICE	1957	NATURE OF SERVICE	commercial	CABLE	82	SINGLE OR TWIN	single	SYSTEM TYPE	K Mk I
CABLE DESC	RIPTION	armored po	lyethylene/air	coaxial		0	CABLE SIZE	1.71 43.	2 mm
CABLE MANU	FACTURER	Telegraph	Construction &	Maintena	nce Co		BLESHIP	ALERI	(3)
REPEATER DESCRIPTIO	N	monocontai	ner inflexible l	pidirection	nal	NUMBER OF	I	REPEATER	-
REPEATER N	ANUFACTU	RER Standa	rd Telephones	& Cables	Limite	d			
NOMINAL TR	ANSMISSIC	N BANDWIDTH	744+744 kHz	TRANSMI	SSION I	FREQUENCIES	60-804+1	1056-1800	kHz
NUMBER OF	EQUALIZE	RS none	EQUALIZATION	METHOD	8				
NOMINAL VO	ICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 180		CHANNEL SPACING,	INITIAL 4	kHz	
TERMINALEQ	UIPMENT	MANUFACTURE	Standard Tel	ephones &	Cable	s Ltd.	TRUCTION RACTOR	J ST	С
POWER FEED	MODE	single end	NOMINAL VO	LTAGE 22	5	SYSTEM	CURRENT	0.316	A
TASI TYPE	- CIRCUI	TS USED _	CIRCUITS DE	RIVED _	т	OTAL CIRCUIT	5_	DATE	

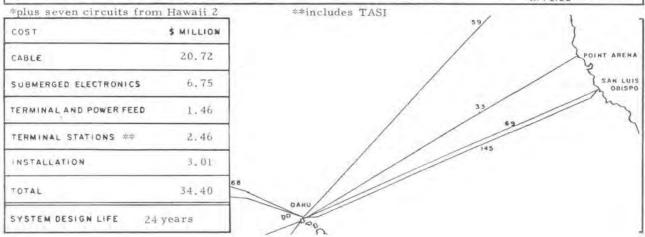
созт	\$ MILLION
CABLE	0,75
SUBMERGED ELECTRONICS	0.06
TERMINAL AND POWER FEED	0.21
TERMINAL STATIONS	0.22
INSTALLATION	0.06
TOTAL	1.30
SYSTEM DESIGN LIFE 20 y	ears

SEACAB	LE SYSTEM DAT	A PROFI	LE SYSTEM REFERENCE 33
NAME	Hawaii No. 1		ACRONYM HAW-1
OTHER NAMES	Hawaii-California l (E-W)(W-E)	Point Arena-Hanav	ima Bay
COUNTRY A	U.S.A.	COUNTRY B	U.S.A. (Hawaii)
TERMINUS A	Point Arena, Californía	TERMINUS B	Hanauma Bay, Oahu
LANDING POINT A	Point Arena	LANDING POINT B	Hanauma Bay
COORDINATES A	38° 59' N x 123°42' W	COORDINATES B	21°16' N x 157°42' W

SYSTEM

OWNER A	American Telep	CIRCUITS HELD 7+32				
OWNER B	Hawaiian Teleph	CIRCUITS HELD	32 h			
IRU HOLDERS	ATT/RCAGC	ITTWC	RCAGC	WUI	ATT/SEACOM	
CIRCUITS HELD	1	3	3	2	3	
LESSEES	none					
CIRCUITS LEASED	4					

DATE IN SERVICE 1957	SERVICE	commercial	CABLE	2197 2210	SINGLE OR TWIN	twin	SYSTEM TYPE	SB
CABLE DESCRIPTION	armored pol	lyethylene coas	xial			CABLE SIZE	E 0.62" 15	.7 mm
CABLE MANUFACTURER	Submarine (	Cables Ltd. an	d Simple	x Wire 8	Cable Co.			
REPEATER	articulated	flexible unidire	ectional		NUMBER OF	57+57	REPEATER	38 nm
REPEATER MANUFACTU	RER Western	n Electric Con		ABLESH USED		NARCH (4 ASIL O LE		LAYER
NOMINAL TRANSMISSIO	N BANDWIDTH	144+144 kHz	TRANSM	SSION FR	REQUENCIES	20-164+2	20-164 kHz	
NUMBER OF EQUALIZER	<b>s</b> 2+1	EQUALIZATION	METHOD	adjust	cable leng	th; select	equalizers	
NOMINAL VOICE CIRCU	T CAPACITY, N	ON-TASI, INITIAL	36	now 51	CHANNEL	INITIAL 4	kHz now	3 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	Western Ele	ectric Co	mpany		struction tractor	ATT	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 2	170/217	0 SYSTEM	CURRENT	0.225 A	
TASI TYPE A CIRCUI	TS USED 30*	CIRCUITS DE	RIVED 3	7 то	TAL CIRCUIT	rs 73	DATE	1961

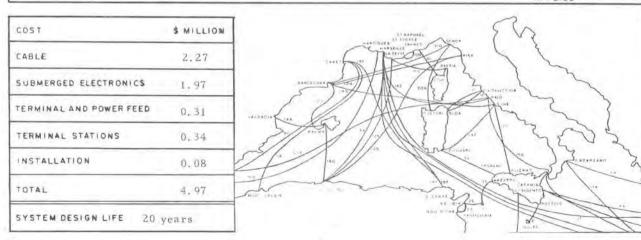


# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 34

			NUMBER
NAME	Marseille-Bordj el Kiffan		
OTHER NAMES	Marseille-Algiers	France - Algeria	1
COUNTRY A	France	COUNTRY B	Algeria
TERMINUS A	Marseille	TERMINUS B	Bordj El Kiffan
LANDING POINT A	Marseille	LANDING POINT B	Bordj El Kiffan
COORDINATES A	43°16' N x 5°23' E	COORDINATES B	$36^{0}53^{i} N \ge 3^{0}2^{i} E$

OWNER A	Administration of Telecommunications	CIRCUITS HELD	80 h
OWNER 8	Administration of Posts and Telecommunications	CIRCUITS HELD	80 h
RU HOLDER	S		
CIRCUITS HELE	6		
LESSEES			
CIRCUITS LEAS	ED		

SERVICE 1957	NATURE OF SERVICE	commercial	CABLE	477	SINGLE OR TWIN	single	SYSTEM TYPE	F 60
CABLE DESCRIPTION	armored poly	yethylene coas	cial			CABLE SIZ	E 0.61 <sup>11</sup> 15	.6 mm
CABLE MANUFACTURER	Les Câbles de	e Lyon C	ABLESH USED:	IPS	AMPERE ( EMILE )		CE	
REPEATER	articulated fl	lexible bidired	ctional		NUMBER OF	2.8	REPEATER	16.5 nm
REPEATER MANUFACTU	RER Compage	nie Industriell	le de Tél	écomm	unications			
NOMINAL TRANSMISSIC	N BANDWIDTH	240+240 kHz	TRANSM	SSION	FREQUENCIES	24-264+3	312-552 kHz	
NUMBER OF EQUALIZES	RS 2	EQUALIZATION	METHOD	adjust	cable length	; select e	qualizers	
NOMINAL VOICE CIRCU	IT CAPACITY, NO	DN-TASI, INITIAL	60	now 8	0 CHANNEL SPACING	INITIAL	4 kHz now	3 kHz
TERMINAL EQUIPMENT I	MANUFACTURER	CIT			CONSTR	ACTOR	CIT	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 15	00/150	) SYSTEM	CURRENT	0.211 A	
TASI TYPE _ CIRCUI	TS USED _	CIRCUITS DE	RIVED		TOTAL CIRCUIT	rs _	DATE	_

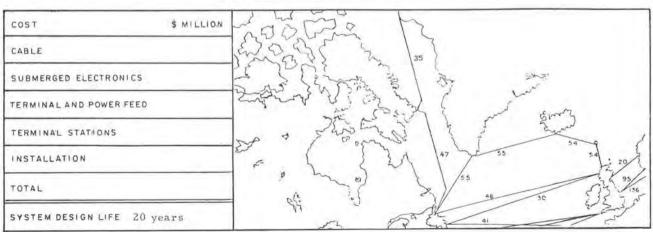


SYSTEM

SEACAB	LE SYSTEM	DATA PRO	DFILE	REFERENCE	35
OFFICIAL	Cape Dyer-Thule				-
OTHER NAMES					
COUNTRY A	Canada	COUNTRY B	Denmark	(Greenland)	
TERMINUS A	Cape Dyer	TERMINUS B	Thule U,	S.AFB	
LANDING POINT A	Cape Dyer	LANDING POIN	тв Thule		
COORDINATES A	76 <sup>0</sup> 35'N x 61 <sup>0</sup> 12'W	COORDINATES	в 76 <sup>0</sup> 32'N з	∝ 68 <sup>0</sup> 49'₩	

OWNER A	Canadian Defense Establishment	CIRCUITS HELD 36h				
OWNER B	U. S. Department of Defense	CIRCUITS HELD 36h				
	In 1964 the Cape Dyer-Thule system and the Whit	te Bay-Cape Dyer system (No. 47)				
	were removed from Cape Dyer and joined in the sea to form the White Bay-Thule					
	system, No. 65.					

DATE IN 1957 NATURE O SERVICE SERVICE	military	CABLE	720 +720	SINGLE OR TWIN	twin	SYSTEM TYPE	SB
CABLE DESCRIPTION armored ]	polyethylene coaxi	al			CABLE SI	zε 0.62" 1	5.7 mm
CABLE MANUFACTURER	Simplex Wire & C	Cable Co	mpany (	CABLESHIF USED	ALB	ERT J MYI	ĈR
REPEATER articulate DESCRIPTION	d flexible unidirec	tional		NUMBER OF	20 + 20	REPEATER	38 nm
REPEATER MANUFACTURER	Western Electric	Compan	y.				
NOMINAL TRANSMISSION BANDWID					1. m. m. 1	1075 COM 1475	
NOMINAL TRANSMISSION BANDWID	TH 144 + 144 kHz	TRANSM	ISSION F	REQUENCIES	20-164 +	20-164 kHz	
	EQUALIZATION						
NUMBER OF EQUALIZERS $1 \pm 1$	EQUALIZATION	метнор		able elngth	and sele	ct equalize:	
NOMINAL TRANSMISSION BANDWID NUMBER OF EQUALIZERS $1 \pm 1$ Nominal voice circuit capacit TERMINAL EQUIPMENT MANUFACTUI	EQUALIZATION Y, NON-TASI, INITIAL	метнор 36	adjust c	able elngth CHANNEL SPACING COM	and sele	ct equalize: 4 kHz	
NUMBER OF EQUALIZERS $1 \pm 1$ Nominal voice circuit capacit	EQUALIZATION Y, NON-TASI, INITIAL	METHOD 36 lectric C	adjust c	able eingth CHANNEL SPACING COI	and sele INITIAL ISTRUCTION NTRACTOR	ct equalize 4 kHz	



#### RETIRED 1982

1		NUMBER	
Golfo d'Aranci 1			
cou	UNTRY B	Italy (Sardinia)	
ŤER	RMINUS B	Olbia	
LA	NDING POINT B	Golfo d'Aranci	
co	ORDINATES B	41°0' N x 9038' E	
	CO TER LA	COUNTRY B TERMINUS B LANDING POINT B	COUNTRY B     Italy (Sardinia)       TERMINUS B     Olbia       LANDING POINT B     Golfo d'Aranci

OWNER	Ministero delle Poste e delle Telecommunicazioni	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

611	10	011	2	20	е.	5	E.	U

DATE IN SERVICE 1957	NATURE OF SERVICE	commercial	CABLE	130	SINGLE OR TWIN	single	SYSTEM TYPE	J Mk I
CABLE DESCRIPTION	armored poly	yethylene coas	kial		(	ABLE SIZ	ZE 0.62" 15.	7 mm
CABLE MANUFACTURER	Pirelli S. p. 4	A., Arco Feli	ce, Naple	?S	CABLESH USED	IP	SALERNUI	M
REPEATER DESCRIPTION	monocontain	er inflexible b	idirectio	nal	NUMBER OF	6	REPEATER	18
REPEATER MANUFACTU	RER Standard	l Telephones /	Cables	Ltd.	CONSTRU		STC	
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSMI	SSION F	REQUENCIES	20-260	312-552 kHa	5
NUMBER OF EQUALIZER	S none	EQUALIZATION	METHOD	1				
NOMINAL VOICE CIRCU	IT CAPACITY, NO	ON-TASI, INITIAL	60	now 60	CHANNEL SPACING,	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	Standard T	alephone	s & Cab	les Limited			
POWER FEED MODE	single end	NOMINAL VOL	TAGE 1 (	000	SYSTEM	CURRENT	0.316 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	T	DTAL CIRCUIT	5 -	DATE	

COST	\$ MILLION
CABLE	0,49
SUBMERGED ELECTRONICS	0.21
TERMINAL AND POWER FEED	0,28
TERMINAL STATIONS	0.31
INSTALLATION	0,21
TOTAL	1.50
SYSTEM DESIGN LIFE 20 y	ears

SEACAB	LE SYSTEM	DATA PROF	ILE REFERENCE 37
NAME	Weybourne-Fanø		
OTHER NAMES			
COUNTRY A	England	COUNTRY B	Denmark
TERMINUS A	Weybourne, Norfolk	TERMINUS B	Esbjerg
LANDING POINT A	Weybourne	LANDING POINT B	Fanø
COORDINATES A	52°57' N x 1°9' E	COORDINATES B	55°25' N x 8°23' F

OWNER

The Great Northern Telegraph Co.

CIRCUITS HELD a11

SYSTEM

This system was created by the installation of 5 new repeaters in place of the

original two repeaters in system No. 12. It operates only for telegraph

service, with 192 derived circuits.

DATE IN SERVICE 1957	NATURE OF SERVICE	commercial	CABLE	3,07	SINGLE OR TWIN	single	SYSTEM TYPE	27S
CABLE DESCRIPTION	armored p	olyethylene coax	ial		c	ABLE SIZ	E 0.62"15	. 7 mm
CABLE MANUFACTURER	Submarine	Cables Limited		USED:	HIP EDC	UARD SU	ENSON	
REPEATER DESCRIPTION	multiconta	iner flexible bid	irectional		NUMBER OF	5	REPEATER	50 nm
REPEATER MANUFACTU	RER Felte	n & Guilleaume	Carlswer	AG				
NOMINAL TRANSMISSIO	N BANDWIDTH	32+32 kHz	TRANSMIS	SION FR	EQUENCIES	8-40+48-	80 kHz	
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	T CAPACITY,	NON-TASI, INITIAL	7 n	ow 8	CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT N	IANUFACTURE	F&G Fernme	ldeanlager	ı GmbH	CONSTRU CONTRA		F&G	
POWER FEED MODE	ingle end	NOMINAL VOLT	AGE	850	SYSTEM	CURRENT	0.445	A
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DEF	RIVED -	то	TAL CIRCUIT	5 -	DATE	3

COST	\$ MILLION
CABLE	1.04
SUBMERGED ELECTRONICS	0.19
TERMINAL AND POWER FEED	0,23
TERMINAL STATIONS	0.24
INSTALLATION	0.09
TOTAL	1.79
SYSTEM DESIGN LIFE	20 years

SEACAB	LE SYSTEM DAT	A PROFI	LE REFERENCE 38
NAME	St. Helier-Tuckton Bridge A		
OTHER NAMES	St. Helier-Tuckton Bridge No. 1	Hengistbury Head	I-St. Helier No. 1
COUNTRY A	Jersey	COUNTRY B	England
TERMINUS A	St. Helier	TERMINUS B	Tuckton Bridge
LANDING POINT A	St. Helier	LANDING POINT B	Hengistbury Head
COORDINATES A	$49^{9}08'N \times 2^{9}5'W$	COORDINATES B	$50^{\circ}42' \text{ N} \propto 1^{\circ}48' \text{ W}$

OWNER British Post Office

-

a11 CIRCUITS HELD

SYSTEM

38

I R U HOLDERS none

CIRCUITS HELD

LESSEES none

CIRCUITS LEASED -

DATE IN SERVICE 1958	NATURE OF	commercial	CABLE	131	SINGLE OR TWIN	single	SYSTEM TYPE	L Mk I
CABLE DESCRIPTION	armored po	olyethylene coa	xial			CABLE SI	ZE 0.62" 15	.7 mm
CABLE MANUFACTURER	Standard T	elephones & Ca	bles Limi	ted	CABLESH USED:	IP AI	RIEL	
REPEATER	monocontai	ner inflexible	bidirection	al	NUMBER OF	10	REPEATER SPACING	12.5 nm
REPEATER MANUFACTU	RER STC a	nd Submarine (	Cables Ltd.		CONSTRUC		STC	
NOMINAL TRANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSMIS	SION FR	EQUENCIES	60-552-	672-1164 k	Ηz
NUMBER OF EQUALIZED	RS none	EQUALIZATIO	N METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 120	now 120	CHANNEL SPACING	INITIAL	4 kHz nov	w 4 kHz
TERMINAL EQUIPMENT	MANUFACTURE	Standard Te	lephones &	Cable	s Limited		_	
POWER FEED MODE	double end	NOMINAL VO	LTAGE 700	)/700	SYSTEM	CURRENT	0.336 A	
TASI TYPE - CIRCU	TS USED -	CIRCUITS D	ERIVED	- т.	TAL CIRCUI	TS :	DATE APPLIED	-

COST	\$ MILLION	UNT 17 HOLYHEAD COVENITHE 54 8.9. ALDEBURGH 32 DOMBUT
CABLE	0.37	139 MIDDELKERKE
SUBMERGED ELECTRONICS	0.26	DUMPTON GAP 128 LAPANNE BROADSTAIRS VEURNE
TERMINAL AND POWER FEED	0.22	BROADSTAIRS ST. MARGARETS 67
TERMINAL STATIONS	0.23	BOURNEMOUTH 203
INSTALLATION	0.06	38 93
TOTAL	1.14	13.14. () ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
SYSTEM DESIGN LIFE 20	0 years	GUERNSEY COURSEULLES

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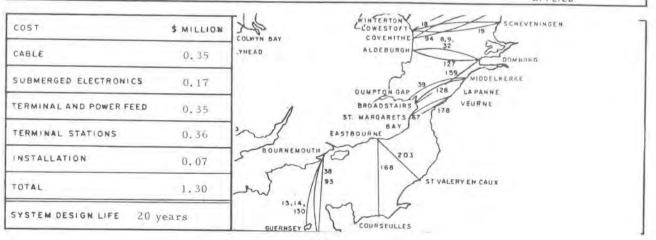
RETIRED 1983

SYSTEM REFERENCE NUMBER

NAME	Dumpton Gap-Middelkerke		NUMBER
OTHER NAMES	Canterbury- Oostende A	U. K Belgium 2	
COUNTRY A	England	COUNTRY B	Belgium
TERMINUS A	Canterbury, Kent	TERMINUS B	Oostende
LANDING POINT A	Dumpton Gap	LANDING POINT B	Middelkerke
COORDINATES	51°23' N x 1°24' E	COORDINATES B	51°11' N x 2°48' E

OWNER A	British Post Office	CIRCUITS HELD 120 h
OWNER B	Régie des Télégraphs et des Téléphones	CIRCUITS HELD 120 h
IRU HOLDERS	none	
CIRCUITS HELD	H	
LESSEES	none	
CIRCUITS LEASED	×	

SERVICE	1958	NATURE OF SERVICE	commercial	CABLE	76	SINGLE OR TWIN	single	SYSTEM TYPE	M MK I
CABLE DESC	CRIPTION	armored pe	olyethylene coa	xial		CA	BLE SIZE	0.935023	. 7 mm
CABLE MANU	FACTURER	Standard T	elephones & Ca	bles Limit	ed	CABLESHIP USED:	II	RIS (2)	
REPEATER DESCRIPTIO	N	monocontai	ner inflexible	bidirection	al	NUMBER OF REPEATERS	2	REPEATER	18.6 nm
REPEATER N	ANUFACTU	RER Standar	d Telephones (	& Cables L	imited				
NOMINAL TR	ANSMISSIC	ON BANDWIDTH	492+492 kHz	TRANSMIS	SION FR	REQUENCIES	60-552+6	72-1164 k	Hz
NUMBER OF	EQUALIZE	RS none	EQUALIZATION	METHOD	-				
NOMINAL VO	ICE CIRCU	UIT CAPACITY, I	NON-TASI, INITIAL	. 120 m	ow 120	CHANNEL SPACING, IN	NITIAL 4	kHz not	v 4 kHz
TERMINALEQ	UPMENT	MANUFACTURER	STC			CONSTRUC CONTRAC		BPO	
OWER FEED	MODE	double end	NOMINAL VOL	TAGE 300	0/300	SYSTEM CU		0.316 A	
TASI TYPE	- CIRCUI	TS USED -	CIRCUITS DE	RIVED -	то	TAL CIRCUITS	(-)	DATE	



RETIRED 1982

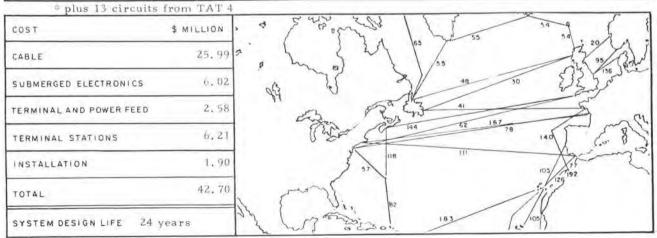
SYSTEM REFERENCE

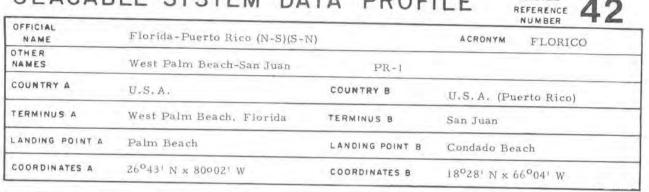
			NUMBER
NAME	Transatlantic No.2		ACRONYM TAT 2
OTHER NAMES Penmarc	h-Clarenville-Sydney Mines	TAT $2(E-W)(W-E)$	Clarenville-Sydney Mines 2
COUNTRY A	France	COUNTRY B	Canada
TERMINUS A	Penmarc'h	TERMINUS B	Clarenville, Newfoundland
LANDING POINT A	Penmarc'h	LANDING POINT B	Clarenville
COORDINATES A	$47^{9}50^{1}N \ge 4^{9}21^{1}W$	COORDINATES B	48 <sup>0</sup> 09'N x 53 <sup>0</sup> 57'W

As originally configured, there was a 60/80 circuit British system extending to Sydney Mines

OWNERS	PTT Franc	e, Deu	tsche Bunde	spost, and A	America	n Tel & Tel Co.		
ATT	/PTT: 13	А	TT/DBP: 15	i.				
IRU HOLDERS	ATT with B	elgium	, Israel, 1TA	LCABLE, N	etherlan	ds, Switzerland		
CIRCUITS HELD		1	4	3	2	2		
	PTT with	FC	ITTWC	RCAGC	WUI;	DBP with RCAGC	WUI	ITTWC
		2	2	1	Ì	ì	1	1

DATE IN 1959 NATURE OF commercia SERVICE SERVICE	1 CABLE MILES		SINGLE OR TWIN	twin	SYSTEM TYPE	SB
CABLE DESCRIPTION armored polyethylene	e coaxial			CABLE SIZE	e 0.62" ]	5,7mm
CABLE MANUFACTURERS Submarine Cables Ltd	l., Simplex, 1	NSW, and	Câbles de	Lyon		
REPEATER articulated flexible unidired	ctional		NUMBER OF	AB:57 BA:57	REPEATER	38 nm
REPEATER MANUFACTURER Western Elect	ric Company	CABLESI USED		ONARCH (4 APERE (3),		LAYER
NOMINAL TRANSMISSION BANDWIDTH $144 \pm 144$	4 kHz transm	ISSION FRI	EQUENCIES	20-164 +	20-164 kH	z
NUMBER OF EQUALIZERS none EQUALIZA	ATION METHOD	10				
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, IN	IITIAL 36 t	now 48	C HANNEL S PACING	INITIAL 4	kHz now	3 kHz
TERMINAL EQUIPMENT MANUFACTURER Western	n Electric Co	mpany		NSTRUCTION	$\mathbf{A}^{T}\mathbf{T}^{t}$	
POWER FEED MODE double end NOMINAL	L VOLTAGE 2	140/2140	SYSTEM	CURRENT	0,225 A	
TASI TYPE A CIRCUITS USED 248 CIRCUIT	S DERIVED	37 TOT		TS 74	DATE	1960



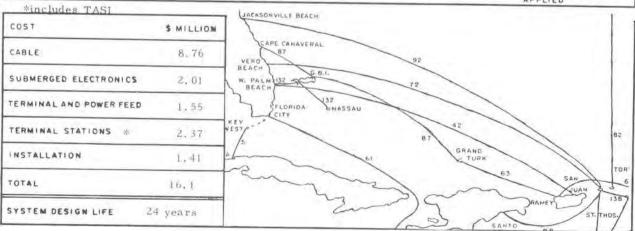


SYSTEM

OWNER A	American Telephone	& Telegraph Company	e	CIRCUITS HELD	44 h
OWNER B	All America Cables	& Radio		CIRCUITS HELD	44 h
RU HOLDERS	ITTWC with AACR	RCAGC with AAGR	WUI with AACR		
CIRCUITS HELD	2	1	3		
LESSEES					

CIRCUITS LEASED

SERVICE 1960	NATURE OF SERVICE	commercial	CABLE	1136 1117	SINGLE OR TWIN	twin	SYSTEM TYPE	SB
CABLE DESCRIPTION	armored	polyethylene c	oaxial		c	ABLE SIZE	e 0.62" 1	5.7 mm
CABLE MANUFACTURER	Simplex Norddeut	Wire & Cable C sche Seekabelw	Company,	Standar	d Telephone	s & Cabl		
REPEATER DESCRIPTION		ed flexible unid			NUMBER OF	30 29	REPEATER	40 nm
REPEATER MANUFACTU	RER Wes	tern Electric C	ompany	(	CABLESHIP USED:		MONARCH	(4)
NOMINAL TRANSMISSIO	N BANDWIDTH	144+144 kHz	TRANSMIS	SION FR	EQUENCIES	20-164+	20-164 kHz	
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	adjust	cable length	i.		
NOMINAL VOICE CIRCUI	Т САРАСІТУ, І	ION-TASI, INITIAL	50	now 50	CHANNEL SPACING, I	NITIAL 3	kHz now	3 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Western Ele	ctric Co.			RUCTION	ΤTA	
OWER FEED MODE d	ouble end	NOMINAL VOLT	TAGE II	80/1180	SYSTEM C	URRENT	0.225 A	-
ASI TYPE A CIRCUIT	SUSED 37	CIRCUITS DEP	RIVED 37	TOT	AL CIRCUITS	74	DATE	962



RETIRED 1983

3

SYSTEM

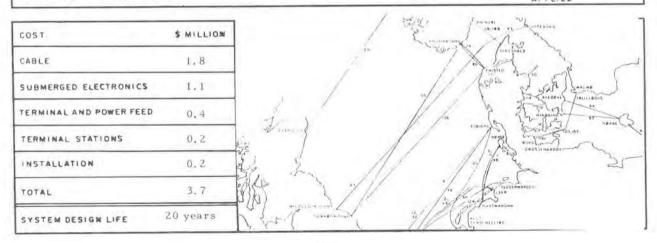
REFERENCE L

# SEACABLE SYSTEM DATA PROFILE

OLHOND			NUMBER TO
NAME	Göteborg-Middlesbrough		
OTHER NAMES	Sandvik-Marske		
COUNTRY A	Sweden	COUNTRY B	England
TERMINUS A	Göteborg	TERMINUS B	Middlesbrough
LANDING POINT A	Sandvik	LANDING POINT B	Marske
COORDINATES A	57°44' N x 11°44' E	COORDINATES B	54°36' N x 1°1' W

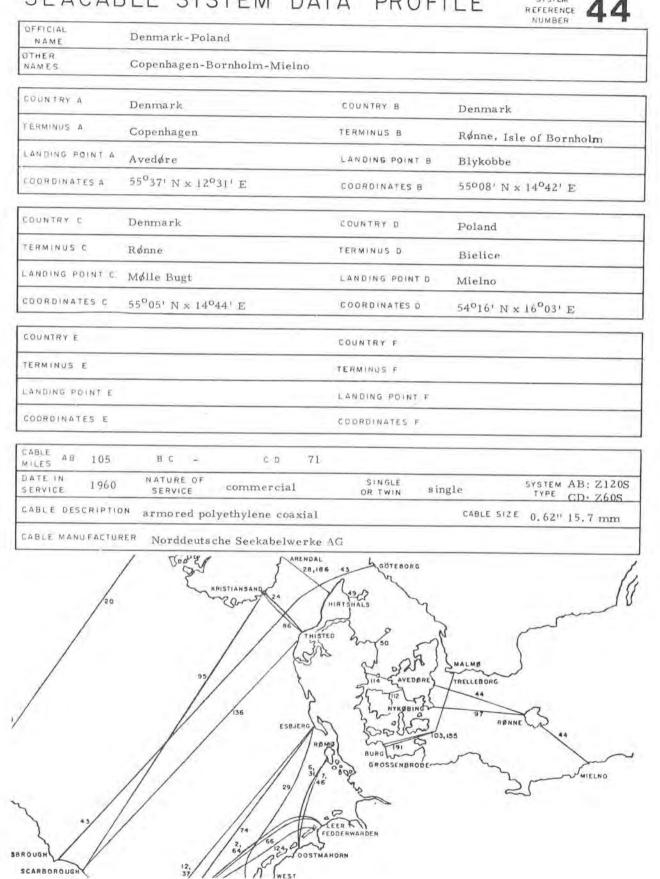
OWNER A	Administration of Telecommunications	CIRCUITS HELD 60 h
OWNER B	British Post Office	CIRCUITS HELD 60 h
IRU HOLDERS	none	
CIRCUITS HELD	4	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1960	NATURE OF	commercial	CABLE	528	SINGLE OR TWIN	single	SYSTEM TYPE	N Mk I
CABLE DESCRIPTI	ON armored p	olyethylene coa	axial			CABLE SI	ZE 0.62" 15	.7 mm
CABLE MANUFACTU	RER Standard 7	Celephones & C	ables Lin	nited	CABLES USED		MONARCH ARIEL	f (4)
REPEATER	monoconta	iner inflexible	bidirectio	onal	NUMBER OF	29	REPEATER	18.0 nm
REPEATER MANUE	ACTURER Stan	dard Telephone	s & Cabl	es Limi	ted			
NOMINAL TRANSMI	SSION BANDWIDT	4 240+240 kHz	TRANSMI	SSION F	REQUENCIES	60-300+	360-608 kH	z
NUMBER OF EQUAL	IZERS 1	EQUALIZATION	METHOD	compu	ited and ass	embled o	on board	
NOMINAL VOICE C	IRCUIT CAPACITY,	NON-TASI, INITIA	L 60	now 60	CHANNEL SPACING,	INITIAL	4 kHz nov	v 4kHz
TERMINAL EQUIPMI	ENT MANUFACTURE	R STC				STRUCTION	BPO	
POWER FEED MOD	E single end	NOMINAL VO	LTAGE 3	500	SYSTEM	CURRENT	0,415	A
TASI TYPE - CI	RCUITS USED -	CIRCUITS DE	ERIVED	- Ť	OTAL CIRCUIT	- s	DATE	-



103

SISTEM



	44 continued
OWNERS	AB: Administration of P.&T., Denmark CD: above, plus Administration of P.&T., Poland and Great Northern Telegraph C
CIRCUITS HELD	
RU HOLDERS	
CHRCUITS HELD	
LESSEES	
CIR CUITS LEASE	D
REPEATER DESCR	REPEATER AB: 10 m RIPTION multicontainer flexible bidirectional SPACING CD: 17 m
NUMBER OF A	в 10 со 3
REPEATER MANU	FACTURER Felten & Guilleaume Carlswerk AG
NUMBER OF	AB none CD none
EQUALIZATION	METHOD _
TERMINAL EQUI	PMENT MANUFACTURER F&G Fernmeldeanlagen GmbH
POWER FEED MC	DDE 48 single end CD single end
NOMINAL VOLTA	GE 1000 430 SYSTEM CURRENT 0.426 A
NOMINAL TRANSM	MISSION BANDWIDTH AB: 492+492 kHz TRANSMISSION FREQUENCIES 60-552+672-1164 kHz 24-264+312-552 kHz
NOMINAL VOICE	EIRCUIT CAPACITY, NON-TASI, INITIAL AB:120 NOW 60 SPACING, INITIAL 4 kHz NOW 4 kHz
TASI TYPE -	CIRCUITS USED - CIRCUITS DERIVED - TOTAL CIRCUITS DATE APPLIED -
REMARKS CA	ABLESHIPS USED: NORDENHAM, EDOUARD SUENSON, C E KRARUP

CONSTRUCTION CONTRACTOR Felten & Guilleaume Carlswerk AG

COST	\$	MILLION
CABLE		0.7
SUBMERGED ELECTRONICS		0.6
TERMINAL AND POWER FEED		0.2
TERMINAL STATIONS		0.2
INSTALLATION		0.3
TUTAL		2.0
SYSTEM DESIGN LIFE	2	0 years

#### 45 unassigned

# SEACABLE SYSTEM DATA PROFILE

RETIRED 1983

#### SYSTEM REFERENCE NUMBER 46

OFFICIAL	Oostmahorn-Rømø No. 2		NOMBER
OTHER NAMES	Leeuwarden-Rømø No. 2		
COUNTRY A	Netherlands	COUNTRY B	Denmark
TERMINUS A	Oostmahorn, Friesland	TERMINUS B	Rømø
LANDING POINT A	Oostmahorn	LANDING POINT B	Rømø
COORDINATES A	53 <sup>0</sup> 24′ N x 6 <sup>0</sup> 10'E	COORDINATES 8	55°05' N x 8°29' E

OWNER A	Administration of PTT	CIRCUITS HELD 120h
OWNER 8	Administration of Posts and Telegraphs	CIRCUITS HELD 120h
	This system was created by installing seve	n 120-channel repeaters in
	place of the original two 36-channel	repeaters in System No. 7

DATE IN 1961 SERVICE	SERVICE	commercial	CABLE	142	SINGLE OR TWIN	single	SYSTEM TYPE	M Mk I
CABLE DESCRIPTIC	n armored p	olyethylene coax	cial			CABLE SI	ze 0.935" 2	3.7 mm
CABLE MANUFACTUR	RER Submarine	Cables Limited		LESHIPS ED:		CH(4), F ARUP, F	POOLSTER	(2), ER (2)
REPEATER	monocontai	ner inflexible b	idirection	al	NUMBER OF	7	REPEATER	
REPEATER MANUFA	CTURER Standar	d Telephones &	Cables,	Ltd.	CONSTRU		STC	
NOMINAL TRANSMIS	SION BANDWIDTH	492+492 kHz	TRANSMIS	SION FRE	QUENCIES	60-552	+672+1164 k	Hz
NUMBER OF EQUALI	ZERS none	EQUALIZATION	METHOD	21				
NOMINAL VOICE CI	RCUIT CAPACITY,	NON-TASI, INITIAL	120 n	ow 120	CHANNEL SPACING,	INITIAL	4 kHz nov	v 4 kHz
TERMINAL EQUIPMEN	NT MANUFACTURER	Standard Te	lephones	& Cables	s Ltd.			1.1
OWER FEED MODE	single end	NOMINAL VOLT	AGE 12	00	SYSTEM	CURRENT	0.340 A	
ASI TYPE - CIR	CUITS USED -	CIRCUITS DER	IVED -	TOT	AL CIRCUIT	s ~	DATE	+

COST	\$ MILLION
CABLE	0.56
SUBMERGED ELECTRONICS	0,33
TERMINAL AND POWER FEED	0.29
ERMINAL STATIONS	0,02
NSTALLATION	0.11
FOTAL	1.31
YSTEM DESIGN LIFE	20 years

#### BECAME PART OF NO.65 IN 1964

SYSTEM REFERENCE NUMBER

#### SEACABLE SYSTEM DATA PROFILE

NAME	Cape Dyer-White Bay		
OTHER NAMES			
COUNTRY A	Canada	COUNTRY B	Canada
TERMINUS A	Cape Dyer	TERMINUS B	White Bay
LANDING POINT A	Cape Dyer	LANDING POINT B	Hampden
COORDINATES A	$76^{\circ}35'N \ge 61^{\circ}12'W$	COORDINATES B	49 <sup>°</sup> 32'N x 56 <sup>°</sup> 52'W

Owned jointly by the Canadian Defense Establishment and the

United States Department of Defense

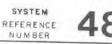
In 1964 the Cape Dyer-White Bay system and the Cape Dyer-Thule system (No. 35)

were removed from Cape Dyer and joined in the sea to become the White Bay-Thule

system, No. 65.

DATE IN 1957 SERVICE	SERVICE military	CABLE 1078 MILES +1078	SINGLE twin	SYSTEM SB TYPE	
CABLE DESCRIPTION	armored polyethylene c	oaxial	CABLE SI	ZE 0.621 15.7 mm	
CABLE MANUFACTURER	Simplex Wire	CABLESHIPS MONARCH (4) USED: ALBERT J MYER			
REPEATER DESCRIPTION	articulated flexible unid	lirectional	NUMBER OF 30 + 30 REPEATERS	REPEATER 38 nm SPACING	
REPEATER MANUFACTU	RER Western Electri	c Company			
NOMINAL TRANSMISSIO	N BANDWIDTH 144 + 144 k	Hz TRANSMISSION F	REQUENCIES 20-164 +	20-164 kHz	
			NO 2010 / V 10		
and the state of the state		ION METHOD adjust ca		1	
NUMBER OF EQUALIZER		ION METHOD adjust c:		t equalizer	
NUMBER OF EQUALIZEF NOMINAL VOICE CIRCU	RS 2 4 2 EQUALIZAT	ION METHOD adjust c:	able length and select CHANNEL SPACING, INITIAL	: equalizer 4 kHz	
NUMBER OF EQUALIZER	RS 2 + 2 EQUALIZAT IT CAPACITY, NON-TASI, INI MANUFACTURER Weste	ION METHOD adjust co	CHANNEL SPACING, INITIAL CONSTRUCTION	t equalizer 4 kHz ATT	

COST	\$ MILLION	2thon	1 1 2	San &	har the	1
CABLE		( of	3 1 60	55	59 9	20/1 / 5
SUBMERGED ELECTRONICS		Jon a	~ { } / >		63	35 (27) JF
TERMINAL AND POWER FEED	Con Con	-	A	46 30	23	- Solo
TERMINAL STATIONS		and the second	and the	62 167 78		mel
INSTALLATION		U Zr pr	1116	10	140	6.87
TOTAL			Tre		135 1192	
SYSTEM DESIGN LIFE 20 yea	rs	J.	82		111	



NAME	Canada Transatlantic 1	ACRONYM CANTAT 1			
OTHER NAMES	Corner Brook - Oban				
COUNTRY A	Canada	COUNTRY B	United Kingdom		
TERMINUS A	Corner Brook, Newfoundland	TERMINUS B	Oban, Scotland		
LANDING POINT A	White Bay	LANDING POINT B	Oban		
COORDINATES A	49 <sup>°</sup> 32'N x 56 <sup>°</sup> 52'W	COORDINATES B	56 <sup>°</sup> 28'N x 5 <sup>°</sup> 30'W		

OWNERS British Post Office, Teleglobe Canada, and Cable and Wireless Limited

The CANTAT project, Oban - Corner Brook, was joined to a companion project called CANTAT B,

extending from Corner Brook to Grosse Roches. Contracted separartely by the then-named Canadian

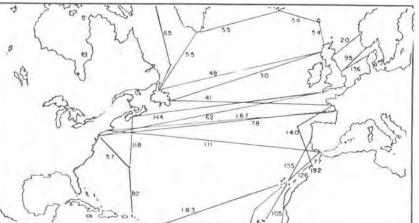
Overseas Telecommunicatons Corporation with Submarine Cables Limited, it consisted of 400 miles of

armored 0.935" polyethylene coaxial with 20 repeaters and 2 equalizers, to operate 2 super-groups at

4 kHz spacing (120 circuits). CANTAT B went into service at the same time as CANTAT. At a later date the 12-channel banks were replaced by 16s, providing 160 circuits. CANTAT B was retired in 1976.

DATE IN SERVICE 1961 NATURE OF SERVICE commercial	CABLE	2073	SINGLE OR TWIN single	SYSTEM TYPE	N MkI
CABLE DESCRIPTION unarmored polyethylene	e coaxia	l	CABLE S	IZE 0.99"	25,1 mm
CABLE MANUFACTURER Submarine Cables Ltd. and	Standar	d Teleph	nones and Cables Lt	d.	
REPEATER DESCRIPTION monocontainer inflexible bidirecti	onal		NUMBER OF REPEATERS 90	REPEATER	26 nm
REPEATER MANUFACTURERS SCL and ST	TC .	CABLES	HIPS MONARC ): ALBER	H(4), ARIE	L.
NOMINAL TRANSMISSION BANDWIDTH $240~\mathrm{kH_Z}$	TRANSMI	SSION FR	EQUENCIES 60-300	+ 360-608 kH	Iz
NUMBER OF EQUALIZERS 8 EQUALIZATION	METHOD	adju	sted on board		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL	60 no	w 80	CHANNEL SPACING, INITIAL	4 kHz now	3 kHz
TERMINAL EQUIPMENT MANUFACTURER ST	С		CONSTRUCTION	BPO	
POWER FEED MODE double end NOMINAL VOLT.	AGE 500	0/5000	SYSTEM CURRENT	0.415 A	
TASI TYPE - CIRCUITS USED - CIRCUITS DER	IVED	- то	TAL CIRCUITS -	DATE	÷

COST	\$ MILLION
CABLE	11.34
SUBMERGED ELECTRONICS	5.51
TERMINAL AND POWER FEED	0.57
TERMINAL STATIONS	0.72
INSTALLATION	1.29
TOTAL	19.43
SYSTEM DESIGN LIFE 20	years



#### RETIRED 1975

SYSTEM

REFERENCE

### SEACABLE SYSTEM DATA PROFILE

NAME	Frederikshavn-Laeso		
OTHER NAMES			2
COUNTRY A	Denmark	COUNTRY B	Denmark
TERMINUS A	Frederikshavn	TERMINUS B	Byrum, Laeso Is.
LANDING POINT A	Saeby	LANDING POINT B	Vesterø Havn
COORDINATES A	57 <sup>0</sup> 21' N x 10 <sup>0</sup> 33' E	COORDINATES B	$57^{0}17'N \times 10^{0}56' E$

OWNER

CIRCUITS HELD all

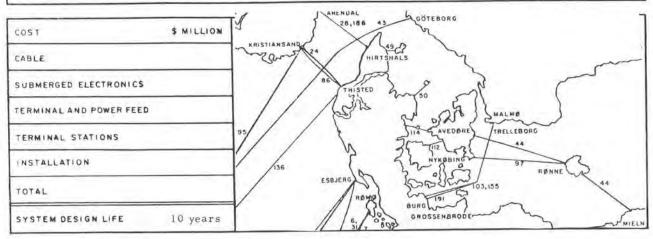
Systems Nos. 49 and 50 were fitted with the first submerged

repeaters using solid-state devices (transistors) in lieu of thermionic

vacuum tubes.

Jutland Telephone Company

DATE IN 1961	NATURE OF	commercial	CABLE	14	SINGLE OR TWIN	quad	SYSTEM TYPE	
CABLE DESCRIPTION	armored gu	uttapercha insu	lated cop	per quad		ABLE SIZ	ε Conducto 4.45 mm	
CABLE MANUFACTURER	Norddeutsc	he Seekabelwei	rke AG	CABL	ESHIP USE	D: PET	ER FABER	(2)
REPEATER DESCRIPTION MONOC	ontainer infl	exible twin am	plifier tra	ansistor	NUMBER OF	2	REPEATER	12.6 nm
REPEATER MANUFACTU	RER Teleco	mmunications	Research	Labor.	CONSTRU CONTRAC		TRL	
NOMINAL TRANSMISSIO	N BANDWIDTH	102+102 kHz	TRANSMI	SSION F	REQUENCIES	6-108+6	6-108 kHz	
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	41 T				
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIAL	. 24 fi	nal 24	CHANNEL SPACING,	INITIAL	4 kHz final	4 kHz
TERMINAL EQUIPMENT	ANUFACTURER	Siemens & H	lalske and	d Felten	& Guilleaur	ne Fernn	neldeanlager	ı
POWER FEED MODE	double end	NOMINAL VOI	LTAGE 6	7/54	SYSTEM	CURRENT	0.028 A	-
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED	- TC	TAL CIRCUIT	s -	DATE	-



#### RETIRED 1975

SYSTEM REFERENCE

# SEACABLE SYSTEM DATA PROFILE

NAME	Grenž-Anholt		NOMBER C
OTHER NAMES			
COUNTRY A	Denmark	COUNTRY B	Denmark
TERMINUS A	Grenå	TERMINUS B	Anholt
LANDING POINT A	Fornaes	LANDING POINT B	Anholt
COORDINATES A	56 <sup>0</sup> 21'N x 10 <sup>0</sup> 58' E	COORDINATES B	56 <sup>0</sup> 41' N x 11 <sup>0</sup> 32' E

Jutland Telephone Company

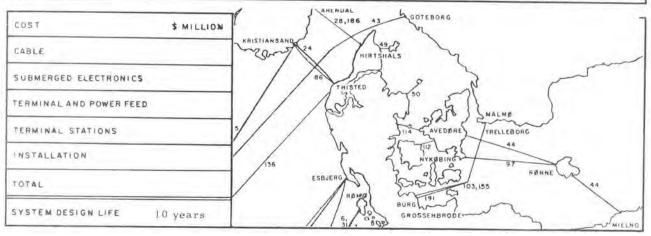
OWNER

CIRCUITS HELD all

Systems Nos. 49 and 50 were fitted with the first known submerged

repeaters uding solid-state devices in lieu of thermionic vacuum tubes.

SERVICE 1961	SERVICE	comme rcial	CABLE	25	SINGLE OR TWIN	single cat 4 pairs	DI&YSTEM TYPE	
CABLE DESCRIPTION	armored gu	uttapercha insu	lated 4 co	opper pa	airs	CABLE SIZE	Conducto 3.01 mm	7
CABLE MANUFACTURER	Norddeutsc	he Seekabelwer	rke AG	CABI	LESHIP USE	D: PETER	FABER (	2)
REPEATER DESCRIPTION		ner inflexible ier transistore	d		NUMBER OF	1	REPEATER	-
REPEATER MANUFACTUR	Telecon	mmunications	Research	Labora	atories, Der	nmark		
NOMINAL TRANSMISSIO	BANDWIDTH	48+48 kHz	TRANSMI	SION F	REQUENCIES	6-54+6-54	kHz	
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCUI	T CAPACITY, N	ON-TASI, INITIAL	12 fin	al 12	CHANNEL SPACING,	INITIAL 4	kHz final	4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Philips-Eind	hoven		CONSTR		TRL	
OWER FEED MODE	single end	NOMINAL VOLT	AGE 6		SYSTEM	CURRENT	0.028	А
ASI TYPE - CIRCUIT	SUSED -	CIRCUITS DEP	RIVED -	то	TAL CIRCUIT	s –	DATE -	



a11

Colwyn Bay - Douglas						
Colwyn Bay - Port Greenaugh						
United Kingdom (Wales)	COUNTRY B	United Kingdom (Isle of Man)				
Colwyn Bay, Denbighshire	TERMINUS B	Douglas				
Colwyn Bay	LANDING POINT B	Port Greenaugh				
53 <sup>0</sup> 18' N x 3 <sup>0</sup> 44' W	COORDINATES B	54°6' N x 4°34' W				
	Colwyn Bay - Port Greenaugh United Kingdom (Wales) Colwyn Bay, Denbighshire Colwyn Bay	Colwyn Bay - Port GreenaughUnited Kingdom (Wales)COUNTRY BColwyn Bay, DenbighshireTERMINUS BColwyn BayLANDING POINT B				

OWNER	British Post Office	CIRCUITS HELD
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	

CIRCUITS LEASED

DATE IN 1962 SERVICE	NATURE OF SERVICE	commercial	CABLE	6	SINGLE OR TWIN	single	SYSTEM TYPE	L Mk II
CABLE DESCRIPTION	armored po	lyethylene coa	xial			CABLE SIZ	ε 0.62" 15	. 7 mm
CABLE MANUFACTURER	Submarine	Cables Ltd. ar	nd Standa	ard Telej	ohones & Ca	bles Ltd.		
REPEATER	monocontai	ner inflexible	bidirect	ional	NUMBER OF	4	REPEATER	12,6 nm
REPEATER MANUFACTU	RER SCL an	d STC	Ċ.	ABLESH	P USED:	ARIEL		
NOMINAL TRANSMISSIC	N BANDWIDTH	492+492 kHz	TRANSM	ISSION F	REQUENCIES	60-552+	672-1164 ki	sE
NUMBER OF EQUALIZE	RS none	EQUALIZATION	N METHO	D				
NOMINAL VOICE CIRCL	IT CAPACITY, N	ION-TASI, INITIAL	L 120	now 120	CHANNEL	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	STC			CONSTR CONTRA	UCTION	BPO	
POWER FEED MODE	double end	NOMINAL VO	LTAGE	375/375	SYSTEM	CURRENT	0.316 A	
TASI TYPE - CIRCU	ITS USED -	CIRCUITS DE	RIVED	- T	OTAL CIRCUIT	rs -	DATE	£

COST	\$ MILLION R	3/18) MIDDLESBROUGH /14
CABLE	0,45	SCARBOROUGH 37
SUBMERGED ELECTRONICS	0.40	Jan J WILANCASTER
TERMINAL AND POWER FEED	0.25	DOUGLAS SI SA WEYBOURNE 214 TE
TERMINAL STATIONS	0.25	16 COLWYN BAY COVENTRE 54 8.9. 13
INSTALLATION	0.08	DOLLYMOUNT 17 HOLYHEAD ALDERURGH
TOTAL	1.43	DUMPTON GAP 33 128 LAPANNE
SYSTEM DESIGN LIFE	20 years	BROADSTAIRS TITE

#### RETIRED 1982

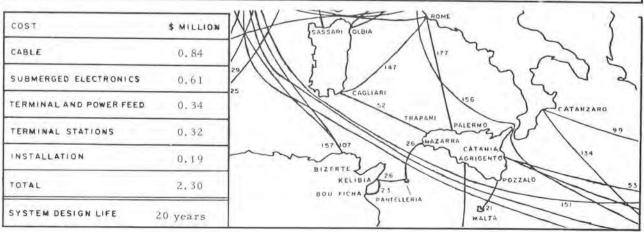
# SEACABLE SYSTEM DATA PROFILE

SYSTEM REFERENCE 52

NAME	Trapani-Cagliari		
OTHER NAMES			
COUNTRY A	Italy (Sicily)	COUNTRY B	Italy (Sardinia)
TERMINUS A	Trapani	TERMINUS B	Cagliari
LANDING POINT A	Trapani	LANDING POINT B	Cagliari
COORDINATES A	38 <sup>0</sup> 1' N x 12 <sup>0</sup> 32' E	COORDINATES B	39°13' N x 9°6' E

OWNER	Ministero delle Poste e delle Telecommunicazione	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

SERVICE 1962	SERVICE	commercial	MILES	218	SINGLE OR TWIN	single	SYSTEM TYPE	L Mk II
CABLE DESCRIPTION	armored po	olyethylene coa	axial			CABLE SIZ	E 0.62" 1	5.7 mm
CABLE MANUFACTURER	Pirelli S.p	. A.	Arco Fel	ice, Na	nlar	LESHIP SED:	SALERN	IUM
REPEATER DESCRIPTION	monocontaj	ner inflexible	bidirectio	onal	NUMBER OF	17	REPEATER	12 nm
REPEATER MANUFACTU	RER Standa	rd Telephones	& Cables	Limite	d			
NOMINAL TRANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSMI	SSION F	REQUENCIES	60-552+6	72-1164 k	Hz
NUMBER OF EQUALIZER	<b>S</b> 1	EQUALIZATION	METHOD	adjust	ed on board			
NOMINAL VOICE CIRCUI	T CAPACITY, N	ION-TASI, INITIAL	120	now 120	CHANNEL SPACING,	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Standard Tel	lephones	& Cable	S CONSTR		STC	
OWER FEED MODE	double end	NOMINAL VOL	TAGE 15	00/1500	SYSTEM	CURRENT	0.310	6 A
ASI TYPE - CIRCUIT	IS USED -	CIRCUITS DE	RIVED -	т	DTAL CIRCUIT	5 _	DATE	

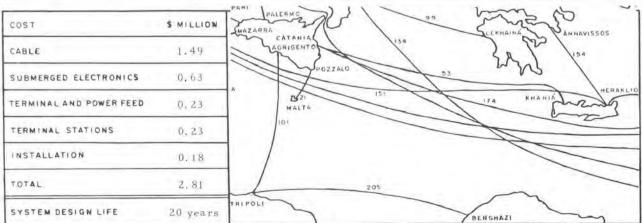




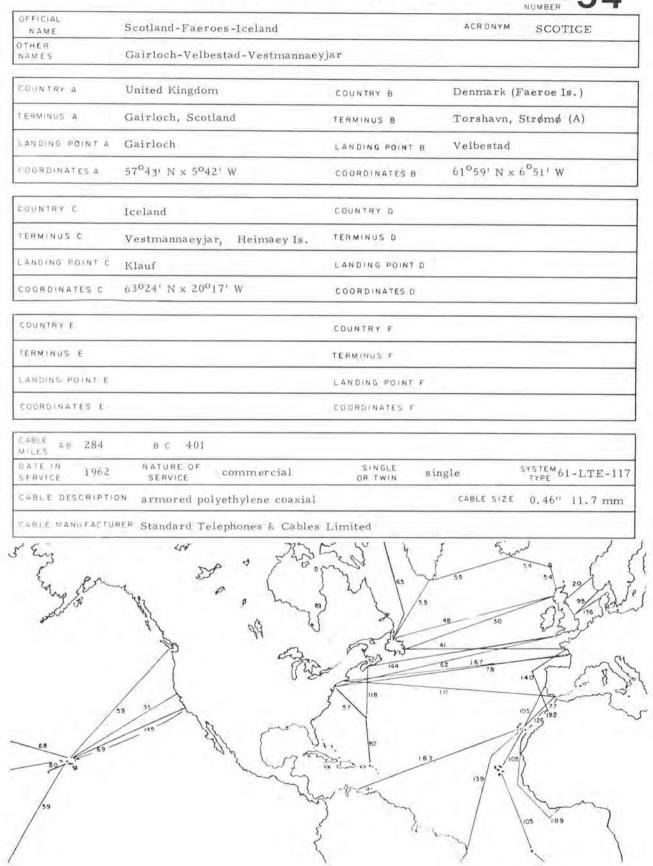
NAME	Sicily-Crete		
OTHER NAMES	MED 2		
COUNTRY A	Italy (Sicily)	COUNTRY B	Greece (Crete)
TERMINUS A	Catania	TERMINUS B	Khania
LANDING POINT A	Catania	LANDING POINT B	Khaniá
COORDINATES A	37 <sup>0</sup> 29' N x 15 <sup>0</sup> 4' E	COORDINATES B	35 <sup>0</sup> 43' N x 24 <sup>0</sup> 0'E

OWNER A	Administration of Posts and Telegraphs	CIRCUITS HELD	60h
OWNER B	Hellenic Telecommunications Organization (OTE)	CIRCUITS HELD	60h
RU HOLDERS	none		
CIRCUITS HELD			
LESSEES	none		
CIRCUITS LEASED			_

DATE IN SERVICE	1962	NATURE OF SERVICE	comme r cial	CABLE MILES	501	SINGLE OR TWIN	single	SYSTEM TYPE	N Mk II
CABLE DES	CRIPTION	unarmored	polyethylene c	oaxial			CABLE SIZE	0.62" 1	5.7 mm
CABLE MAN	UFACTURER	Pirelli and	Les Câbles de	Lyon	CA	BLESHIP U	SED: SA	LERNUM	
REPEATER DESCRIPTIC	) N	monoconta	iner inflexible	bidirectio	nal	NUMBER OF	23	REPEATER SPACING	18 nm
REPEATER	MANUFACTU	RER Subma	rine Cables Ltd	l. and Sta	ndard T	elephones &	Cables Lt	d.	
NOMINAL T	RANSMISSIC	N BANDWIDTH	240+240 kHz	TRANSMI	SSION FI	REQUENCIES	20-260+3	12-552 kH	z
NUMBER OF	EQUALIZE	RS I	EQUALIZATION	N METHOD	adjus	ted on board	ł		
NOMINAL V	DICE CIRCU	IIT CAPACITY,	NON-TASI, INITIA	L 60 E	nal 60	CHANNEL SPACING,	INITIAL 4	kHz final	4 kHz
TERMINALE	QUIPMENT	MANUFACTURE	R STC			CONSTR	UCTION ACTOR	SCL	
POWER FEE	D MODE	single end	NOMINAL VO	LTAGE 30	000	SYSTEM	CURRENT	0,41	5 A
TASI TYPE	- CIRCU	ITS USED -	CIRCUITS DI	ERIVED	- тс	TAL CIRCUIT	S -	DATE	e.



S/STEM REFERENCE



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 OWNERS
 AB: British Post Office, Adm. of P. and T., Denmark, and Great Northern Telegraph Co. BC: Administration of P. and T., Denmark and Great Northern Telegraph Company

 CIRCUITS HELD
 AB: jointly 29

 BC: jointly 29

IRU HOLDERS none

CIRCUITS HELD \_

LESSEES ICAO and Government Agencies

CIRCUITS LEASED AB: 7 BC: 6

REPEATER DESCRIPTION	monocontainer inflexible bidirectional	SPACING 27 mm
NUMBER OF A B 10	BC 15	

REPEATER MANUFACTURER Standard Telephones & Cables Limited

NUMBER OF A B none B C 1

EQUALIZATION METHOD adjust length and select equalizer

TERMINAL EQUIPMENT MANUFACTURER Standard Telephones & Cables Limited

POWER FEED MODE AB double end Cdouble end

NOMINAL VOLT	AGE	850	/850	12	40/124	0				SYSTEM	t 0.316 A
NOMINAL TRAN	SMISSION	BANDW	IDTH		34+84 k 78+78 k		TRANS	MISSION FREQUENCIES			BA:12-96 kH CB:18-96 kH
NOMINAL VOICE	CIRCUIT	CAPACIT	Y, NON	TASI, INI	DAL 24	по	w 29	CHANNEL SPACING, INITIAL	3 kHz	now	3 kHz
TASI TYPE -	CIRCUITS	S USED	÷.	CIR	CUITS DI	ERIVED	+	TOTAL CIRCUITS		ATE APPLIE	σ
REMARKS	A stati	ons:	AB	Torsha	vn	BC	Torshavn	CABLESHIPS USED:		ALERI OHN W N	

CONSTRUCTION CONTRACTOR Standard Telephones & Cables Limited

COST	\$ MILLION
ÇABLE	1.6
SUBMERGED ELECTRONICS	1.0
TERMINAL AND POWER FEED	0.3
TERMINAL STATIONS	0.3
INSTALLATION	0.4
TOTAL	3.6
SYSTEM DESIGN LIFE	20 years



ICECAN

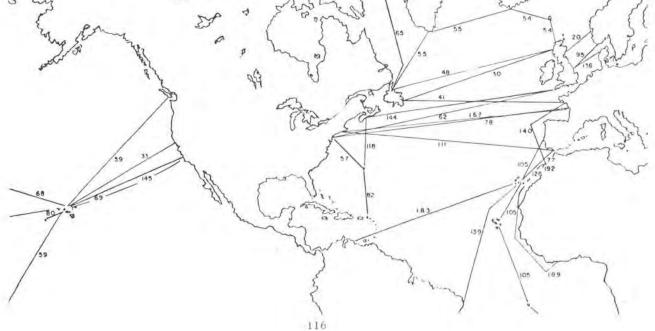
DFFICIAL Iceland-Greenland-Ganada ACRONYM OTHER NAMES Vestmannaeyjar - Frederiksdal-Hampden- Corner Brook

COUNTRY A	Iceland	COUNTRY B	Greenland
TERMINUS A	Vestmannaeyjar, Heimaey Is.	TERMINUS B	Frederiksdal
LANDING POINT A	Klauf	LANDING POINT B	Frederiksdal
OORDINATES A	63 <sup>0</sup> 24' N x 20 <sup>0</sup> 17' W	CODRDINATES B	59°59' N x 44°36' W

COUNTRY C	Canada	
TERMINUS C	Corner Brook	
LANDING POINT C	Hampden	
COORDINATES C	49°32' N x 56°52' W	

COUNTRY F	
TERMINUS F	
LANDING POINT F	
COORDINATES F	
	TERMINUS F LANDING POINT F

SERVICE	1962	NATURE OF SERVICE	commercial	SINGLE OR TWIN	single		SYSTEM TYPE	Z-18-S
CABLE DES	CRIPTION	armored poly	vethylene coaxial			CABLE SIZE	0.46"	11.7 mm
CABLE MAN	FACTURER	Norddeutsc	he Seekabelwerke /	\G				



			continue
DWNERS	AB: Great Northern Telegraph BC: Great Northern Telegraph	n Company n Company and Canadian Overse	as Telecommunicati
CIRCUITS HELD	28		w Teleglobe Canada
IRU HOLDERS	none		
CIRCUITS HELD			
LESSEES	ICAO and Government Agencie	s	
CIRCUITS LEASED	AB: 3 BC: 4		
REPEATER DESCRIPTI	on monocontainer flexible bid	irectional	REPEATER SPACING 22 nm
NUMBER OF A B 3	38 вс 41		
REPEATER MANUFACT	URER Felten & Guilleaume Car	lswerk AG	
NUMBER OF A B	4 BC 4		
EQUALIZATION MET	HOD designed and assembled	on board	
TERMINAL EQUIPMEN	NT MANUFACTURER F&G Fermmele	leanlagen GmbH and Siemens &	Halske AG
POWER FEED MODE	AB double BC double end end		
NOMINAL VOLTAGE	2300/2300 2600/2600		SYSTEM CURRENT 0.426 A
NOMINAL TRANSMISSI	on bandwidth $77+77~{ m kHz}$	TRANSMISSION FREQUENCIES 10-	87+103-180 kHz
NOMINAL VOICE CIRCU	JIT CAPACITY, NON-TASI, INITIAL 20 no	DW 28 CHANNEL INITIAL 3 & 4 k	Hz now 3 kHz
		- TOTAL CIRCUITS -	DATE APPLIED -

CONSTRUCTION CONTRACTOR Felten & Guilleaume Carlswerk AG CABLESHIPS NEPTUN(3) USED: EDOUARD SUENSON

COST	\$	MILLION
CABLE		5.47
SUBMERGED ELECTRONICS		3.76
TERMINAL AND POWER FEED		0,91
TERMINAL STATIONS		1.03
INSTALLATION		0.46
TOTAL	1	1.63
SYSTEM DESIGN LIFE	20	years

\*As originally configured, there were two Z.18S repeaters on land, one in the cablelanding hut at Hampden and one at Splice 39 in the cable between Hampden and Deer Lake. From Deer Lake a Z60S system with two unattended intermediate land repeaters, accommodating 60 channels, extended onward to Corner Brook.

Recently the Z 18S terminal equipment at Deer Lake has been relocated to Corner Brook, and the sea system, now with 24 3kHz-spaced circuits, is extended to Corner Brook, requiring the placement of a Z 18S repeater between Deer Lake and Corner Brook. The Z 60S system has been retired.

SEACAB	LE SYSTEM	DATA PROF	ILE SYSTEM REFERENCE 56
NAME	Canet Plage-Mers el K	ebir	
OTHER NAMES	Perpignan-Oran	France-Algeria 2	
COUNTRY A	France	COUNTRY B	Algeria
TERMINUS A	Perpignan, Pyrénées	Orientales TERMINUS B	Oran
LANDING POINT A	Canet Plage	LANDING POINT B	Mers el Kebir
COORDINATES A	42°42 N x 3°03'E	COORDINATES B	35 <sup>0</sup> 39' N x 0 <sup>0</sup> 47' W

Administration of Posts and Telecommunications, France OWNER A CIRCUITS HELD Administration of Posts and Telecommunications, Algeria OWNER 8. CIRCUITS HELD IRU HOLDERS

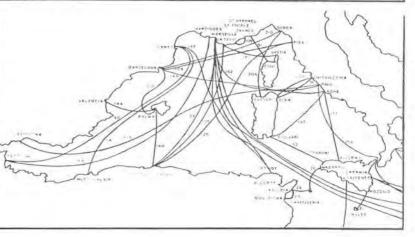
CIRCUITS HELD

LESSEES

CIRCUITS LEASED

SERVICE 1962	NATURE OF SERVICE	commercial	CABLE	542	SINGLE OR TWIN	single	SYSTEM TYPE F 60	
CABLE DESCRIPTION	armored po	olyethylene coa	xial			CABLE SI	ZE 0.61" 15,6 mm	n
CABLE MANUFACTURER	Les Câbles	de Lyon	С	ABLESI	HIP USED:	MARCE	L BAYARD	
REPEATER DESCRIPTION	multicontai	ner flexible bid	direction	al	NUMBER OF	.2.1	REPEATER SPACING 17.3	nm
REPEATER MANUFACTU	RER Cie. In	dustrielle de 7	Félécomr	nunicati	ions			
NOMINAL TRANSMISSIC	N BANDWIDTH	240+240 kHz	TRANSM	ISSION P	REQUENCIES	24-2644	-312-552 kHz	
NUMBER OF EQUALIZE	15 5	EQUALIZATION	METHOD	preset	; adjust blo	ck length	; choice of 3 for 1	No.
NOMINAL VOICE CIRCU	IT CAPACITY, M	ION-TASI, INITIAL	60	now 8	CHANNEL SPACING	INITIAL	4 kHz now 3 kH	-lz
TERMINAL EQUIPMENT	MANUFACTURER	CIT			CONSTI CONTR.	ACTOR	CIT	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 2	2400/240	0 SYSTEM	CURRENT	0.211 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	т	OTAL CIRCUIT	rs -	DATE -	

COST	\$ MILLION
CABLE	2.60
SUBMERGED ELECTRONICS	2.43
TERMINAL AND POWER FEED	0.37
TERMINAL STATIONS	0.36
INSTALLATION	0.19
TOTAL	5.95
SYSTEM DESIGN LIFE	20 years

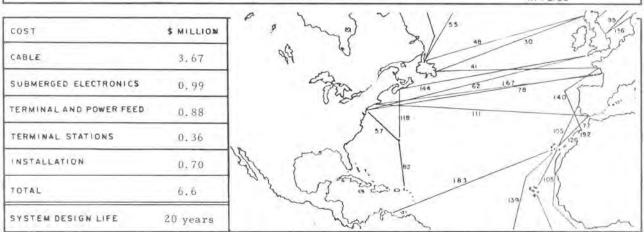


LE SYSTEM DAT	A PROF	ILE REFERENCE 57
New Jersey-Bermuda		ACRONYM BER-1
US/BDA Manahawkin - Flatts		
Bermuda, B.C.C.	COUNTRY B	U.S.A.
Flatts	TERMINUS B	Manahawkin, N.J.
Devonshire Bay	LANDING POINT B	Harvey Cedars
$32^{0}18' \text{ N} \times 64^{0}44 \text{ W}$	COORDINATES B	39 <sup>0</sup> 41' N x 74 <sup>0</sup> 09' W
	New Jersey-Bermuda US/BDA Manahawkin - Flatts Bermuda, B. C. C. Flatts Devonshire Bay	New Jersey-Bermuda US/BDA Manahawkin - Flatts Bermuda, B. C. C. COUNTRY B Flatts TERMINUS B Devonshire Bay LANDING POINT B

SYSTEM

OWNER A	Cable & Wirele	Cable & Wireless Limited				
OWNER B	American Telep	phone & Telegraph Compa	ny CIRCUITS HELD 73 h			
RU HOLDERS	WUI/C&W	RCAGC/C&W	ITTWC/C&W			
CIRCUITS HELD	2	4	3			
LESSEES	ITTWC					
CIRCUITS LEASED	1					

DATE IN SERVICE 1962	NATURE OF SERVICE	commercial	CABLE	750	SINGLE OR TWIN	single	SYSTEM TYPE	N Mk V
CABLE DESCRIPTION	unarmo	ed polyethylen	e coaxial			CABLE SIZE	E 0.99" 25	1 mm
CABLE MANUFACTURER	Standard	l Telephones &	Cables 1	imited.	CABLESH USED:		ARCH (4), ,RETRIEVE	CR (5)
REPEATER DESCRIPTION	monocor	ntainer inflexib	le bidirec	tional	NUMBER OF	30	REPEATER	20 nm
REPEATER MANUFACTU	RER Subm	arine Cables I	td. and S	tandard	Telephones	& Cables	Ltd.	
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSMI	SSION FR	EQUENCIES	60-300+3	60-608 kHz	
NUMBER OF EQUALIZER	s 2	EQUALIZATION	METHOD	adjuste	d on board			
NOMINAL VOICE CIRCU	T CAPACITY,	NON-TASI, INITIAL	80	now 82	CHANNEL SPACING,	INITIAL 3	kHz now	3 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	STC			CONSTR CONTRA		STC	& C&W
POWER FEED MODE d	ouble end	NOMINAL VOL	TAGE 16	50/1650	SYSTEM	CURRENT	0.415 A	
TASI TYPE - CIRCUI	TSUSED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	5 -	DATE	



British Post Office

		NUMBER JO
Colwyn Bay-Lancaster		
Colwyn Bay-Heysham		
United Kingdom (Wales)	COUNTRY B	England
Colwyn Bay, Denbighshire	TERMINUS B	Lancaster, Lancashire
Colwyn Bay	LANDING POINT B	Heysham
53°18'N x 3°44' W	COORDINATES B	$54^{\circ}2'N \ge 2^{\circ}55'W$
	Colwyn Bay-Heysham United Kingdom (Wales) Colwyn Bay, Denbighshire Colwyn Bay	Colwyn Bay-HeyshamUnited Kingdom (Wales)COUNTRY BColwyn Bay, DenbighshireTERMINUS BColwyn BayLANDING POINT B

OWNER

CIRCUITS HELD all

SYSTEM

REFERENCE 58

IRU HOLDERS

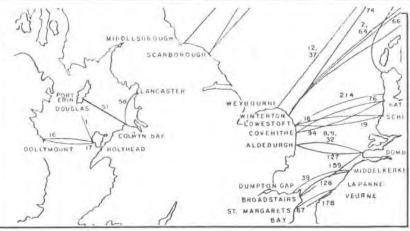
CIRCUITS HELD

LESSEES

CIRCUITS LEASED

DATE IN SERVICE 1962	SERVICE	commercial	CABLE	73	SINGLE OR TWIN	single	SYSTEM TYPE	L Mk II
CABLE DESCRIPTION	armored po	olyethylene coas	xial		(	ABLE SIZE	0,935" 2	3.7 mm
CABLE MANUFACTURER	Standard Te	elephones & Cal	bles Lim	ited	CABLESHIP	USED: A	LERT(4)	
REPEATER DESCRIPTION	monocontai	ner inflexible b	oidirectio	onal	NUMBER OF REPEATERS	3	REPEATER	18.5 nm
REPEATER MANUFACTU	RER Subma	rine Cables Lir	nited and	I Stan	dard Telephon	es & Cabl	es Ltd.	
NOMINAL TRANSMISSIO	N BANDWIDTH	<b>4</b> 92+492 kHz	TRANSMI	SSION	FREQUENCIES	60-552+6	72-1164 k)	Ηz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	÷				
NOMINAL VOICE CIRCU	IT CAPACITY, N	ION-TASI, INITIAL	120 n	ow 12	O CHANNEL SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT N	MANUFACTURER	Standard Tele	phones &	cabl	es CONSTR CONTRA		BPC	)
POWER FEED MODE	single end	NOMINAL VOL	TAGE 6	00	SYSTEM	CURRENT	0.316	A
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DEF	RIVED -		TOTAL CIRCUIT	5 -	DATE	8

COST	\$ MILLION
CABLE	0,50
SUBMERGED ELECTRONICS	0.38
TERMINAL AND POWER FEED	0.25
TERMINAL STATIONS	0.25
INSTALLATION	0.08
TOTAL	1.46
SYSTEM DESIGN LIFE	20 years



NAME Commonwealth Pacific Cable

ACRONYM COMPAC

SISTEM REFERENCE NUMBER

SEE NOTE

ł

NAMES

COUNTRY 4	Canada	COUNTRY B	Canada
TERMINUS A	Vancouver, British Columbia	TERMINUS B	Port Alberni, Vancouver Is.(A
LANDING POINT A	Vancouver	LANDING POINT B	Port Alberni
OOHDINATES A	49 <sup>0</sup> 15' N x 123 <sup>0</sup> 8' W	COORDINATES B	49 <sup>0</sup> 15' N x 124 <sup>0</sup> 45' W
COUNTRY C	U.S.A. (Hawaii)	COUNTRY D	Fiji
TERMINUS C	Keawaula Bay, Oahu (A)	TERMINUS D	Suva
LANDING POINT C	Keawaula Bay	LANDING POINT D	Suva
COORDINATES C	21 <sup>0</sup> 30' N x 158 <sup>0</sup> 14' W	COORDINATES D	18°8' S x 178°26' E
COUNTRY E	New Zealand	COUNTRY F	Australia
TERMINUS E	Auckland, North Island (A)	TERMINUS F	Sydney, New South Wales
LANDING POINT E	EAST: Takapuna WEST: Muriwai Beach	LANDING POINT F	Bondi Beach
COORDINATES E	36 <sup>0</sup> 49' S x 174 <sup>0</sup> 4 <sup>5</sup> E 36 <sup>0</sup> 48' S x 174 <sup>0</sup> 25' E	COORDINATES F	33 <sup>0</sup> 44' S x 151 <sup>0</sup> 16' E
CABLE AB 81 MILES	вс 2546 ср 3073	D E 1260	E F 1273

DATE IN AD: 1963 SERVICE DF: 1962		commercial	SINGLE OR TWIN	single			N Mk V & Mk VIII
CABLE DESCRIPTION	unarmore	d polyethylene coaxial			CABLE SIZE	0.99"	25.15 mm

CABLE MANUFACTURER Submarine Cables Limited and Standard Telephones & Cables Limited

in the second se	29 33	118 - 118 -
163 117 117 117 170 170 153 68 68 68 153 68	801'- 10 801'- 10 801'- 10	Contraction 181
North Contraction of the second secon		and a start
4		75



59
continued

OWNERS AC: C	OTC*; CD: CC	TC, C&W, NZPO, (	TC(A); DF: C&W, NZPO, OT	C(A)
CIRCUITS HELD				
IRU HOLDERS	ATT	ATT	HTC	
CIRCUITS HELD	AC:14	CF:14	AC:3	
LESSEES	none			
CIRCUITS LEASED				

REPEATER DESCRIPTION	monocontai	ner inflexi	ble bidire	ctional			REPEATER SPACING	26 nm
NUMBER OF A B 5 REPEATERS	вс 100	C D 1	.7 D E	50	EF 5(	)		
REPEATER MANUFACTURER	Submarine	Cables Li	mited and	Standar	d Teleph	ones & Cabl	es Limited	
NUMBER OF A B none EQUALIZERS	вс 10	εD	12 0	E 6	EF	Ġ.		
EQUALIZATION METHOD	assembled o	on board						
TERMINAL EQUIPMENT MAN	UFACTURER	Standard	Telephone	s & Cab	les Lim	ited		
POWER FEED MODE AB	ingle BC	double c end	D double end	DE	double end	EF doul end	ole	
NOMINAL VOLTAGE 5	00	5600/5600	5950/5	950	2550/25	50 2700/27	OURRENT 0	.415 A
NOMINAL TRANSMISSION BAN	рыртн 240-	240 kHz	T F	ANSMISSIC	N FREQUE	NCIES 60-30	0+360-608	kHz
NOMINAL VOICE CIRCUIT CAPA	CITY, NON-TASI, I)	NITIAL 80	now 82		NNEL CING, INITI	ai 3 kHz	now 3 1	Hz
1451 TYPE B CIRCUITS USE	o 33 c	RCUITS DERI	VED 94	TOTAL	CIRCUITS	127## 04	TE APPLIED I	975
REMARKS System "A"	stations:	AB; BC; C	D; DE; EF					

CONSTRUCTION CONTRACTOR

Cable & Wireless Limited

CABLESHIPS MONARCH (4), MERCURY USED: RETRIEVER (5)

\*\*\* This is pro-rata. Vancouver-Sydney TASI B uses 33 COMPAC bearers plus 38 SEACOM-TPC-HAW 3 bearers to provide 274 inlets. Of these, 33/71x274=127 may be ascribed to COMPAC. This cable thus carries 82-33 =49 hard-wire circuits, 33 TASIand-through circuits, and 94 TASI-only circuits for a grand total of 176 circuits.

COST	\$ MILLION
CABLE	40
SUBMERGED ELECTRONICS	20
TERMINAL AND POWER FEED	4
TERMINAL STATIONS	4
INSTALLATION	5
TOTAL	73
SYSTEM DESIGN LIFE	20 years

SPECIAL NOTE:

Sections AB, BC, and EF were retired when the Canada - Hawaii and Norfolk Island - New Zealand portions of ANZCAN, (project No. 261) were completed in 1983.

\* COTC: Canadian Overseas Telecommunications Corporation (now Teleglobe Canada)

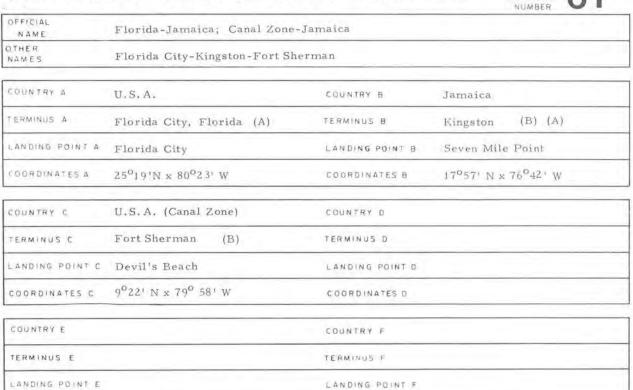
C&W: Cable & Wireless Limited NZPO: New Zealand Post Office

OTC(A): Overseas Telecommunications Commission (Australia)

HTC: Hawaiian Telephone Company

COORDINATES E

### SEACABLE SYSTEM DATA PROFILE

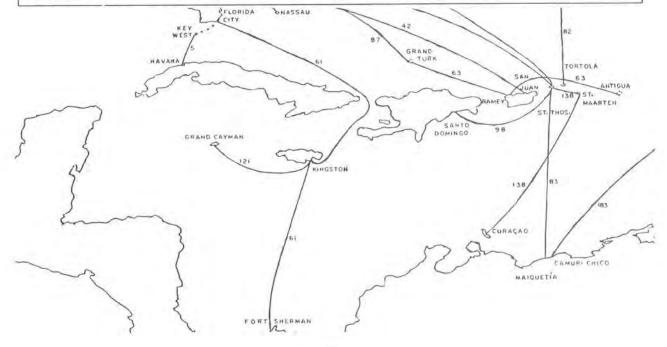


SISTEM REFERENCE

CABLE AB 834 B C 621 MILES SINGLE OR TWIN DATEIN NATURE OF SYSTEM SD 1963 commercial single SERVICE TYPE SERVICE CABLE DESCRIPTION CABLE SIZE 1.00" 25.4 mm unarmored polyethylene coaxial

COORDINATES F

CABLE MANUFACTURER Western Electric Co. and Standard Telephones & Cables Ltd.



OWNERS	AB: A.T.&T. Co. and Jamaica International Telecommunications Limited BC: A.T.&T. Co. and I.T.T. Central America Cables & Radio, Inc.	
CIRCUITS HELD	*	
IRU HOLDERS	*	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASE	ED -	
TRANS A.C.	REPE	ATER

REPEATER DESCRIPTION monocontainer flexible bidirectional	SPACING	20 n
NUMBER OF A B 43 B C 32 REPEATERS		
REPEATER MANUFACTURER Western Electric Company		
NUMBER OF AB 4 BC 3 EQUALIZERS		
EQUALIZATION METHOD networks selected by externally-controlled stepping switch	1	
TERMINAL EQUIPMENT MANUFACTURER Western Electric Company		
POWER FEED MODE AB end BC end	-	
NOMINAL VOLTAGE 4150 4150	SYSTEM CURRENT ()	.370 A
		LLIA
	504+660-1052	S KEIZ
NOMINAL TRANSMISSION BANDWIDTH 384+384 kHz TRANSMISSION FREQUENCIES 108-	-504+660-1052 now 3 kF	
NOMINAL TRANSMISSION BANDWIDTH $384+384 \text{ kHz}$ TRANSMISSION FREQUENCIES $108-1000 \text{ AB}$ : $144 \text{ channel}$ Nominal voice circuit capacity, non-tasi, initial $128 \text{ now} \frac{\text{AB}: 144 \text{ channel}}{\text{BC}: 128 \text{ spacing}}$ .	now 3 kF	

CONSTRUCTION CONTRACTOR American Telephone & Telegraph Company

\$ MILLION
9.51
4,85
3.54
1.30
1.40
20.6
24 years

\* See following page

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#### A-B UNITED STATES - JAMAICA CABLE

Allocation		Circuits
American Telephone & Telegraph Co.	ITT Central America Cables & Radio*	45
Western Union International, Inc.*	ITT Central America Cables & Radio*	4
RCA Global Communications, Inc.*	TRT Telecommunications Corporation*	4
ITT World Communications, Inc.*	ITT Central America Cables & Radio#	14
American Telephone & Telegraph Co.		2
TRT Telecommunications Corporation*		1
TRT Telecommunications Corporation*	Jamaica International Telecommunications, Limited	İ
American Telephone & Telegraph Co.	Jamaica International Telecommunications, Limited	55
Canadian Overseas Telecommunications Corporation* (now Teleglobe Canada)	Jamaica International Telecommunications, Limited	<14
Western Union International, Inc. $*$	Jamaica International Telecommunications, Limited	1
RCA Global Communications, Inc.*	Jamaica International Telecommunications, Limited	1
ITT World Communications, Inc.*	Jamaica International Telecommunications, Limited	T.
Bahamas Telecommunications Corporation*	Jamaica International Telecommunications, Limited	2
Jamaica International Telecommunications,		
Limited		2
	TOTAL	144

#### B-C JAMAICA - CANAL ZONE CABLE

Allocation		Circuits
American Telephone & Telegraph Co.	ITT Central America Cables and Radio	62
American Telephone & Telegraph Co.		28
Western Union International, Inc.*	ITT Central America Cables and Radio	8
RCA Global Communications, Inc.*	TRT Telecommunications Corporation*	4
ITT World Communications, Inc.*	ITT Central America Cables and Radio	1.9
TRT Telecommunications Corporation*		З
TRT Telecommunications Corporation*	Jamaica International Telecommunications, Limited	Z
RCA Global Communications, Inc.*	ITT Central America Cables and Radio	Z
	TOTAL	1.7.0

TOTAL 128

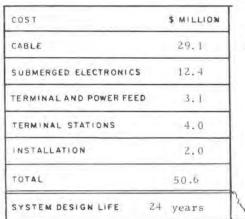
NAME	Transatlantic No. 3		ACRONYM TAT-3
OTHER NAMES	Tuckerton-Widemouth		
COUNTRY A	U.S.A.	COUNTRY B	United Kingdom
TERMINUS A	Tuckerton, New Jersey	TERMINUS B Wi	demouth Bay, Cornwall
LANDING POINT A	Beach Haven	LANDING POINT B	Widemouth Bay
COORDINATES A	39 <sup>0</sup> 34' N x 74 <sup>0</sup> 14' W	COORDINATES B	50 <sup>0</sup> 47' N x 04 <sup>0</sup> 34'W

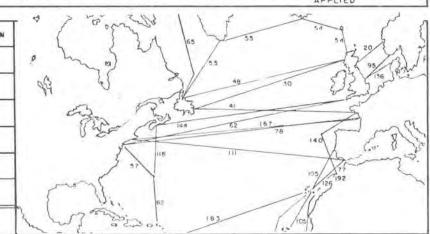
SYSTEM

NUMBER 62

OWNER A	American	American Telephone & Telegraph Company CIRCUITS HELD						
OWNER B	British Po	st Office				CIRC	UITS HELD	106 h
IRU HOLDERS	BPO with	RCAGC	ITTWC	PW	WUI	FTCC		
CIRCUITS HELD		11	14	Z	8	2		
LEASES	ATT to RC	AGC	BPO to	DBP				
CIRCUITS LEASED	3h		1	h				

SERVICE	commercial	CABLE	3518	SINGLE OR TWIN	single	SYSTEM TYPE	SD
unarmored	polyethylene co	paxial		c	ABLE SIZE	1.00" 25	. 4 mm
Standard Te	lephones & Ca	bles, Ltd.	, and W	estern Elec	tric Comp	bany	
monocontair	ner flexible bid	lirectiona	ſ	NUMBER OF	182	REPEATER	20 nm
ER Weste	ern Electric Co	mpany		1.0	NG LINES	, ALERT	(4)
BANDWIDTH	$384{+}384~\mathrm{kHz}$	TRANSMIS	SION FR	EQUENCIES	108-504	+660-1052	kHz
s 17	EQUALIZATION	METHOD	steppi	ng switch			
T CAPACITY, N	ION-TASI, INITIAL	138 n	ow 138	CHANNEL SPACING,	INITIAL 3	kHz now	3 kH2
ANUFACTURER	Western Ele	ctric Com	pany			ATT	
uble end	NOMINAL VOL	TAGE 500	0/5000	SYSTEM	CUPPENT	0.37	0 A
	SERVICE unarmored Standard Te monocontain ER Weste BANDWIDTH S 17 T CAPACITY, N ANUFACTURER	SERVICE commercial unarmored polyethylene co Standard Telephones & Ca monocontainer flexible bid ER Western Electric Co BANDWIDTH 384+384 kHz S 17 EQUALIZATION T CAPACITY, NON-TASI, INITIAL ANUFACTURER Western Electric	SERVICE Commercial MILES unarmored polyethylene coaxial Standard Telephones & Cables, Ltd monocontainer flexible bidirectiona. EER Western Electric Company BANDWIDTH 384+384 kHz TRANSMIS S 17 EQUALIZATION METHOD T CAPACITY, NON-TASI, INITIAL 138 m ANUFACTURER Western Electric Com	SERVICE commercial MILES 3518 unarmored polyethylene coaxial Standard Telephones & Cables, Ltd. and W monocontainer flexible bidirectional EER Western Electric Company CABLE USE BANDWIDTH 384+384 kHz TRANSMISSION FR S 17 EQUALIZATION METHOD Steppi T CAPACITY, NON-TASI, INITIAL 138 now 138 ANUFACTURER Western Electric Company	SERVICE       commercial MILES       3518       OR TWIN         unarmored polyethylene coaxial       Graduation       Graduation         Standard Telephones & Cables, Ltd. and Western Flect       NUMBER OF         monocontainer flexible bidirectional       NUMBER OF         mereaters       CABLESHIPS         LO       USED:         M BANDWIDTH       384+384 kHz         TRANSMISSION       FREQUENCIES         S       17       EQUALIZATION METHOD         S       17       EQUALIZATION METHOD         TCAPACITY, NON-TASI, INITIAL       138       CHANNEL         SPACING,       ANUFACTURER       Western Electric Company	SERVICEcommercial milesMILES3518 OR TWINsingleunarmored polyethylene coaxialCABLE SIZEStandard Telephones & Cables, Ltd. and Western Electric Comp monocontainer flexible bidirectionalNUMBER OF REPEATERS182Monocontainer flexible bidirectionalNUMBER OF REPEATERS182MERWestern Electric CompanyCABLESHIPS USED:LONG LINESM BANDWIDTH384+384 kHzTRANSMISSION FREQUENCIES108-504S17EQUALIZATION METHODstepping switchTCAPACITY, NON-TASI, INITIAL138now 138CHANNEL SPACING, INITIALANUFACTURERWestern Electric CompanyCONSTRUCTION CONTRACTOR	SERVICEcommercialMILES3518OR TWINsingleTYPEunarmored polyethylene coaxialCABLE SIZE1.00"25Standard Telephones & Cables, Ltd. and Western Flectric Companymonocontainer flexible bidirectionalNUMBER OF REPEATERSREPEATER SPACINGTERWestern Electric CompanyCABLESHIPS USED:LONG LINES, ALERT USED:M BANDWIDTH384+384 kHzTRANSMISSION FREQUENCIES108-504+660-1052S17EQUALIZATION METHOD Stepping switchstepping switchT CAPACITY, NON-TASI, INITIAL138now138ANUFACTURERWestern Electric CompanyCONSTRUCTION CONSTRUCTION CONTRACTORATT







rk-Ramey-Antigua Easte rks/Caicos Islands	ern Test Range No.	1
rks/Caicos Islands		
	COUNTRY B	U.S.A. (Puerto Rico)
S.A.F. Facility, Grand Turk	TERMINUS B	Ramey
and Turk	LANDING POINT B	Ramey
°26' N x 71°9' W	COORD NATES 8	18 <sup>°</sup> 29'N x 67 <sup>°</sup> 09''W
tigua	COUNTRY D	
olidge A.F. Facility	TERMINUS D	
olidge A.F.F.	LANDING POINT D	
010'N x 61 <sup>0</sup> 47' W	COORDINATES D	
	COUNTRY F	
	TERM US F	
	LANDING POINT F	
	COORDINATES F	
NATURE OF SERVICE military armored polyethylene coaxial	OR TWIN	gle SYSTEM Z60S TYPE Z60S CABLE SIZE 0.6211 15.7 mm
BEACH G.B.I.	ат вт <u>GPAND</u> стилк 63	В2 ТОЯТОLА 63 АНТІБИА 138 57, АНТІБИА 138 57, ТНОЗ 98 138 83
	tigua olidge A.F. Facility olidge A.F.F. 210'N x 61°47' W B C 377 C 0 NATURE OF military armored polyethylene coaxial Norddeutsche Seekabelwerke JACKSONVILLE BEACH VEROF BEACH W. PALMUSZ GRAND CAYMAN (17) ST ST ST ST ST ST ST ST ST ST ST ST ST	tigua COUNTRY D olidge A. F. Facility TERMINUS D olidge A. F. F. LANDING POINT D OUNTRY F COUNTRY F TERMINUS F LANDING POINT F COUNTRY F COUNTRY F LANDING POINT F COORDINATES F B C 377 C D D E NATURE OF SERVICE military OR TWIN Single SERVICE OR TWIN Single SINGLE SINGLE SINgle MATURE OF MILITARY OR TWIN SINgle SERVICE OF MILITARY OR TWIN SINgle SERVICE OF MILITARY OR TWIN SINgle SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE SINGLE

	63
United States Government	
all	
none	
-	
none	
A	
monocontainer flexible bidirectional	REPEATER SPACING 17 nm

REPEATER DESCRIPTION monocontainer flexible bidirectional	REPEATER SPACING	17 nm
NUMBER OF AB 19 BC 21 REPEATERS AB 19 BC 21		
REPEATER MANUFACTURER Felten & Guilleaume Carlswerk AG		
NUMBER OF A B ] B C ] EQUALIZERS		
EQUALIZATION METHOD compute and assemble on board		
TERMINAL EQUIPMENT MANUFACTURER F&G Fernmeldeanlagen GmbH		
POWER FEED MODE & B double end end		
NOMINAL VOLTAGE 1000/1000 1000/1000	SYSTEM CURRENT 0	.426 A
NOMINAL TRANSMISSION BANDWIDTH $240+240 \ \mathrm{kHz}$ TRANSMISSION FREQUENCIES	24-264+312-552	kHz
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 60 NOW 60 CHANNEL SPACING, INITIAL 4 B	Hz now 4 kł	Iz
TASI TYPE - CIRCUITS USED - CIRCUITS DERIVED - TOTAL CIRCUITS -	DATE APPLIED	÷
REMARKS CABLESHIPS USED: NEPTUN(3), OMEGA		

CONSTRUCTION CONTRACTOR United States Underseas Cable Corporation

OWNER

CIRCUITS HELD

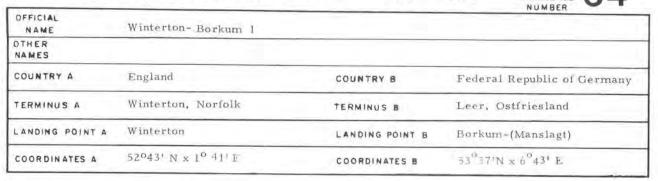
I R U HOLDERS

CIRCUITS HELD

CIRCUITS LEASED

LESSEES

COST	\$ MILLION
CABLE	2.6
SUBMERGED ELECTRONICS	1.6
TERMINAL AND POWER FEED	0.9
TERMINAL STATIONS	-
NSTALLATION	1.2
TOTAL	6.3
SYSTEM DESIGN LIFE	20 years



SYSTEM

REFERENCE

CIRCUITS HELD

CIRCUITS HELD 120h

64

120h

OWNER A British PostOffice
OWNER B. Deutsche Bundespost

none

IRU HOLDERS none

CIRCUITS HELD

LESSEES

CIRCUITS LEASED -

DATE IN SERVICE	1963	NATURE OF SERVICE	commercial	CABLE	251	SINGLE OR TWIN	single	SYSTEM TYPE	Q
CABLE DES	CRIPTION	armored pe	olyethylene coa	sial			CABLE SIZ	E 0.62" 15	.7 mm
CABLE MANU	FACTURER	Standard T	elephones & Ca	ables Ltd.	CABLE	MAG	NARCH (4	I), PETER I	FABER(2
REPEATER DESCRIPTIO	N	monocontai	ner inflexible	bidirectio	nal	NUMBER OF	20	REPEATER	11.7 nm
REPEATER N	ANUFACTU	RER Standa	rd Telephones	& Cables	Ltd.				
NOMINAL TR	ANSMISSIC	N BANDWIDTH	492+492 kHz	TRANSMIS	SION FF	REQUENCIES	60-552+	672-1164 kF	Iz
NUMBER OF	EQUALIZE	RS 1	EQUALIZATION	METHOD	adjust	ed on board			
NOMINAL VO	ICE CIRCU	JIT CAPACITY, I	NON-TASI, INITIAL	. 120 n	ow 120	CHANNEL SPACING,	INITIAL	4 kHz now	4 kHz
TERMINALEQ	UIPMENT	MANUFACTURER	Standard Te	lephones &	Cables	CONSTR CONTRA	UCTION	вро	-
POWER FEEL	MODE	double end	NOMINAL VOL	TAGE 850	/850	SYSTEM	CURRENT	0.430 A	
TASI TYPE -	- CIRCUI	ITS USED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	s _	DATE APPLIED -	

COST \$ MILLION 9 CABLE 0.70 LEER K FEDDERWARDEN SUBMERGED ELECTRONICS 0.66 OOSTMAHORN TERMINAL AND POWER FEED 0.17 WEST TERMINAL STATIONS 0.22 EGMOND INSTALLATION WE BOURNE 0,11 ATWIJK WINTERTON SCHEVENINGEN 18 94 8,9, 32 1.83 COVENITHE TOTAL 25 ALDEBURGH DOMINING 127 SYSTEM DESIGN LIFE 20 years 159 MIDDELKERKE 130

#### RETIRED 1976

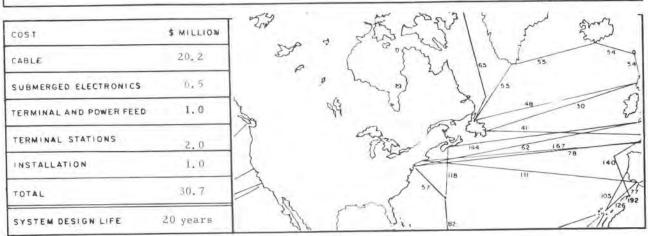
# SEACABLE SYSTEM DATA PROFILE SYSTEM 65

0

OLHOAD	LE OTOTEM E		NUMBER VV
OFFICIAL NAME	Thule-White Bay		
COUNTRY A	Greenland	COUNTRY B	Canada
TERMINUS A	USAFB Thule	TERMINUS B	Hampden, Newfoundland
LANDING POINT A	Thule	LANDING POINT B	Hampden
COORDINATES A	$76^{\circ}32' \text{ N} \ge 68^{\circ}49' \text{ W}$	COORDINATES B	$49^{\circ}32^{\circ}$ N x $56^{\circ}52^{\circ}$ W

OWNER A	U.S. Department of Defense	CIRCUITS HELD 36 h
OWNER B	Canadian Defense Establishment	CIRCUITS HELD 36 h
	In 1964 the Cape Dyer-Thule system (No. 35	5) and the Cape Dyer-White Bay system
	(No. 47) were withdrawn from Cape Dyer an	nd joined in the sea to become the
	Thule-White Bay system No. 65.	

DATE IN SERVICE 1964	NATURE OF SERVICE	military	CABLE	2020 2020	SINGLE OR TWIN	twin	SYSTEM TYPE	SB
CABLE DESCRIPTION	armored po	olyethylene co	paxial			CABLE SIZ	E 0.62" 15	i. 7 mm
CABLE MANUFACTURER	Simplex Wi	ire & Cable C	ompany	CAB	LESHIP USE	D: CYR	US FIELD	
REPEATER DESCRIPTION	articulated	(lexible unid	irectional		NUMBER OF	54 + 54	REPEATER S PACING	37.5 nm
REPEATER MANUFACTU	RER Weste	rn Electric C	ompany					
NOMINAL TRANSMISSIC	ON BANDWIDTH	144+144 kHz	TRANSM	ISSION I	FREQUENCIES	20-164+	20-164 kHz	
NUMBER OF EQUALIZE	RS 1+1	EQUALIZATI	ON METHOD	adjust	cable length	i; select	equalizers	
NOMINAL VOICE CIRCI	JIT CAPACITY,	NON-TASI, INIT	IAL 36 fi	nal 3)	6 CHANNEL SPACING	INITIAL	4 kHz fina	14 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R Western E	lectric Co	mpany	CONSTI CONTR.	RUCTION ACTOR	Western	Electric
POWER FEED MODE	double end	NOMINAL V	OLTAGE 23	00/2300	) SYSTEM	CURRENT	0.225 A	
TASI TYPE - CIRCU	ITS USED -	CIRCUITS	DERIVED		TOTAL CIRCUI	TS -	DATE	÷



131

# SEACABLE SYSTEM DATA PROFILE SYSTEM 66

NAME	Winterton - Borkum 2		NUMBER VV
OTHER NAMES	Winterton - Leer 2	Leer-Winterton B	
COUNTRY A	England	COUNTRY B	Federal Republic of Germany
TERMINUS A	Winterton, Norfolk	TERMINUS B	Leer, Ostfriesland
LANDING POINT A	Winterton	LANDING POINT B	Borkum-(Manslagt)
COORDINATES A	52°43' N x 1°41' E	COORDINATES B	53° 37' N x 6°43' E

120h

120h

CIRCUITS HELD

OWNER A	British Post Office
OWNER B	Deutsche Bundespost
IRU HOLDERS	none
CIRCUITS HELD	-
LESSEES	none

CIRCUITS LEASED -

SERVICE	1964	SERVICE	commercial	CABLE MILES	249	SINGLE OR TWIN	single	SYSTEM TYPE	Q
CABLE DESCR	RIPTION	armored po	olyethylene coa	xial			CABLE SIZ	E 0.62º 15	5.7 mm
CABLE MANUF	ACTURER	Standard T	elephones & Ca	bles Ltd.	CABI USF	ESHIPS D:		LERT (4) FABER (2)	
REPEATER		monocontai	ner inflexible	bidirection		NUMBER OF	20	REPEATER	11.7 nm
REPEATER MA	NUFACTU	RER Standa	rd Telephones	& Cables	Ltd.				
NOMINAL TRA	NSMISSIC	N BANDWIDTH	492+492 kHz	TRANSMIS	SION FR	EQUENCIES	60-55Z+6	72-1164 kF	Iz
NUMBER OF E	QUALIZER	RS 1	EQUALIZATION	METHOD	adjuste	d on board	1		
NOMINAL VOI	CE CIRCU	IT CAPACITY, M	ION-TASI, INITIAL	120 n	ow 120	CHANNEL SPACING,	INITIAL	4 kHz oow	4 kHz
TERMINAL EQU	IPMENT N	MANUFACTURER	Standard Te	lephones &	c Cables		NSTRUCTI NTRACTO		20
OWER FEED	MODE	double end	NOMINAL VOL	TAGE 850	/850		CURRENT	0.430 A	
ASI TYPE -	CIRCUI	TS USED -	CIRCUITS DE	RIVED -	τo	TAL CIRCUIT	s -	DATE	-

COST	\$ MILLION
CABLE	0.70
SUBMERGED ELECTRONICS	0.66
TERMINAL AND POWER FEED	0.17
TERMINAL STATIONS	0.04
INSTALLATION	0,08
TOTAL	1.65
SYSTEM DESIGN LIFE	20 years

RETIRED 1983

SYSTEM

# SEACABLE SYSTEM DATA PROFILE

SEACAB	LE SYSTEM	DATA PROF		FERENCE 67
NAME	St. Margarets Bay - La	Panne		
OTHER NAMES	La Panne - St. Margaret	's Bay No. 6		
COUNTRY A	England	COUNTRY B	Belgium	
TERMINUS A	St. Margaret's Bay, Ker	nt TERMINUS B	La Panne	
LANDING POINT A	St. Margaret <sup>i</sup> s Bay	LANDING POINT B	La Panne	
COORDINATES A	5109' N x 1024' E	COORDINATES B	51°6' N x 2	°35' E

OWNER A	British Post Office	CIRCUITS HELD 420 h
OWNER 8	Régie des Télégraphs et des Téléphones	CIRCUITS HELD 420 h
	The previously-laid polyethylene and air-dielectric c	oaxial cable was raised in two
	places by IRIS(2) in 1964, and 2 transistorized repea	bell at a factor if and

SERVICE 1964	NATURE OF SERVICE	commercial	CABLE	1.9	SIN OR 1		single	SYSTEM TYPE	S
CABLE DESCRIPTION	armored po	lyethylene and	air coa:	xial		c	ABLE SIZ	E 1.7" 43	. 2 mm
CABLE MANUFACTURER	Submarine	Cables Limited	4						
REPEATER	monocontai	ner inflexible	bidirecti	ional	NUMB	T	2	REPEATER	16 nm
REPEATER MANUFACTU		rine Cables Li	mited	CABI	LESHIP (	JSED:	IRIS (2	:)	
A REAL PROPERTY CONTRACTOR		the second second							
NOMINAL TRANSMISSIO	N BANDWIDTH	1732+1732 kH	ZTRANSM	AISSION	FREQUEN	CIES	12-2044	+2296-402	8 kHz
		1732+1732 kH			FREQUEN	CIES	12-2044	+2296-402	8 kHz
NUMBER OF EQUALIZE	RS none	EQUALIZATION	N METHOD					+2296-402 4 kHz nov	
NOMINAL TRANSMISSIO NUMBER OF EQUALIZER NOMINAL VOICE CIRCU TERMINAL EQUIPMENT I	RS none	EQUALIZATION	м метнос 1 420	D - now 4	20 CHA	ONNEL CING,		4 kHz nov	v 4 kHz
NUMBER OF EQUALIZES NOMINAL VOICE CIRCU TERMINAL EQUIPMENT I	RS none	EQUALIZATION NON-TASI, INITIAI	м метнос L 420 Electric	now 4	20 CHA SPA	INNEL CING, CONST CONTE	NITIAL RUCTIC	4 kHz nov PN SCI	4 kHz

OST	\$ MILLION	T COLWAN BAY	HITHE 94 8.9.
ABLE	0.36	PHOLYHEAD ALDE	
UBMERGED ELECTRONICS	0.08	DUMPT	
TERMINAL AND POWER FEED	0,80	ST. MARGA	STAIRS 178 VEURNE
TERMINAL STATIONS	0.02	BOURNEMOUTH	$\leq$
INSTALLATION	0.06	3 5 ~	168 ST VALERY EN CAUX
TOTAL	1,32	13.14. (1) m	6
SYSTEM DESIGN LIFE	20 years	130	SEULLES

OTHER NAMES	Hawaii-Guam 1 Ja		
		apan-Guam	
COUNTRY A	U.S.A. (Hawaii)	COUNTRY B	U.S.A. (Midway)
TERMINUS A	Makaha, Cahu (a)	TERMINUS B	Midway
LANDING POINT A	Makaha	LANDING POINT B	Sand Island
COURDINATES A	21°29' N x 158°13' W	COORDINATES 8	28°12' N x 177°23' W
COUNTRY C	U.S.A. (Wake)	COUNTRY D	U.S.A. (Guam)
TERMINUS C	Wake	TERMINUS D	Agana
ANDING POINT C	Wake	LANDING POINT D	Tanguisson Point
COORDINATES C	19 <sup>0</sup> 16' N x 166 <sup>0</sup> 39' E	COORDINATES D	13°33' N x 144°48' F
COUNTRY E	Japan	COUNTRY F	
TERMINUS E	Ninomiya	TERMINUS F	
ANDING POINT E	Ninomiya	LANDING POINT F	
ABLE AB 1239	35 <sup>0</sup> 17' N x 139 <sup>0</sup> 16' E B C 1108 C D 1501	COORDINATES F	
ERVICE 1964	NATURE OF SERVICE commercial	SINGLE OR TWIN Singl	e SYSTEM SD
ABLE DESCRIPTION	R Western Electric Co., Standa	rd Telephones & Cab	CABLE SIZE 1.00" 25.4 mm
10 10 10 10 10 10 10 10 10 10	68 . 68 . 53 . 59 . 59 . 59 . 59 . 59 . 59 . 59	59 33 149	



AD: A.T.&T. Co. and DE: ATT and Kokusai	l Hawaiian Tel. Co. Denshin Denwa Co. Ltd.
CIRCUITS HELD* see following page	
R'U HOLDERS *	
CIRCUITS HELD to	
LESSEES *	
CIRCUITS LEASED#	
REPEATER DESCRIPTION monocontainer fle:	xible bidirectional SPACING 20 nm
NUMBER OF A B 64 B C 58 C D	78 de 74
REPEATER MANUFACTURER Western Electric	Company
NUMBER OF A B 6 B C 5 C D EQUALIZERS	ο 7 αε 7
EQUALIZATION METHOD stepping switch	
TERMINAL EQUIPMENT MANUFACTURER Weste	rn Electric Company
POWER FEED MODE AD double end	DE single end
NOMINAL VOLTAGE 5500/5500	4055 SYSTEM 0.370 A
	Hz. TRANSMISSION FREQUENCIES 108-504+660-1052 kHz
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL	128 now AD: 142 CHANNEL DE: 138 SPACING, INITIAL 3 kHz now 3 kHz
TASI TYPE A CIRCUITS USED 37 # CIRCUITS	DERIVED 39 # TOTAL CIRCUITS N. A. DATE APPLIED 1966
REMARKS # between California and Guam	**includes \$0.69 M for TASI at Guam

CONSTRUCTION CONTRACTOR	American Telephone & Telegraph Company	CABLESHIP USED:	LONG LINES

COST \$	MILLION
CABLE	35.38
SUBMERGED ELECTRONICS	18.07
TERMINAL AND POWER FEED **	6.86
TERMINAL STATIONS	3.48
INSTALLATION	4.00
TOTAL	67.79
SYSTEM DESIGN LIFE	24 years

#### ALLOCATIONS

	SEACOM	HTC	KDD	PLDT	RCAGC	ITTWC	WUI
ATT	20	Z	30	14	6		
HTC		1	7	6	9		
ITTWC			10	1		5	
RCAGC			7	Z	3		
WUI				1			÷ń.
KDD			8				
GMCR						2	
PGC					1		

#### LEASES

AT	T/SEACOM	to	RCAGC	1
	н	to.	SEACOM	1
AT	T/KDD	to	RCAGC	1
AT'	T/RCAGC	to	RCAGC	ā.

NAME	Hawaii No.	. 2				1.9	CRONY	M HAW	-2
OTHER NAMES	Hawaii-Ca	lifornia 2							
COUNTRY A	U.S.A.			COUR	TRY B	U	.s.A.	(Hawaii)	-
TERMINUS A	San Luis C	bispo, Califo	rnia	TERM	INUS B	М	akaha	, Oahu	
LANDING POINT A	San Luís C	bispo		LAND	DING POINT	в М	lakaha		-
COORDINATES A	35 <sup>0</sup> 18' N x	120 <sup>0</sup> 53' W		000	RDINATES	B 2:	0291	N x 158 <sup>0</sup> 13' 1	N
OWNER A	American	Telephone &	Telegr	aph Com	pany			CIRCUITS HEL	<b>D</b> 58h
OWNER B	Hawaiian 7	Felephone Co	mpany					CIRCUITS HEL	o 58 h
IRU HOLDERS	ATT/KDD	ATT/PLDT	ATT	/RCAGC	ITTWC	RCAGC	WUI	ITTWC/KDI	D RCAGC/K
CIRCUITS HELD	31	14	6		4	7	4	5	4
IRU HOLDERS	ITTWC/GN	ACR ITTWO	c/wui	А	TT/SEAG	COM			
CIRCUITS HELD	I	1			8				
DATE IN 1964	NATURE	oF E commer	icial	CABLE	2383	SINGLE	sin	gle TYPE	0.0

Ξ.

SERVICE 1964 SERVICE commercial MILES 2383	OR TWIN single	TYPE SD
CABLE DESCRIPTION unarmored polyethylene coaxial	CABLE SI	ZE 1.00" 25.4 mm
CABLE MANUFACTURERS Ocean Cable Co.Ltd. and Western Electr	cableship USED:	LONG LINES
REPEATER monocontainer flexible bidirectional	NUMBER OF REPEATERS	REPEATER SPACING 20 nm
REPEATER MANUFACTURER Western Electric Company		
NOMINAL TRANSMISSION BANDWIDTH $~384{+}384~\mathrm{kHz}$ transmission	FREQUENCIES 108-504	+660-1052 kHz
NUMBER OF EQUALIZERS 12 EQUALIZATION METHOD step	pping switch	
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 128 now 1-	42 CHANNEL SPACING, INITIAL	3 kHz now 3 kHz
TERMINAL EQUIPMENT MANUFACTURER Western Electric Company	CONSTRUCTION CONTRACTOR	ATT
POWER FEED MODE double end NOMINAL VOLTAGE 3400/34	400 SYSTEM CURRENT	0.370 A
TASI TYPE A CIRCUITS USED 37 CIRCUITS DERIVED 34	TOTAL CIRCUITS 71	DATE 1965

\*includes \$0.69M for TASI at San Luis Obispo

COST	\$ MILLION
CABLE	13.67
SUBMERGED ELECTRONICS	7.81
TERMINAL AND POWER FEED	2,42
TERMINAL STATIONS *	5.20
INSTALLATION	2.20
TOTAL	31,30
SYSTEM DESIGN LIFE	24 years

SEACAE	LE SYSTEM DA	ATA PROF		FERENCE 70
NAME	Guam-Philippines		ACRONYM	TPC 1
OTHER NAMES	Agana-Baler Trans Pac	ific Cable 1		
COUNTRY A	U.S.A. (Guam)	COUNTRY B	Philippine Re	public
TERMINUS A	Agana	TERMINUS B	Baler, Luzon	p.
LANDING POINT A	Tanguisson Point	LANDING POINT B	Baler	
COORDINATES A	$13033' \text{ N} \ge 144048' \text{ E}$	COORDINATES B	15046' N x 12	1034' E

OWNER 8 Philipp	pine Long Distance Telephone Company	CIRCUITS HELD	4+36h
	See separate page		

SERVICE 1964	SERVICE	commercial	CABLE MILES	1468	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DESCRIPTION	unarmore	ed polyethylene	coasial		1.13	CABLE SIZ	E 1,00" 25	, 4 mm
CABLE MANUFACTURER	Standard	Telephones & C	Cables Ltd	., West	tern Electri	c Co., an	d Ocean Ca	able Co
REPEATER DESCRIPTION	monocont	ainer flexible l	oidirection	al	NUMBER OF	76	REPEATER	20 nm
REPEATER MANUFACTU	RER Weste	rn Electric Cor	npany		CONSTRU CONTRAC		ATT	
NOMINAL TRANSMISSIO	N BANDWIDTH	384+384 kHz	TRANSMIS	SION FR			660-1052 k	Hz
NUMBER OF EQUALIZER	<b>s</b> 7	EQUALIZATION	METHOD	steppir	ng switch			
NOMINAL VOICE CIRCUI	T CAPACITY,	NON-TASI, INITIAL	. 128 n	ow 128	CHANNEL SPACING,	INITIAL 3	kHz now	3 kHz
TERMINAL EQUIPMENT M	ANUFACTURES	Western Ele	etric Com	pany	CABLESHI USED:	P LO	NG LINES	
OWER FEED MODE S	ingle end	NOMINAL VOL	TAGE 42	00	SYSTEM	CURRENT	0.370 A	
TASI TYPE - CIRCUIT	SUSED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	5 -	DATE	-

COST	\$ MILLION
CABLE	10,99
SUBMERGED ELECTRONICS	4,66
TERMINAL AND POWER FEED	4.66
TERMINAL STATIONS	1.40
INSTALLATION	1.60
TOTAL	23,31
SYSTEM DESIGN LIFE 2	4 years



### ALLOCATIONS

	RCAGC	PLDT	ATT	HTC	ITTWC 1	KDD	WUI	GMCR	PGC	1TA	Elbi	
ATT												
PLDT		4	36	12	3		8					
RCAGC		1							18			
ITTWC					2			8				
KDD						8		4	15			
PGC									6			
ETPI											)	
ITA	1		12	1	1		1					

1

1

SYSTEM

REFERENCE

# SEACABLE SYSTEM DATA PROFILE

OFFICIAL	Philippines - Viet Nam		NUMBER
NAME OTHER NAMES		Subsystem A	
COUNTRY A	Philippine Republic	COUNTRY B	Viet Nam
TERMINUS A	U.S. Naval Station, San M	iguel TERMINUS B	Nha Trang
LANDING POINT A	San Miguel	LANDING POINT B	Nha Trang Bay
COORDINATES A	$15^{0}18' \text{ N} \times 120^{0}0' \text{ E}$	COORDINATES B	12014' N x 109012' E

OWNER (when built) U.S. Government

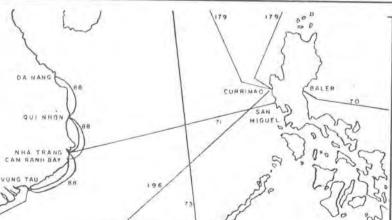
CIRCUITS HELD all

The Viet Nam end of the system was abandoned in 1975. In 1980 the U.S. Government Surplus Property Agency offered the remaining portion of the system for sale by international tender. The offering was acquired by Eastern Telecommunications

Philippines Incorporated.

DATE IN SERVICE 1964	NATURE OF SERVICE	military	CABLE	5.00	SINGLE OR TWIN	single	SYSTEM TYPE	Z60S
CABLE DESCRIPTION	armored po	lyethylene co	axial			CABLE S	IZE 0.62" 15	7 mm
CABLE MANUFACTURER	Simplex Wi	re and Cable	Company	C.	ABLESHIP USE	D: NEP	TUN(3)	
REPEATER DESCRIPTION	monocontai	ner flexible b	idirectio	nal	NUMBER OF		REPEATER	17 nm
REPEATER MANUFACTU	RER Felten	& Guilleaume	Carlswe	erk A(	; CONSTRU CONTRAC		United Sta seas Cable	
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSM	115510	N FREQUENCIES	24-2644	-312-552 kHz	5
NUMBER OF EQUALIZER	<b>s</b> 3	EQUALIZATIO	N METHOD	) con	puted and asse	mbled o	n board	
NOMINAL VOICE CIRCUI	T CAPACITY, N	ON-TASI, INITIA	L 60		CHANNEL SPACING,	INITIAL	4 kHz	
TERMINAL EQUIPMENT M	ANUFACTURER	Felten & G	uilleaum	e Fer	nmeldeanlagen	GmbH		
OWER FEED MODE C	louble end	NOMINAL VO	LTAGE	3000	SYSTEM	CURRENT	0,426 A	
TASI TYPE - CIRCUIT	IS USED -	CIRCUITS DI	RIVED	-h	TOTAL CIRCUIT	<b>S</b> =	DATE	

COST	\$ MILLION	5
CABLE	2,5	1
SUBMERGED ELECTRONICS	1.8	JONAN AD
TERMINAL AND POWER FEED	. 8	
TERMINAL STATIONS	1.1	QUI NHON
INSTALLATION	1.8	NHA TRANG
TOTAL	8.0	VUNG TAU
SYSTEM DESIGN LIFE	20 years	A



SEACAB	LE SYSTEM D	ATA PROFI	LE	REFERENCE 72
NAME	Florida-St. Thomas No. 1		ACRONYM	ST T 1
OTHER NAMES	Vero Beach-Magens Bay			
COUNTRY A	U.S.A.	COUNTRY B	U.S.A. (1	/irgin Islands)
TERMINUS A	Vero Beach, Florida	TERMINUS B	Magens B	ay, St. Thomas
LANDING POINT A	Vero Beach	LANDING POINT B	Magens B	ay
COORDINATES A	27°38' N x 80°21' W	COORDINATES B	18022' N	∝ 64°56' W

SYSTEM

OWNER A	America	an Telephon	ie and Tel	egraph Co	ompany	7			CIRCUITS	HELD	82 h
OWNER B	ITT Con	munication	ns, 1nc\	irgin Isla	unds				CIRCUITS	HELD	82 h
IRU HOLDERS	CANTV	with ATT,	RCAGC,	ITTWC,	WUI;	ITTCVI	with	WUI			
CIRCUITS HELD		41	1	1	1		3				
IRU HOLDERS	WUI	JITL	RCAG	GC		OWNE	RВ	ĪT	TTCVI	6 h	
CIRCUITS HELD	1	2	4			OWNE	RC	11	TWC	6 h	

DATE IN SERVICE	1964	SERVICE	commercial	CABLE	1179	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DES	CRIPTION	unarmored [	polyethylene co	axial			CABLE SIZ	E 1.00" 25	. 4 mm
CABLE MAN	UFACTURER	Western Ele	ectric Co., Sta	ndard T	elephone	es & Cables	Ltd., & O	cean Cable	Co.
REPEATER	ON	monocontair	ner flexible bid	irection	al	NUMBER OF	61	REPEATER	20 nm
REPEATER	MANUFACTU	RER Wester	n Electric Con	ipany	CABLES	SHIP USED:	LONG L	INES	
NOMINAL T	RANSMISSIC	N BANDWIDTH	384+384 kHz	TRANSM	ISSION F	REQUENCIES	108-504	+660-1052	kHz
NUMBER O	FEQUALIZE	rs 5	EQUALIZATION	METHOD	step	ping switch			
NOMINAL	OICE CIRCU	JIT CAPACITY, N	ION-TASI, INITIAL	128	now 147	CHANNEL SPACING,	INITIAL	3 kHz nov	3 kHz
TERMINAL	EQUIPMENT	MANUFACTURER	Western Elec	ctric Co	mpany	CONSTR	UCTION ACTOR	ATT	
POWER FE	ED MODE	single end	NOMINAL VOL	TAGE	3360	SYSTEM	CURRENT	0.370	А
TASI TYPE	- CIRCU	ITS USED -	CIRCUITS DE	RIVED	- 1	OTAL CIRCUIT	S -	DATE	-

COST	\$ MILLION
CABLE	8,85
SUBMERGED ELECTRONICS	3,95
TERMINAL AND POWER FEED	2.16
TERMINAL STATIONS	0.94
INSTALLATION	1.00
TOTAL	16,90
SYSTEM DESIGN LIFE	24 years

RETIRED 1983 SYSTEM REFERENCE 73 A

OFFICIAL NAME OTHER

NAMES

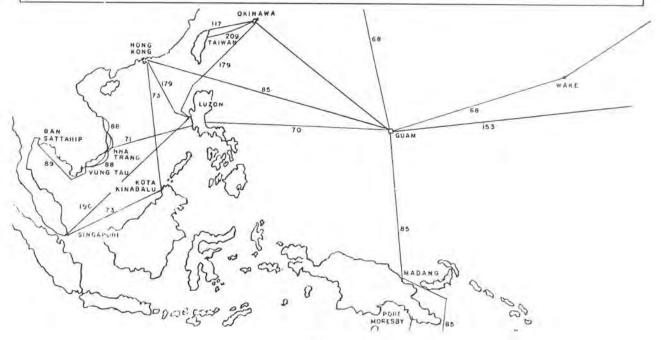
Southeast Asia Communications Cable (Singapore-Guam) ACRONYM SEACOM

COUNTRY A	Republic of Singapore	COUNTRY B	Malaysia
TERMINUS A	Katong	TERMINUS B	Kota Kinabalu, Sabah
LANDING POINT A	East Coast Park	LANDING POINT B	Kota Kinabalu
COORDINATES A	1 <sup>0</sup> 13' N x 103 <sup>0</sup> 53' E	COORDINATES B	5 <sup>0</sup> 58' N × 116 <sup>0</sup> 8' E
COUNTRY C	Hong Kong	COUNTRY D	U.S.A. (Guam)
TERMINUS C	Deep Water Bay	TERMINUS D	Tumon Bay
LANDING POINT C	Deep Water Bay	LANDING POINT D	Tumon Bay
COORDINATES C	22 <sup>°</sup> 28' N x 114 <sup>°</sup> 6' E	COORDINATES D	13 <sup>0</sup> 31' N x 144 <sup>0</sup> 48' F

COUNTRY E	COUNTRY F	
TERMINUS E	TERMINUS F	
LANDING POINT E	LANDING POINT F	
COORDINATES E	COORDINATES F	

CABLE AB	867	вс	1102	C D	2111			
DATE IN SERVICE	1965	N ATURE SERVIC		commercia	al	SINGLE OR TWIN	single	SYSTEM N MK VII
CABLE DES	CRIPTION	unarmo	red po	lyethylene	coaxial		CABLE	SIZE 0. 99" 25.1 mm

CABLE MANUFACTURER Submarine Cables Limited and Standard Telephones & Cables Limited





13	A
continued	

OWNERS	*O.T.	C.A.,	Adm. of Te	el. (M), Telcor	n. Auth, (S), C. &W., C	.O.T.C., N.Z.P.O
CIRCUITS HELD						
IRU HOLDERS	ATT:	A-C	C-D	KDD: A-C	C-D	
CIRCUITS HELD		8 h	30 h	3 + 13/22	14	
LESSEES	none					
CIRCUITS LEASED	-					
REPEATER DESCRIPT	רדו אסו	onocont	ainer infle:	xible bidirecti	onal	REPEATER SPACING 26 mm
NUMBER OF A B 4	43 В	c 46	C D 8	34		
REPEATER MANUFAC	TURER St	andard	Telephones	& Cables Ltd	, and Submarine Cable	s Ltd.
NUMBER OF A B	3	вс 4	C D	6		
EQUALIZERS			1.11.1.1			
EQUALIZERS	HOD ad	justed a	on board			
		5		l Telephones &	Cables Limited and A	EI Limited
EQUALIZATION MET	NT MANUF	ACTURER	Standard c double	cp double	Cables Limited and A	EI Limited
EQUALIZATION MET	NT MANUF	ACTURER ble B	Standaro c double end		Cables Limited and A	EI Limited System Current 0.415 /
EQUALIZATION MET TERMINAL EQUIPME POWER FEED MODE	NT MANUF A B dou end 2200/24	ACTURER ble B 200 2	Standaro c double end	c D double end 4200/4200	Cables Limited and A	SYSTEM CURRENT 0.415 /
EQUALIZATION MET TERMINAL EQUIPME POWER FEED MODE NOMINAL VOLTAGE	NT MANUF A B dou end 2200/21	ACTURER ble B 200 2 IDTH 24	Standard c double end 300/2300 40+240 kHz	CD double end 4200/4200 TRAN		SYSTEM CURRENT 0.415 / 300+360-608 kHz
EQUALIZATION MET TERMINAL EQUIPME POWER FEED MODE NOMINAL VOLTAGE NOMINAL TRANSMISS	NT MANUF A B dou end 2200/22 ION BANDW UIT CAPACIT	acturer ble b 200 2 idth 24 y, non-tas	Standard c double end 300/2300 40+240 kHz i, initial 80	CD double end 4200/4200 TRAN now 82	SMISSION FREQUENCIES 60-	SYSTEM CURRENT 0.415 / 300+360-608 kHz

CONSTRUCTION CONTRACTOR Cable & Wireless Limited

COST	\$ MILLION
CABLE	19
SUBMERGED ELECTRONICS	11
TERMINAL AND POWER FEED	3
TERMINAL STATIONS	3
INSTALLATION	3
TOTAL	39
SYSTEM DESIGN LIFE	20 years

CABLESHIPS USED: MERCURY, MONARCH(4) CABLE ENTERPRISE RECORDER(3)

\* Overseas Telecommunications Commission, Australia Administration of Telecommunications, Malaysia Telecommunications Authority of Singapore Cable & Wireless Limited Canadian Overseas Telecommunications Corporation (now Teleglobe Canada) New Zealand Post Office

SEACOM

NAMES

OFFICIAL NAME Southeast Asia Communications Cable (Sydney - Guam) ACRONYM SEACOM

SISTEM REFERENCE NUMBER

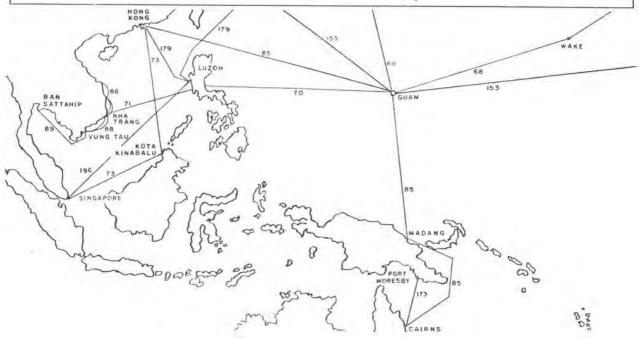
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COUNTRY A	Australia	COUNTRY B	Papua (Northeast New Guinea)
TERMINUS A	Cairns, Queensland	TERMINUS B	Madang
LANDING POINT 4	Cairns	LANDING POINT B	Madang
COORDINATES A	17°8'S x 145°29'E	COORDINATES B	$5^{0}7' \text{ S x } 146^{0}0' \text{ E}$
COUNTRY C	U.S.A. (Guam)	COUNTRY D	
TERMINUS C	Tumon Bay	TERMINUS D	
LANDING POINT C	Tumon Bay	LANDING POINT D	
COORDINATES C	$13^{0}31^{+}$ N x $144^{0}48^{+}$ E	COORDINATES D	
COUNTRY F		29.0342.040	

COUNTRY E	COUNTRY F	
TERMINUS E	TERMINUS F	
LANDING POINT E	LANDING POINT F	
COORDINATES E	COORDINATES F	

MILES AB	1614	вс 1391				
DATE IN SERVICE	1967	NATURE OF SERVICE	commercial	SINGLE OR TWIN	single	SYSTEM U MK I
CABLE DES	CRIPTION	unarmored	polyethylene coaxial		CABLE	SIZE 0.99" 25.1 mm

CABLE MANUFACTURER Submarine Cables Limited and Standard Telephones & Cables Ltd.





IRCUITS HELD          RU HOLDERS       ATT       ATT/OTC       KDD         CIRCUITS HELD       32       42       5         LESSEES       none	
CIRCUITS HELD 32 42 5  LESSEES none  CIRCUITS LEASED -  REPEATER DESCRIPTION monocontainer inflexible bidirectional REPEATER SPACING 17  NUMBER OF A B 98 B C 82  REPEATERS AB 98 B C 82  REPEATER MANUFACTURER Submarine Cables Ltd. and Standard Telephones & Cables Ltd.  NUMBER OF A B 9 B C 8	
LESSEES none CIRCUITS LEASED - REPEATER DESCRIPTION monocontainer inflexible bidirectional REPEATER SPACING 17 NUMBER OF A B 98 B C 82 REPEATERS AB 98 B C 82 REPEATERS Submarine Cables Ltd. and Standard Telephones & Cables Ltd. NUMBER OF A B 9 B C 8	
CIRCUITS LEASED - REPEATER DESCRIPTION monocontainer inflexible bidirectional SPACING 17 NUMBER OF A B 98 B C 82 REPEATERS AB 98 B C 82 REPEATER MANUFACTURER Submarine Cables Ltd. and Standard Telephones & Cables Ltd. NUMBER OF A B 9 B C 8	
REPEATER DESCRIPTION MONOCONTAINER INflexible bidirectional REPEATER NUMBER OF A B 98 B C 82 REPEATERS A B 98 B C 82 REPEATER MANUFACTURER Submarine Cables Ltd. and Standard Telephones & Cables Ltd.	
REPEATER DESCRIPTION monocontainer inflexible bidirectional SPACING 17 NUMBER OF A B 98 B C 82 REPEATERS A B 98 B C 82 REPEATER MANUFACTURER Submarine Cables Ltd. and Standard Telephones & Cables Ltd.	
REPEATERS AB 98 BC 32 REPEATER MANUFACTURER Submarine Cables Ltd. and Standard Telephones & Cables Ltd.	7 nm
NUMBER OF A B Q B C 8	
AB 9 BL 8	
EQUALIZATION METHOD adjusted on board	
TERMINAL EQUIPMENT MANUFACTURER Standard Telephones & Cables Limited	
POWER FEED MODE AB double BC double end	
NOMINAL VOLTAGE 5200/5200 4400/4400 SYSTEM CURRENT 0.4	15 A
NOMINAL TRANSMISSION BANDWIDTH $492+492 \text{ kHz}$ TRANSMISSION FREQUENCIES $60-552 + 672-1164$ , $554-572 + 1166-1184$	and 4
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 160 NOW 166 CHANNEL INITIAL 3 kHz NOW 3 kHz	
TASI TYPE B 38 CIRCUITS DERIVED 37 TOTAL CIRCUITS 14748 DATE APPLIED 1975	

CONSTRUCTION CONTRACTOR Cable & Wireless Limited USED: MONARCH (4)

\*\*This is pro-rata. A Vancouver-Sydney TASI B uses 33 COM-PAC bearers plus 38 SEACOM-TPC 2 - HAW 3 bearers to supply 274 inlets. Of these, 33/71 x 274=127 may be ascribed to COMPAC, which thus carries 82-33=49 hard-wire circuits, 33 TASI-and-through circuits, and 94 TASI-only circuits, for a grand total of 176 circuits.

COST	\$ MILLION
CABLE	14.7
SUBMERGED ELECTRONICS	9.3
TERMINAL AND POWER FEED	0.8
TERMINAL STATIONS	1.2
INSTALLATION	1.8
TOTAL	27,8
SYSTEM DESIGN LIFE	20 years

\*\*\* This TASI is in fact Sydney-Guam. This cable thus carries. 166-38=91 hard-wire circuits, 147 TASI B circuits (of which 109 are TASI-only), and 74 TASI A circuits (of which 37 are TASI-only), for a grand total of 312 circuits.

\*Overseas Telecommunications Commission (Australia)

Administration of Telecommunications, Malaysia

Administration of Telecommunications, Singapore

Cable & Wireless Limited

Canadian Overseas Telecommunications Corporation, Now Teleglobe Canada

New Zealand Post Office

### RETIRED 1983

# SEACABLE SYSTEM DATA PROFILE

SYSTEM REFERENCE 74

			NUMBER
NAME	Winterton-Maade		
OTHER NAMES	Winterton-Fan¢	Maade-Winterton No. 1 Ma	aade-Winterton A
COUNTRY A	England	COUNTRY B	Denmark
TERMINUS A	Winterton, Norfolk	TERMINUS B	Maade
LANDING POINT A	Winterton	LANDING POINT E	8 Fanø
COORDINATES A	$52^{0}43' \text{ N} \ge 1^{0}41' \text{ E}$	COORDINATES B	55°22' N x 8°25' E

OWNER A	British Post Office	CIRCUITS HELD 120h
OWNER B	Administration of Posts and Telegraphs	CIRCUITS HELD 120h
IRU HOLDERS	none	
CIRCUITS HELD	2	
LESSEES	nòne	
CIRCUITS LEASED	-	

SERVICE	1964	NATURE OF SERVICE	commercial	CABLE	298	SINGLE OR TWIN	single	SYSTEM TYPE	Q
CABLE DES	CRIPTION	armored po	olyethylene coa	axial		1.1	CABLE SIZ	E 0.62" 15	.7 mm
CABLE MAN	UFACTURER	Standard T	elephones & Ca	ables Lim	ited	CABLESHIP: USED:		ALERT (4) TER FABEI	R (2)
REPEATER DESCRIPTIO	N	monocontai	ner inflexible	bidirectio	nal	NUMBER OF	24	REPEATER	
REPEATER	MANUFACTU	RER Standa	rd Telephones	& Cables	Limite	d			
NOMINAL TE	RANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSMI	SSION F	REQUENCIES	60-552+	672-1164 k	Hz
NUMBER OF	EQUALIZER	rs 1	EQUALIZATION	METHOD	adjust	ed on board			
NOMINAL V	DICE CIRCU	IT CAPACITY, N	ON-TASI, INITIAL	. 120 r	iow 120	CHANNEL SPACING,	INITIAL 4	kHz nov	w 4 kHz
TERMINALE	QUIPMENT N	MANUFACTURER	Standard Te	lephones	& Cable	CONSTR CONTRA		STC	
OWER FEE	D MODE	double end	NOMINAL VOL	TAGE 110	0/1100	SYSTEM	CURRENT	0.415 A	
TASI TYPE	- CIRCUI	TS USED -	CIRCUITS DE	RIVED -	тс	TAL CIRCUIT	s -	DATE	

COST	\$ MILLION
CABLE	1.00
SUBMERGED ELECTRONICS	0.75
TERMINAL AND POWER FEED	0.25
TERMINAL STATIONS	0.03
INSTALLATION	9.10
TOTAL	2.13
SYSTEM DESIGN LIFE 2	0 years

SEACAB	LE SYSTEM	DATA PROFI	LE REFERENCE 75
NAME	Oahu Submarine Tie		
OTHER NAMES	Makaha-Hanauma Bay	OAHU TIE	
COUNTRY A	U.S.A. (Hawaii)	COUNTRY B	U.S.A. (Hawaii)
TERMINUS A	Makaha, Oahu	TERMINUS B	Hanauma Bay, Oahu
LANDING POINT A	Makaha	LANDING POINT B	Hanauma Bay
COORDINATES A	21°29' N x 158°13' W	COORDINATES B	21°16' N x 157°42' W

SYSTEM

Jointly owned by American Telephone & Telegraph Co. and Hawaiian Tel. Co. CIRCUITS HELD a11

IRU HOLDERS none

CIRCUITS HELD

LESSEES none

-

-

CIRCUITS LEASED

DATE IN SERVICE 1964	SERVICE	commercial	CABLE	49	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DESCRIPTION	unarmored	polyethylene co	oaxial		1.1.19	CABLE SIZ	E 1.00 <sup>11</sup> 25	. 4 mm
CABLE MANUFACTURER	Western Ele	ectric Company	y and Sta	ndard '	Telephones	& Cables	Ltd.	
REPEATER DESCRIPTION	monocontaii	ner flexible bio	lirectiona	1	NUMBER OF	2	REPEATER	20 nm
REPEATER MANUFACTU	RER Wester	n Electric Con	npany	CABLI	ESHIP USED	: LONG	G LINES	
NOMINAL TRANSMISSIO	N BANDWIDTH	384+384 kHz	TRANSMIS	SION FI	REQUENCIES	108-504	+660-1052	kHz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY, N	ON-TASI, INITIAL	96 i	10w 96	CHANNEL SPACING,	INITIAL	4 kHz nov	v 4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Western Ele	ctric Co,			STRUCTION	ATT	
POWER FEED MODE	single end	NOMINAL VOL	TAGE 1	0	SYSTEM	CURRENT	0,370	A
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DEP	RIVED -	тс	DTAL CIRCUIT	S -	DATE	4

COST	\$ MILLION
CABLE	0.96
SUBMERGED ELECTRONICS	0.10
TERMINAL AND POWER FEED	0,96
TERMINAL STATIONS	0.75
INSTALLATION	0.13
TOTAL	2.90
SYSTEM DESIGN LIFE	24 years

RETIRED 1979

76

SYSTEM

REFERENCE

# SEACABLE SYSTEM DATA PROFILE

			NUMBER
NAME	Covehithe-Katwijk No. 1		
OTHER NAMES	Covehithe-Katwijk A		
COUNTRY A	England	COUNTRY B	Netherlands
TERMINUS A	Covehithe, Suffolk	TERMINUS B	Oegstgeest, South Holland
LANDING POINT A	Covehithe	LANDING POINT B	Katwijk
COORDINATES A	52 <sup>0</sup> 2 <sup>2</sup> ′ N x 1 <sup>0</sup> 42′ E	COORDINATES B	52 <sup>0</sup> 12' N x 4 <sup>0</sup> 24' E

OWNER A	British Post Office	CIRCUITS HELD	120h
OWNER B	Administration of PTT	CIRCUITS HELD	120h
RU HOLDERS	none		
CIRCUITS HELD			
LESSEES	none		
CIRCUITS LEASED			

DATE IN 1964 SERVICE	NATURE OF SERVICE	commercial	CABLE	109	SINGLE OR TWIN	single	SYSTEM TYPE	Q
CABLE DESCRIPTION	armored po	olyethylene coa	xial			CABLE SI	ZE 0.62" 15	. 7 mm
CABLE MANUFACTURER	Standard T	elephones & Ca	bles Lin	nited		ESHIP ED:	ALERT(4)	
REPEATER DESCRIPTION	monocontai	ner inflexible	pidirectio	onal	NUMBER OF	8	REPEATER	11.9 nm
REPEATER MANUFACTU	RER Standa	rd Telephones	& Cables	Limite	d			
NOMINAL TRANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSMI	SSION F	REQUENCIES	60-552-	672-1164 kj	-Iz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	T CAPACITY, I	NON-TASI, INITIAL	120 fin	al 120	CHANNEL SPACING	INITIAL	4 kHz final	4 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	Standard Tel	ephones	& Cable	s Ltd.	NSTRUCT	SIC	â
POWER FEED MODE d	ouble end	NOMINAL VOL	TAGE 42	5/425	SYSTEM	CURRENT	0.415 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	τ	OTAL CIRCUIT	s -	DATE	2

COST	\$ MILLION	IGH 12. JOOSTMAHORN
CABLE	0.35	ABOROUGH 37 WEST TEASCHELLING
SUBMERGED ELECTRONICS	0,30	ASTER 214 75 KATWIJK
TERMINAL AND POWER FEED	0.05	L'OWESTOFT
TERMINAL STATIONS	~	ALDEBURGH
INSTALLATION	0.10	39 MIDDELKERKE
TOTAL	0,80	DUMPTON GAP 128 LAPANNE BROADSTAIRS VEURNE ST. MARGARETS 67 178
SYSTEM DESIGN LIFE	20 years	EASTBOURNE

SEACAB	LE SYSTEM	DATA PROF	LE	REFERENCE 77
NAME	Peninsula - Canary Islands	No.1	ACRONYM	PENCAN I
OTHER NAMES	San Fernando - Santa Cruz,	Tenerife		
COUNTRY A	Spain (mainland)	COUNTRY B	Spain (Ca	nary Islands)
TERMINUS A	San Fernando, Cádiz	TERMINUS B	Santa Cru	z de Tenerife
LANDING POINT A	San Fernando Beach	LANDING POINT B	San Juan	Beach
COORDINATES A	36°27' N x 6°15' W	COORDINATES B	28°27' N	x 16 <sup>0</sup> 15' W

SYSTEM

OWNER	Compañía Telefónica Nacional de España	CIRCUITS HELD all
IRU HOLDERS	South Atlantic Cable Company	
CIRCUITS HELD	16	
LESSEES	none	
CIRCUITS LEASED	-	

DATE IN SERVICE 1965	NATURE OF SERVICE	commercial	CABLE	749	SINGLE OR TWIN	single	SYSTEM TYPE	NA (U MkI
CABLE DESCRIPTION	unarmore	i polyethylene c	oaxial			CABLE S	ZE 0.99" 25	.1 mm
CABLE MANUFACTURE	R Standard	Celephones & Ca	ables Lim	ited C	ABLESHIP	USED:	JOHN W MA	ACKAY
REPEATER DESCRIPTION	monoconta	iner inflexible	bidirectic	nal	NUMBER OF	45	REPEATER	17 nm
REPEATER MANUFAC	TURER Stands	ard Telephones	& Cables	Limite	d			
NOMINAL TRANSMISS	ION BANDWIDT	4 492+492 kHz	TRANSMI	SSION F	REQUENCIES	60-552	2+672-1164 k	Hz
NUMBER OF EQUALIZ	ERS 3	EQUALIZATION	METHOD	adjust	ted on board			
NOMINAL VOICE CIR	CUIT CAPACITY,	NON-TASI, INITIA	L 160	now 160	CHANNEL SPACING,	INITIAL	3 kHz now	3 kHz
TERMINAL EQUIPMEN	T MANUFACTURE	R Standard Tel	ephones &	c Cable:	CONSTR CONTRA		STC	
POWER FEED MODE	double end	NOMINAL VO	LTAGE 25	00/250	0 SYSTEM	CURRENT	0.430 /	ł
TASI TYPE - CIRC	UITS USED -	CIRCUITS DE	RIVED -	1	OTAL CIRCUIT	5 -	DATE	-

COST Estimated	S MILLION
CABLE	3.5
SUBMERGED ELECTRONICS	2.2
TERMINAL AND POWER FEED	0.4
TERMINAL STATIONS	1.4
INSTALLATION	0,4
TOTAL	7.9
SYSTEM DESIGN LIFE	20 years

17 2107 - MIS			NUMBER -
NAME	Transatlantic No. 4		ACRONYM TAT-4
OTHER NAMES	Tuckerton-St. Hilaire de Riez		
COUNTRY A	U.S.A.	COUNTRY B	France
TERMINUS A	Tuckerton, N. J.	TERMINUS B	St. Hilaire de Riez, Vendee
LANDING POINT A	Beach Haven	LANDING POINT B	St. Hilaire de Riez
COORDINATES A	39 <sup>0</sup> 33' N x 74 <sup>0</sup> 15' W	COORDINATES B	46°44' N x 1°59' W

OWNER see following page

CIRCUITS HELD

CIRCUITS HELD

SYSTEM

REFERENCE 78

IRU HOLDERS see following page

CIRCUITS HELD

TOTAL

SYSTEM DESIGN LIFE

LESSEES none

CIRCUITS LEASED -

SERVICE 1965	SERVICE	commercial	MILES	3599	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DESCRIPTION	unarmored	polyethylene	coaxial			CABLE SIZ	E 1.00" 25	5.4 mm
CABLE MANUFACTURER	Western E	lectric Co., (	Câbles de	Lyon, 1	Norddeutsc	he Seekab	elwerke A	3
REPEATER DESCRIPTION		iner flexible b			NUMBER OF	1.92	REPEATER	20 nm
REPEATER MANUFACTUR	ER Wester	n Electric Co	mpany		ESHIPS ED: 1	LONG MARCEL		
NOMINAL TRANSMISSION	BANDWIDTH	384+384 kHz	TRANSMI	SSION FR	EQUENCIES	108-50	4+660-1052	2 kHz
NUMBER OF EQUALIZERS	<b>s</b> 18	EQUALIZATION	METHOD	steppin	g switch	-		
NOMINAL VOICE CIRCUI	T CAPACITY, NO	N-TASI, INITIAL	128	now 138	CHANNEL SPACING,	INITIAL 3	kHz now	3 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Western Elec	ctric Con	npany		STRUCTION	ATT	
POWER FEED MODE d	louble end	NOMINAL VOLT	AGE 510	00/5100	SYSTEM	CURRENT	0.370 A	
TASI TYPE *- CIRCUIT	SUSED -	CIRCUITS DEP	IVED -	тот	TAL CIRCUIT	s -	DATE -	h
*13 circuits of TAT-	4 are used on		ASI				AFFEILD	
COST	\$ MILLION		2º mg	1 52	LE	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	54 9	6
CABLE	29.77	+ h	3	N 1	63 20 3.		23 20	SAI
SUBMERGED ELECTRONIC	<b>s</b> 12.48	- 4	25	×	48	30	5325	136 22
TERMINAL AND POWER FEE	<b>D</b> 4.03	דוך	5 6	Path	3 41		- Sing	
TERMINAL STATIONS	2.11		Ser 5	144	52	167	140	mall .
NSTALLATION	2.01	-	K	118	fit		Yh .	- 0 3

50.40

24 years

### ALLOCATIONS

	ATT	FTCC	ITTWC	RCAGC	wui
France	19	3	8	6	4
DBP	25		11	7	4
ITALCABLE	4		1	1	1
Austria	2				
Switzerland	3.		2	4	2
Belgium	3		1	1	1
Netherlands	3			1	1
Norway	1			1	
Denmark	1		1		
Spain	1		.1		
Israel	ī		1		1
Sweden	1				1
Tunisia			1		

### 79 Unassigned

## SEACABLE SYSTEM DATA PROFILE

LE SYSTEM DA	ATA PROFI	LE SYSTEM REFERENCE 80
Hawaii-Johnston Island		
484-N Subsystem C Wet W	ash C	
U.S.A.	COUNTRY B	U.S.A.
Makua, Oahu, Hawaii	TERMINUS B	U.S.A.F.S. Johnston Is.
Makua	LANDING POINT B	Johnston Is.
21°32' N x 158°14' W	COORDINATES B	16°36' N x 169°26' W
	Hawaii-Johnston Island 484-N Subsystem C Wet W U.S.A. Makua, Oahu, Hawaii Makua	484-N Subsystem C     Wet Wash C       U.S.A.     COUNTRY B       Makua, Oahu, Hawaii     TERMINUS B       Makua     LANDING POINT B

OWNER	U.S. Government	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1966	NATURE OF SERVICE	military	MILES	769	SINGLE OR TWIN	single	SYSTEM TYPE	Z60S
CABLE DESCRIPTION	armored p	olyethylene c	oaxial		c	ABLE SIZ	E 0.62" 15	7 mm
CABLE MANUFACTURER	Simplex W	ire & Cable (	Company	CAB	LESHIP USE	D: NEF	TUN (3)	
REPEATER	monoconta	iner flexible	bidirectiona	1	NUMBER OF	45	REPEATER	17 nm
REPEATER MANUFACTU	RER Felte	n & Guilleaum	ne Carlswer	k Au	CONSTRU		United Stat seas Cable	
NOMINAL TRANSMISSIC	N BANDWIDTH	240+240 kH2	TRANSMIS	SION FR	REQUENCIES	24-264+3	12-552 kH:	\$
NUMBER OF EQUALIZE	RS 3	EQUALIZATIO	ON METHOD	design	ed and const	ructed or	n board	
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITI	AL 60 n	ow 60	CHANNEL SPACING,	INITIAL "	4 kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURE	F&G Fern	meldeanlage	en Gmb	н			
POWER FEED MODE	double end	NOMINAL VI	OLTAGE 300	00/3000	SYSTEM	CURRENT	0.426 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS D	DERIVED	то	TAL CIRCUITS	5 -	DATE APPLIED	2

COST	\$ MILLION
CABLE	3.88
SUBMERGED ELECTRONICS	2.65
TERMINAL AND POWER FEED	0.42
TERMINAL STATIONS	0.41
INSTALLATION	0.60
TOTAL	7.96
SYSTEM DESIGN LIFE	20 years

## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE

		NUMBER
Cannes-Ile Rousse		
France-Corsica		
France	COUNTRY B	France (Corsica)
Cannes, Alpes Maritimes	TERMINUS B	Ile Rousse
Cannes	LANDING POINT B	lle Rousse
43 <sup>0</sup> 32' N x 7 <sup>0</sup> 03' E	COORDINATES B	42°38' N x 8°54' E
	France-Corsica France Cannes, Alpes Maritimes Cannes	France-Corsica         France       COUNTRY B         Cannes, Alpes Maritimes       TERMINUS B         Cannes       LANDING POINT B

CIRCUITS HELD all

NUMBER

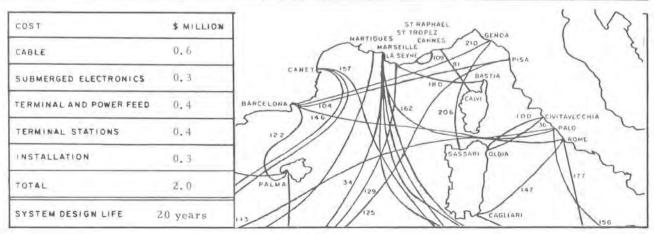
none IRU HOLDERS

CIRCUITS HELD

LESSEES none

-

DATE IN SERVICE 1966	SERVICE	commercial	CABLE	106	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DESCRIPTION	unarmored	polyethylene c	oaxial			CABLE SIZE	: 1.00" Z	5.4 mm
CABLE MANUFACTURER	Les Câbles	de Lyon		CABLE	SHIP USED	MARCE	L BAYARI	ó
REPEATER DESCRIPTION	monocontai	ner flexible bi	directiona	1	NUMBER OF	5	REPEATER	20 nm
REPEATER MANUFACTU	RER Compa	gnie Industriel	le de Télé	commu	nications	CIT		
NOMINAL TRANSMISSIO	N BANDWIDTH	384+384 kHz	TRANSMIS	SION F	REQUENCIES	108-554+	660-1052 k	Hz
NUMBER OF EQUALIZED	RS none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY, 1	ION-TASI, INITIAL	96	now 96	CHANNEL SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Cie. Industr	ielle de T	élécom	munications	CONSTR CONTR.	RUCTION ACTOR	CIT
OWER FEED MODE	single end	NOMINAL VOL	TAGE 4	00	SYSTEM	CURRENT	0.325 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	s -	DATE	-



# SEACABLE SYSTEM DATA PROFILE SYSTEM

			NUMBER
NAME	Tortola - Bermuda		
OTHER NAMES			
COUNTRY A	Tortola, B.V.I.	COUNTRY B	Bermuda, B.C.C.
TERMINUS A	Chalwell	TERMINUS B	The Flatts Village
LANDING POINT A	Brewers Bay	LANDING POINT B	Devonshire Bay
COORDINATES A	18 <sup>0</sup> 25' N x 64 <sup>0</sup> 37' W	COORDINATES B	32 <sup>0</sup> 18' N x 64 <sup>0</sup> 44' W

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OWNER Cable and Wireless Limited

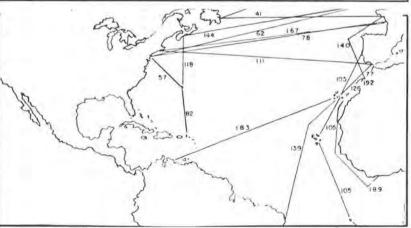
IRU HOLDERS

CIRCUITS HELD

LESSEES

DATE IN 1966 SERVICE	NATURE OF SERVICE	commercial	CABLE	902	SINGLE OR TWIN	single	SYSTEM TYPE N M&VII
CABLE DESCRIPTION	unarmored	polyethylene c	oaxial			CABLE SIZE	0.99" 25.1 mm
CABLE MANUFACTURER	Submarine	Cables Limited	CAE	LESHI	<sup>o</sup> USED:	MERCURY	
REPEATER DESCRIPTION	monoconta	iner inflexible b	oidirecti	onal	NUMBER OF	35	SPACING 26.3 nm
REPEATER MANUFACTU	RER Subma	rine Cables Ltd	. and St	andard	Telephones	& Cables 1	_td.
NOMINAL TRANSMISSIC	N BANDWIDTH	240+240 kHz	TRANSMI	SSION F	REQUENCIES	60-300+3	60-608 kHz
NUMBER OF EQUALIZE	RS 2.	EQUALIZATION	METHOD	adjus	ted on boar	d	
NOMINAL VOICE CIRCL	IT CAPACITY, P	NON-TASI, INITIAL	80	now 80	CHANNEL SPACING,	INITIAL 3	kHz now 3 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Associated E	lectrica	l Indust	ries Ltd.con	STRUCTION NTRACTOR	C&W
POWER FEED MODE	single end	NOMINAL VOLT	AGE 3	500	SYSTEM	CURRENT	0.415 A
TASI TYPE - CIRCU	TS USED -	CIRCUITS DER	IVED -	Ť	DTAL CIRCUIT	5 -	DATE -

COST	\$ MILLION
CABLE	4.22
SUBMERGED ELECTRONICS	1.71
TERMINAL AND POWER FEED	0.28
TERMINAL STATIONS	0.38
INSTALLATION	0,60
TOTAL	7.19
SYSTEM DESIGN LIFE 20	years



SEACAB	LE SYSTEM	DATA PROF	ILE SYSTEM REFERENCE 83
NAME	St. Thomas-Venezuela		
OTHER NAMES	Maiquetía-Magens Bay		
COUNTRY A	Venezuela	COUNTRY B	U.S.A. (Virgin Islands)
TERMINUS A	Maiquetía	TERMINUS B	Magens Bay, St. Thomas
LANDING POINT A	Punta de Mulatos, Varga	AS LANDING POINT B	Magens Bay
COORDINATES A	$10^{0}36' \text{ N} \ge 66^{0}55' \text{ W}$	COORDINATES B	18 <sup>0</sup> 22' N x 64 <sup>0</sup> 56' W

OWNER A	Compañía Anónima N	lacional de	Teléfo	onos de V	lenez	uela	CIRCUITS HELD	83h
OWNER 8	American Telephone	& Telegra	ph Con	npany			CIRCUITS HELD	55h
RU HOLDERS	CANTV with RCAGC,	ITTWC,	CTNE	, ITTCV	I,WUI	, CDT		
CIRCUITS HELD	5	3	2	12	2	4		

LESSEES none

DATE IN SERVICE 1966	NATURE OF SERVICE	commercial	CABLE	545	SINGLE OR TWIN	single	SYSTEM TYPE	N Mk VII
CABLE DESCRIPTION	unarmored	polyethylene o	coaxial			CABLE SIZ	E 0.99" 25	.1 mm
CABLE MANUFACTURER	Standard T	elephones & Ca	ables Ltd.	CAF	LESHIP US	ED: A	LERT(4)	
REPEATER DESCRIPTION	monocontai	iner inflexible	bidirectio	nal	NUMBER OF	22	REPEATER	26 nm
REPEATER MANUFACTU	RER Standa	rd Telephones	& Cables	L.td.				
NOMINAL TRANSMISSIC	N BANDWIDTH	240+240 kHz	TRANSMI	SSION F	REQUENCIES	60-300+	360-608 kH	z
NUMBER OF EQUALIZE	RS 1	EQUALIZATIO	N METHOD	adjus	ted on boar	d		_
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 80	now 83	CHANNEL SPACING	INITIAL	3 kHz no	w 3 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R Standard Te	lephones	& Cable	S CONSTR	UCTION ACTOR	ATT	
POWER FEED MODE	single end	NOMINAL VO	LTAGE 2	300	SYSTEM	CURRENT	0.415 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DI	ERIVED -	т	OTAL CIRCUI	·s -	DATE	÷

COST	\$ MILLION
CABLE	2.9
SUBMERGED ELECTRONICS	1.0
TERMINAL AND POWER FEED	1.5
TERMINAL STATIONS	Q.3
INSTALLATION	0,5
TOTAL	6.2
SYSTEM DESIGN LIFE	20 years

LE SYSTEM	DATA PROF	ILE REFERENCE 86
Kristiansand-Thisted 2		
Norway	COUNTRY B	Denmark
Kristiansand	TERMINUS B	Thisted, Thy
Kristiansand	LANDING POINT B	Klitmøller
58 <sup>0</sup> 10'N x 08 <sup>0</sup> 01'E	COORDINATES B	$57^{0}3' N \propto 8^{0}30' E$
	Kristiansand-Thisted Z Norway Kristiansand Kristiansand	Kristiansand-Thisted 2 Norway COUNTRY B Kristiansand TERMINUS B Kristiansand LANDING POINT B

OWNER A	Administration of Telecommunications	CIRCUITS HELD 480 h
OWNER B	Administration of Posts and Telegraphs	CIRCUITS HELD 480 h
IRU HOLDERS	none	
CIRCUITS HELD	-	
LESSEES	none	
CIRCUITS LEASED	-	

SERVICE 1967	SERVICE	commercial	MILES	80	SINGLE OR TWIN	single	SYSTEM TYPE	T Mk 1
CABLE DESCRIPTION	armored pol	lyethylene coax	kial		c	ABLE SIZE	0.935" 2	3.7 mm
CABLE MANUFACTURER	Submarine C	Cables Limited	ń. –	CABLES	SHIP USED	: MONA	RCH(4)	
REPEATER DESCRIPTION		er inflexible l transistorize	d		NUMBER OF	10	REPEATER	7.5 nm
REPEATER MANUFACTU	RER Submar	ine Cables Lin	nited					
NOMINAL TRANSMISSIO	N BANDWIDTH	1980+1980 kHz	TRANSMIS	SION FRE	QUENCIES	312-22924	2792-477	2 kHz
		and the first of the off its						
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD -	S				
					CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
NUMBER OF EQUALIZER NOMINAL VOICE CIRCUI TERMINAL EQUIPMENT N	IT CAPACITY, N		480 no	w 480	SPACING,	Construct	ion 50	
NOMINAL VOICE CIRCU	IT CAPACITY, N	ON-TASI, INITIAL	. 480 no Slectrical I	w 480	SPACING,	Construct Contracto	ion 50	

	/4
COST	\$ MILLION
CABLE	0.38
SUBMERSED ELECTRONICS	0.42
TERMINAL AND POWER FEED	0,39
TERMINAL STATIONS	0.40
INSTALLATION	0.10
TOTAL	1.69
SYSTEM DESIGN LIFE	20 years



SYSTEM

Cape Canaveral-Grand Turk



NAME Cape Canaveral-Grand Turk OTHER A. F. Eastern Test Range No. 2

OFFICIAL

ETI	FETR	AF	ACRONYM
4	FF	Aŀ	ACHONYM

#### COUNTRY A U.S.A. COUNTRY B Bahama Islands TERMINUS A U.S.A.F. Eastern Test Range TERMINUS B U.S.A.F. Facility, G.B.I. LANDING POINT A Cape Canaveral (Complex 19) LANDING POINT B U.S.A.F.F., G.B.I. 26°37'N x 78°19'W COORDINATES A 28°29'N x 80°35'W COORDINATES B COUNTRY C Turks / Caicos Islands COUNTRY D TERMINUS C U.S.A.F. Facility, Grand Turk TERMINUS D

LANDING POINT C U.S.A.F.F.Grand Turk LANDING POINT D COORDINATES C 21°26'N x 71°07'W COORDINATES D

COUNTRY E	COUNTRY F	
TERMINUS E	TERMINUS F	
LANDING POINT E	LANDING POINT F	
COORDINATES E	COORDINATES F	

DATE IN SERVICE	10/2	NATURE OF	1111-0	SINGLE	at and a	SYSTEM AB: 3M
SERVICE	1967	SERVICE	military	OR TWIN	single	TYPE BC: NMKV
CABLE DE	SCRIPTION	unarmored	l polyethylene coaxial		CABLE SIZE	1.00" 25.4 mm

JACKSONVILLE BEACH PE CANAVERAL 2 87 VERO G. 8.1 W. PAI 132 BNASSAU FLORIDA WE 82 GRAND TURK TORTOLA 63 ANTIGUA JUA 1387 ST. MAARTEN SANTO GRAND CAYMAN KINGSTON 131 CURAÇÃO

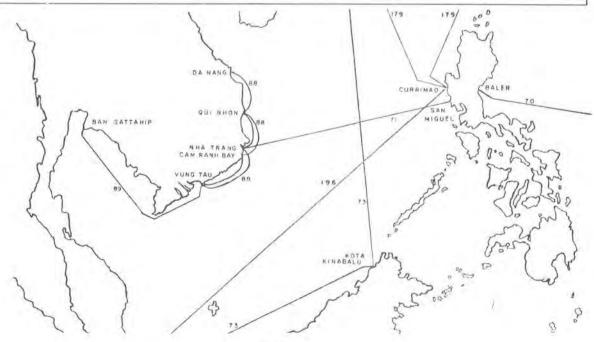
OWNER	United States Government
CIRCUITS HELD	all
IRU HOLDERS	none
CIRCUITS HELD	
LESSEES	none
CIRCUITS LEASED	
REPEATER DESCRIPTI	ON monocontainer inflexible bidirectional SPACING BC:30nn
NUMBER OF A B	21 вс 19
REPEATER MANUFAC	URER Standard Telephones & Cables Limited
NUMBER OF A B	none BC none
EQUALIZATION MET	HOD
TERMINAL EQUIPME	NT MANUFACTURER Standard Telephones & Cables Limited
POWER FEED MODE	AB double BC double end end
NOMINAL VOLTAGE	600/600 1000/1000 SYSTEM AB:0.502 CURRENT BC:0.415
NOMINAL TRANSMISSI	BD: 2404 240 KHz 60-3004312-352 KHz
NOMINAL VOICE CIRCI	$AB:270$ $_{ m now}$ $270$ channel $270$ channel $4~{ m kHz}$ now $4~{ m kHz}$ $60$ $60$ spacing, initial $4~{ m kHz}$ now $4~{ m kHz}$
TASI TYPE - CIRCI	UITS USED _ CIRCUITS DERIVED _ TOTAL CIRCUITS _ DATE APPLIED _
REMARKS The clos	system as originally built had a station at San Salvador. In 1970 this station was ed, the cable was withdrawn, and joined in the sea with the addition of 1 repeater.

CONSTRUCTION CONTRACTOR Standard Telephones & Cables Limited CABLESHIP JOHN W MACKAY

COST	\$ MILLION
CABLE	4.3
SUBMERGED ELECTRONICS	1.8
TERMINAL AND POWER FEED	0.7
TERMINAL STATIONS	0.6
INSTALLATION	0.6
TOTAL	8.0
SYSTEM DESIGN LIFE	20 years

## SEACABLE SYSTEM DATA PROFILE

DEFICIAL NAME	Viet Nam Coastal System					
OTHER NAMES	Project 439-L					
COUNTRY A	Viet Nam	COUNTRY B	Viet Nam			
TERMINUS A	Da Nang	TERM NUS B	Qui Nhon			
LANDING POINT A	Da Nang	LANDING POINT B	Qui Nhon			
EDORDINATES A	16 <sup>°</sup> 02'N x 108 <sup>°</sup> 16'E	COORDINATES B	$13^{\circ}44'N \times 109^{\circ}13'E$			
COUNTRY C	Viet Nam	COUNTRY D	Viet Nam			
TERMINUS C	Nha Trang	TERMINUS D	Cam Ranh Bay			
LANDING POINT C	Nha Trang	LANDING POINT D	Cam Ranh Bay			
COORDINATES C	12 <sup>°</sup> 14'N x 109 <sup>°</sup> 12'E	COORDINATES D	$11^{\circ}54'N \ge 109^{\circ}16'E$			
CQUNTRY E	Viet Nam	COUNTRY F				
TERMINUS E	Vung Tau	TERMIN S F				
LANDING POINT E	Vung Tau	LANDING POINT F				
COORDINATES E	10 <sup>0</sup> 20'N x 107 <sup>0</sup> 06'E	COORDINATES F				
CABLE AB ZOZ	вс 122 BD 141	CE 290	DE 206			
DATE IN 196 SERVICE	7 NATURE OF military SERVICE	SINGLE sing OR TWIN	le SYSTEM ZOOS			
CABLE DESCRIPTIO	N armored polyethylene coaxial		CABLE SIZE 0.62" 15.7 mm			



										88
WNER	United Stat	es Gov	/ernmen	it						continu
CIRCUITS HELD	a11									
RU HOLDERS	none									
CIRCUITS HELD										
LESSEES	none									
CIRCUITS LEASED										
REPEATER DESCRIPT	ION monoc	ontain	er flexil	ole bidi	rection	al			REPEATE	R IG 17 nm
NUMBER OF A B	12 вс	7	BD	8	CE	17	DE	12		
REPEATER MANUFAC	TURER Unite	d State	s Under	seas C	able Co	rporat	ion			
NUMBER OF A E	none BC	none	BD	none	CE	1	DE	none		
EQUALIZATION MET	ноо сотри	ted an	d assem	bled or	board					
TERMINAL EQUIPME	ENT MANUFACTU	RER	Felten &	Guille	aume F	ernme	ldeanlag	gen Gm	bH	
POWER FEED MODE	AB single end	ВC	single end	BD	single end	CE	single end	DE	single end	
NOMINAL VOLTAGE	1700		1200		1300		2200		SYSTEM 1700 CURRENT	0.426 A
NOMINAL TRANSMISS	ION BANDWIDTH	240+2	240 kHz		TRAN	SMISSION	FREQUE	NCIES 24	-264+312-55	2 kHz
NOMINAL VOICE CIRC	UIT CAPACITY, NON	TASI, IN	TIAL 60			CHAN	NEL ING, INITIA	4 k)	Hz	
TASI TYPE - CIRC	UITS USED -	CIP	CUITS DE	RIVED	-					4
REMARKS			(	CABLE	SHIPS (	JSED:	NEPT	UN (3),	OMEGA	

CONSTRUCTION CONTRACTOR United States Underseas Cable Corporation

COST	\$ MILLION
CABLE	3.8
SUBMERGED ELECTRONICS	2.5
TERMINAL AND POWER FEED	2.5
TERMINAL STATIONS	2.0
NSTALLATION	2.0
TOTAL	12.8
SYSTEM DESIGN LIFE	20 years

### SEACABLE SYSTEM DATA PROFILE

SEACAE	ILE STOLEM	DATA PROFI	LE REFERENCE 89
NAME	Viet Nam-Thailand		NOMBER
OTHER NAMES	439-L Link G		
COUNTRY A	Viet Nam	COUNTRY B	Thailand
TERMINUS A	Vung Tau	TERMINUS B	Ban Sattahip
LANDING POINT A	Vung Tau	LANDING POINT B	Ban Sattahip
COORDINATES A	$10^{\circ}20' \text{ N} \times 107^{\circ}51 \text{ E}$	COORDINATES B	12°20' N x 100°54' E

OWNER (when built) U.S. Government

CIRCUITS HELD all

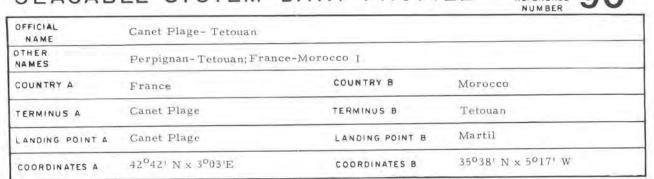
The VietNam end of this system was abandoned in 1975. In 1980 the U.S. Government Surplus

Property Office offered the remaining portion of the system for sale by international tender. The

system was acquired by a private group of investors.

SERVICE 1967	SERVICE	military	CABLE	607	SINGLE OR TWIN	single	SYSTEM TYPE	Z60S
CABLE DESCRIPTION	armored pol	lyethylene coa	sial			CABLE SIZ	ε 0.62" 15.	7 mm
CABLE MANUFACTURER	Simplex Wir	e & Cable Co	mpany	CABLE USED	D. C.	EPTUN (	3), OMEGA	1
REPEATER DESCRIPTION	monocontair	er flexible bi	directiona	1	NUMBER OF	37	REPEATER	17 nm
REPEATER MANUFACTU	RER U.S. UI	nderseas Cabl	e Corpora	ation	CONSTRU CONTRAC	C. C. C. C. C.	U.S. Under	*seas
NOMINAL TRANSMISSIO	N BANDWIDTH	240+240 kHz	TRANSMI	SSION FF	REQUENCIES	24-264+	312-552 kHz	
NUMBER OF EQUALIZER	<b>s</b> 3	EQUALIZATION	METHOD	compu	te and asse	mble on b	oard	
NOMINAL VOICE CIRCU	T CAPACITY, N	ON-TASI, INITIAL	60		CHANNEL SPACING,	INITIAL	4 kHz	
TERMINAL EQUIPMENT N	ANUFACTURER	Felten & Gu	illeaume	Fernme	ldeanlagen	GmbH		
POWER FEED MODE de	ouble end	NOMINAL VOL	TAGE 21	00/2100	SYSTEM	CURRENT	0.426 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	s –	DATE	

COST	\$ MILLION	DA NANG 08 CURRINAD
CABLE	2.5	D QUINHÔN SAN
SUBMERGED ELECTRONICS	1.6	
TERMINAL AND POWER FEED	0.8	NHA TRANG
TERMINAL STATIONS	0.5	196 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
NSTALLATION	0,5	
TOTAL	5.9	·*
SYSTEM DESIGN LIFE	20 years	KINABALU RA

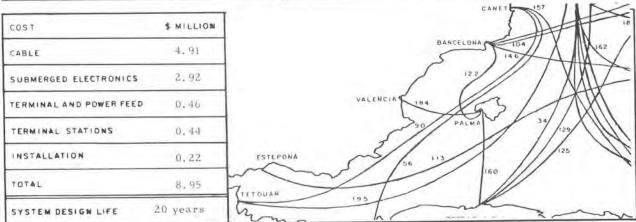


SYSTEM REFERENCE

Administration of Posts and Telecommunications OWNER A

CIRCUITS HELD CIRCUITS HELD Administration of PTT OWNER B IRU HOLDERS CIRCUITS HELD LESSEES CIRCUITS LEASED

DATE IN SERVICE 1967	NATURE OF SERVICE	commercial	MILES	758	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DESCRIPTION	unarmored	polyethylene o	coaxial			CABLE SIZ	E 1.00" 2	5.4 mm
CABLE MANUFACTURER	Les Cábles	de Lyon	CA	BLESHIF	USED: N	ARCEL B	AYARD	
REPEATER DESCRIPTION	monocontai	ner flexible bi	idirectio	nal	NUMBER OF	2.0	REPEATER SPACING	18.85 nn
REPEATER MANUFACTU	RER Cie. In	dustrielle de '	Telecom	municati	ons			
NOMINAL TRANSMISSIC	N BANDWIDTH	384+384 kH	. TRANSM	ISSION F	REQUENCIES	108-554	+660-1052	kHz
NUMBER OF EQUALIZE	RS 3	EQUALIZATIO	N METHOD	0				
NOMINAL VOICE CIRCL	JIT CAPACITY, N	ION-TASI, INITIA	L 96	now 9	6 SPACING	, INITIAL	4 kHz noy	4 kHz
TERMINAL EQUIPMENT	MÁNUFACTURER	CIT				NSTRUCTION INTRACTOR	CIT	
POWER FEED MODE	double end	NOMINAL VO	LTAGE	2200/220	0 SYSTEM	CURRENT	0.325	
TASI TYPE - CIRCU	ITS USED -	CIRCUITS D	ERIVED	- 1	OTAL CIRCU	TS -	DATE	-



SEACAB	LE SYSTEM DA	TA PROFI	LE SYSTEM PEFERENCE 91
NAME	Gairloch-Stornoway		
OTHER NAMES	Loch Gairloch-Loch Erisort		
COUNTRY A	United Kingdom, (Scotland)	COUNTRY B	United Kingdom
TERMINUS A	Gairloch, County Ross & Coma	artyTERMINUS B	Stornoway, Isle of Lewis
LANDING POINT A	Gairloch	LANDING POINT B	Stornoway
COORDINATES A	57 <sup>0</sup> 43' N x 5 <sup>0</sup> 42' W	COORDINATES B	58° 8' N x 6°24' W

OWNER	British Government	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

10/2	SERVICE g	overnmental	CABLE	48	SINGLE OR TWIN	single	SYSTEM TYPE	D
CABLE DESCRIPTION	armored po	lyethylene coa	ixial			CABLE SIZ	E 0,62"15	.7 mm
CABLE MANUFACTURER	Submarine (	Cables Limite	d					
REPEATER DESCRIPTION	monocontair	uer inflexible	bidirectio	nal	NUMBER OF	1	REPEATER SPACING	41
REPEATER MANUFACTUR	ER Submar	ine Cables Li	mited					
NOMINAL TRANSMISSION	BANDWIDTH	240+240 kHz	TRANSMIS	SION FR	REQUENCIES	60-300+	360-608 kH	Z
NUMBER OF EQUALIZERS	none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCUIT	CAPACITY, N	ON-TASI, INITIAL	60	now 60	CHANNEL SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT MA	NUFACTURER	General Elec	etric Co.	(Englan	(h)	STRUCTION	вро	
POWER FEED MODE sin	igle end	NOMINAL VOI	LTAGE 35	i0	SYSTEM	CURRENT	0.350 A	
TASI TYPE - CIRCUIT	SUSED -	CIRCUITS DE	RIVED -	тс	TAL CIRCUIT	's -	DATE	-

COST	\$ MILLION
CABLE	0.120
SUBMERGED ELECTRONICS	0.013
TERMINAL AND POWER FEED	0.013
TERMINAL STATIONS	0.024
INSTALLATION	0.020
TOTAL	0.190
SYSTEM DESIGN LIFE	20 years

# SEACABLE SYSTEM DATA PROFILE SYSTEM 92

OFFICIAL	the company and the set of the		NUMBER
NAME	Florida-St. Thomas No. 2		ACRONYM STT2
OTHER NAMES	Jacksonville Beach-Magens Ba	ау	
COUNTRY A	U.S.A.	COUNTRY B	U.S.A. (Virgin Islands)
TERMINUS A	Jacksonville Beach, Florida	TERMINUS B	Magens Bay, St. Thomas
LANDING POINT A	Jacksonville Beach	LANDING POINT B	Magens Bay
COORDINATES A	30 <sup>0</sup> 18' N x 81 <sup>0</sup> 24' W	COORDINATES B	18°22' N x 64°56' W

OWNER A

OWNER B \*

IRU HOLDERS

CIRCUITS HELD

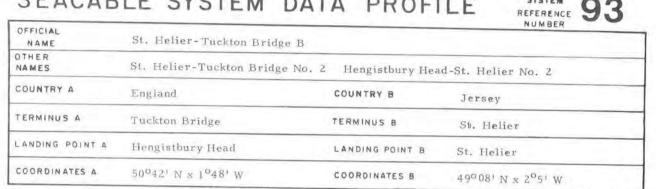
see following page

SERVICE 1968	NATURE OF SERVICE	commercial	CABLE	1298	SINGLE DR TWIN	single	SYSTEM	SF
CABLE DESCRIPTION	unarmore	ed polyethylene	coaxial		c	ABLE SIZE	E 1.5" 38	
CABLE MANUFACTURER		Telephones &	Cables L	mited	CABLESH	IP USED:	LONG L	NES
REPEATER DESCRIPTION		ainer flexible onal transistori	ized		NUMBER OF	140	REPEATER	10 nm
REPEATER MANUFACTUR		ern Electric C		_		_		
NOMINAL TRANSMISSIO	N BANDWIDTH	2160+2160 kH2	TRANSMI	SSION FR	EQUENCIES	554-2920	+3575-589	kHz
NUMBER OF EQUALIZER	<b>s</b> 6	EQUALIZATION	METHOD	switch	ed networks			
NOMINAL VOICE CIRCUI	T CAPACITY, N	ION-TASI, INITIAL	720 n	ow 720	CHANNEL SPACING, <sup>1</sup>	NITIAL 3	kHz now	3 kHz
								a server
TERMINAL EQUIPMENT M	ANUFACTURER	Western Ele	ctric Con	npany		TRUCTION RACTOR	ATT	- 1414
	ouble end	Western Ele				RACTOR	ATT 0,136 /	

COST	\$ MILLIOM
CABLE	16.67
UBMERGED ELECTRONICS	9.79
ERMINAL AND POWER FEED	3.97
ERMINAL STATIONS	1.36
NSTALLATION	1.01
OTAL	32.8
YSTEM DESIGN LIFE 24	years

### FLORIDA - ST. THOMAS No. 2

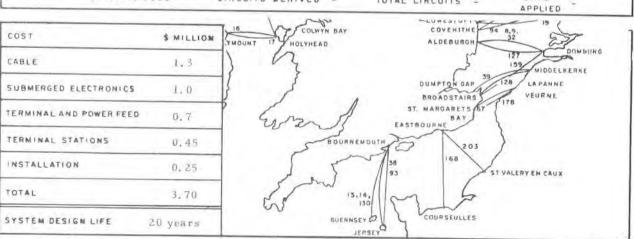
Allocation				Circuits
American Telephone & Telegraph Co.				4
IC		Compañía Dominicana de Teléfonos C por A	30	88
20		Compañía Anónima Nacional de Teléfonos de Venezuela	ŝţe.	13
0		ITT Communications, Inc., Virgin Islands		517
0		Netherlands Antilles Government	-25	33
10		Cable & Wireless Limited	*	38
an a		French Ministry of Posts and Telegraphs	¢.	8
34		Guyana Telecom. Corp.		3
n		Telco d'Haiti		15
Canadian Overseas Telecommunications C	orp. + +			ġ
Companía Telefónica Nacional de España	*	ITT Communications, Inc., Virgin Islands		4
10	*	Compañía Anónima Nacional de Teléfonos de Venezuela	ds	2
Compañia Dominicana de Teléfonos, C por A	*			4
ITT Communications, Inc. V. I.				5
ITT World Communications, Inc.				40
RCA Global Communications, Inc.				28
Western Union International, Inc.				30
TRT Telecommunications Corp.				_4
+IRU + now Teleglobe Canada		TOTAL CIRC	UITS	8 845



SYSTEM

OWNER	British Post Office	CIRCUITS HELD all
RU HOLDERS	none	
CIRCUITS HELD	none	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1968	SERVICE	commercial	CABLE	137	SINGLE	single	SYSTEM	T Mk I
CABLE DESCRIPTION	armored p	olyethylene coa	ixial			CABLE SIZ	E 0.935" 2	
CABLE MANUFACTURER	Submarine	Cables Limite	-1	BLESHIP SED:	S		POOLSTER	
REPEATER		iner inflexible al transistoriz	ed		NUMBER OF	10	REPEATER	7.5 nm
REPEATER MANUFACTUR	ER Subm	arine Cables L	imited					
NOMINAL TRANSMISSION		1980+1980 kH			EQUENCIES		+2792-4772	kHz
NOMINAL VOICE CIRCUI	T CAPACITY, I			10w 480	CHANNEL		4 kHz now	4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Associated E	Electrical	Industri	tes CON	STRUCTION	SCL	
OWER FEED MODE C	louble end	NOMINAL VOL	TAGE 22	5/225	SYSTEM	CURRENT	0.150 A	
ASI TYPE - CIRCUIT	SUSED -	CIRCUITS DEF	RIVED -	TOT	AL CIRCUIT	s -	DATE	



RETIRED 1983

SYSTEM

CIRCUITS HELD CIRCUITS HELD

### SEACABLE SYSTEM DATA PROFILE

SEACAB	LE SYSTEM DA	TA PROFI	LE REFERENCE 94
NAME	Covehithe-Katwijk No. 2		
OTHER NAMES	Covehithe-Katwijk B		
COUNTRY A	Netherlands	COUNTRY B	England
TERMINUS A	Degstgeest, South Holland	TERMINUS B	Covehithe, Suffolk
LANDING POINT A	Katwijk	LANDING POINT B	Covchithe
COORDINATES A	$52^{0}12^{4}$ N x $4^{0}24^{1}$ E	COORDINATES B	$52^{0}22^{1}$ N x $01^{0}42^{1}$ E

OWNER A Administration of FTT OWNER B British Post Office I R U HOLDERS Deutsche Bundespost 60

CIRCUITS HELD

LESSEES

DATE IN SERVICE 1968	NATURE OF SERVICE	commercial	CABLE	109	SINGLE OR TWIN	single	SYSTEM TYPE	T Mk I
CABLE DESCRIPTION	armored p	olyethylene co	axial			CABLE SIZ	E 0.935" 2	3.7 mm
CABLE MANUFACTURER	Submarine	Cables Limite	ed C.	ABLESH	IIP USED:	MONAR	СН (4)	
REPEATER DESCRIPTION		iner inflexible al transistori:			NUMBER OF	1.4	REPEATER	7.5 nm
REPEATER MANUFACTU	RER Subma	rine Cables L	imited					
NOMINAL TRANSMISSIC	N BANDWIDTH	1980+1980 kH	ZTRANSMIS	SION FR	EQUENCIES	312-229	2+2792-477	2 kHz
NUMBER OF EQUALIZED	RS none	EQUALIZATION	N METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY, P	ION-TASI, INITIA	L 480 no	w 480	CHANNEL SPACING	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Associated	Electrical	Industr	185	NSTRUCTION NTRACTOR	SCL	_
POWER FEED MODE (	louble end	NOMINAL VO	LTAGE 17	5/175	SYSTEM	CURRENT	0,150 A	
TASI TYPE - CIRCU	TS USED -	CIRCUITS DI	ERIVED -	то	TAL CIRCUI	TS -	DATE APPLIED	-
		average 1	10		2.9. *	10 1 11	LOOSTNAHORN	

COST	S MILLION
CABLE	0.45
SUBMERGED ELECTRONICS	0.50
TERMINAL AND POWER FEED	0.45
TERMINAL STATIONS	-
INSTALLATION	0.10
TOTAL	1,50
SYSTEM DESIGN LIFE	20 years

# SEACABLE SYSTEM DATA PROFILE SYSTEM BEFERENCE 95

NAME	Kristiansand-Scarborough		NUMBER UU
OTHER NAMES	Kristiansand-Scarborough A	Kristiansand-Cayt	on Bay
COUNTRY A	Norway	COUNTRY B	England
TERMINUS A	Kristiansand	TERMINUS B	Scarborough, Yorkshire
LANDING POINT A	Kristiansand	LANDING POINT B	Cayton Bay
COORDINATES A	58°10' <sub>N x</sub> 08°01' E	COORDINATES B	54°15' N x 0°22' W

CIRCUITS HELD 480h

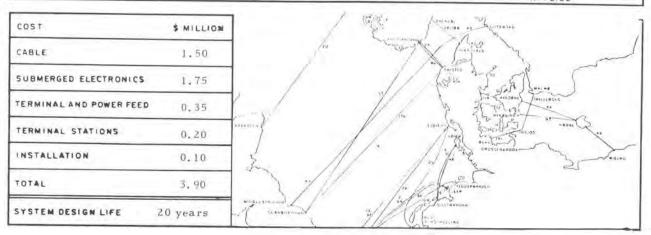
OWNER A	Administration of Telecommunications
OWNER B	British Post Office

IRU HOLDERS

CIRCUITS HELD

LESSEES

SERVICE 1968	NATURE OF SERVICE	commercial	CABLE	393	SINGLE OR TWIN	single	SYSTEM TYPE	I&X Mk 1
CABLE DESCRIPTION	armored p	olyethylene coa	xial			CABLE SIZ	E 0. 935" 2	23.7 mm
CABLE MANUFACTURER	Submarine	Cables Limited	d C.	ABLESH	HP USED:	MONA	ARCH(4)	
REPEATER DESCRIPTION		iner inflexible al transistorize	ed		NUMBER OF	53	REPEATER	7,5 nm
REPEATER MANUFACTU	RER Subma	rine Cables Lir	mited					
NOMINAL TRANSMISSIO	N BANDWIDTH	1980+1980 kMz	TRANSM	SSION F	REQUENCIES	312-229	92+2792-47	72 kHz
NUMBER OF EQUALIZER	s 4	EQUALIZATION	METHOD	adjus	ted on board			
NOMINAL VOICE CIRCU	IT CAPACITY, N	ION-TASI, INITIAL	480	now 480	SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT N	ANUFACTURER	Associated E	lectrica	l Indust	ries	STRUCTION	SCL	
OWER FEED MODE	louble end	NOMINAL VOLT	TAGE 69	0/690	SYSTEM	CURRENT	0.150 A	-
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DER	IVED	- T(	TAL CIRCUIT	5 -	DATE APPLIED	

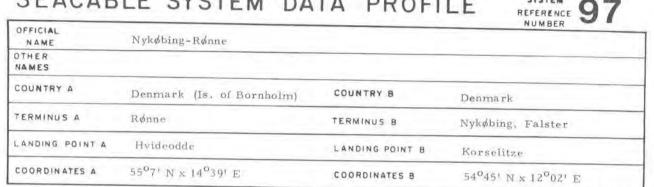


SEACAB	LE SYSTEM	DATA PROFI	LE REFERENCE 96
NAME	Marseille-Tel Aviv		ACRONYM MARTEL
OTHER NAMES	France-Israel		
COUNTRY A	France	COUNTRY B	Israel
TERMINUS A	Marseille	TERMINUS B	Tel Aviv
LANDING POINT A	Marseille	LANDING POINT B	Tel Aviv
COORDINATES A	43°16' N x 5°23' E	COORDINATES B	32°4' N x 34°46' E

OWNER	The D	nternation	nal Tele	commu	nicati	ions Co	ompany Lt	d.,	CIRCUITS HELD	256 h
EXCOFIN	(A, a join	nt enterpi	ise of F	rance	Càble	et Ra	dio and the	governm	ent of Israel	
RU HOLDERS	ATT	France	BPO	DBP	CH	Italy	Belgium	N1.	Israel	
CIRCUITS HELD	32 h	32 h	21 h	16 h	12 h	8 h	21/2 h	21/2h	130h	

DATE IN SERVICE 1968	NATURE OF	commercial	CABLE	1833	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DESCRIPTION	unarmored	polyethylene o	oaxial		(	CABLE SIZ	E 1.00" 25	. 4 mm
CABLE MANUFACTURER	Les Gâbles	de Lyon Alsa	cienne	CABL	ESHIP USEI	: MAR	CEL BAYA	RD
REPEATER	monocontai	iner flexible bi	direction	al	NUMBER OF	96	REPEATER	20 nm
REPEATER MANUFACTU	RER Compa	gnie Industrie	lle de Té	lécomm	unications			
NOMINAL TRANSMISSIC	N BANDWIDTH	384+384 kHz	TRANSM	SSION F	REQUENCIES	108-554-	+660-1052	dHz
NUMBER OF EQUALIZED	<b>RS</b> 9	EQUALIZATION	METHOD	ste	pping switch	1		
NOMINAL VOICE CIRCU	IT CAPACITY, I	NON-TASI, INITIAL	- 96	now 128	CHANNEL SPACING,	INITIAL	4 kHz now	3 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Cie. Industr	ielle de 7	félécom	municat.com	STRUCTION	EXCOFI	NA
POWER FEED MODE	double end	NOMINAL VOI	LTAGE 35	00/3500	SYSTEM	CURRENT	0,325 A	
TASI TYPE - CIRCU	TS USED -	CIRCUITS DE	RIVED -	TC	TAL CIRCUIT	5 -	DATE	4

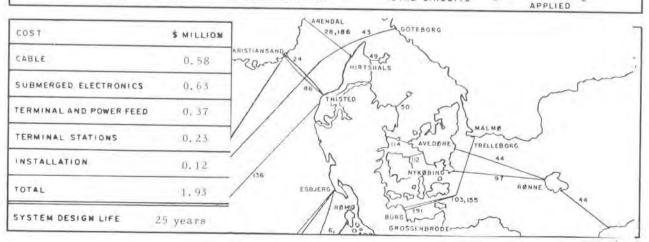
COST	\$ MILLION
CABLE	10
SUBMERGED ELECTRONICS	7
TERMINAL AND POWER FEED	ù.
TERMINAL STATIONS	1
INSTALLATION	1
TOTAL	20
SYSTEM DESIGN LIFE	20 years

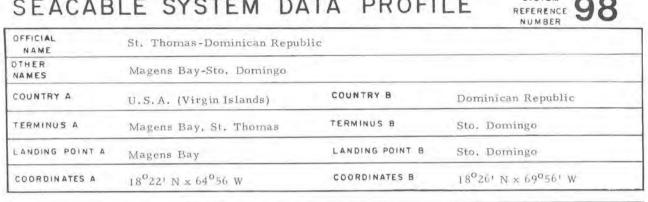


SYSTEM

OWNER	Administration of Posts and Telegraphs	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD	- C	
LESSEES	none	
CIRCUITS LEASED	1	

SERVICE 1968	SERVICE Comme	PCIA	MILES	103	SIN		single	SYSTEN	T Mk 1
CABLE DESCRIPTION	armored polyethy	ylene coaxi	al			c	ABLE SI	ZE 0.950"	
CABLE MANUFACTURER	Submarine Cable	s Limited	C	ABLES USED:		ALE	RT(4),	PETER F.	ABER(2)
REPEATER DESCRIPTION	monocontainer in bidirectional trar	11 Jul 2 (0.27 Prot 2 Prot			NUMBE		13	REPEATER	7.5 mm
REPEATER MANUFACTU	RER Submarine	Cables Lin	nited						
NOMINAL TRANSMISSIO	N BANDWIDTH 1980+	1980 kHzт	RANSMI	SION F	REQUENC	ES	312-229	2+2792-47	72 kHz
NUMBER OF EQUALIZER	s none EQUA	LIZATION ME	THOD	-					
NOMINAL VOICE CIRCUI	T CAPACITY, NON-TAS	SI, INITIAL 4	80 n	ow 480	CHAN	INEL ING,	NITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER Ass	ociated Ele	ctrica)	Indust	ries		TRUCTION	SCL	
POWER FEED MODE d	ouble end NOM	INAL VOLTAG	E 14(	/140	SYS	TEM C	URRENT	0.150 A	
TASI TYPE - CIRCUIT	SUSED - CIRC	UITS DERIV	E0 -	то	TAL CIR	CUITS	-	DATE	<u>.</u>





SYSTEM

OWNER A	American Telephon	ne & Teleg	raph Com	pany			CIRCUITS HELD	4+ 97h
OWNER B	Compañia Dominic	ana de Tel	éfonos, C	.por A.			CIRCUITS HELD	4± 97h
IRU HOLDERS	CDT with ITTWC,	ITTCVI,	RCAGC,	CANTV,	NAG,	WUI		
CIRCUITS HELD	4	12	1	4	2	1		

ATT with Telco d'Haiti

DATE IN SERVICE	1968	NATURE OF SERVICE	commercial	CABLE	386	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DES	RIPTION	unarmored	d polyethylene co	paxial			CABLE S	IZE 1.00" 25	.4 mm
CABLE MANU	FACTURER	Western E	Clectric Company		LESHIPS SED:	5 LONG	LINES	STANLEY .	ANGWIN
REPEATER	N	monoconta	iner flexible bid	irectiona	÷	NUMBER OF	20	REPEATER	20 nm
REPEATER #	ANUFACTU	RER West	ern Electric Cor	npany					
NOMINAL TR	ANSMISSIC	N BANDWIDTH	384+384 kHz	TRANSMIS	SION FRE	EQUENCIES	108-50	4+660-1052	kHz
NUMBER OF	EQUALIZE	RS 1	EQUALIZATION	METHOD	steppin	g switch			
NOMINAL VO	DICE CIRCU	UT CAPACITY,	NON-TASI, INITIAL	144 no	ow 144	CHANNEL	INITIAL	3 kHz nov	y 3 kHz
TERMINALE	QUIPMENT	MANUFACTURE	R Western Elec	ctric Com	npany	1.19 50	STRUCTIO	ATT	
POWER FEE	D MODE	single end	NOMINAL VOLT	AGE []	00	SYSTEM	CURREN	T 0.370 A	
TASI TYPE	- CIRCU	TS USED -	CIRCUITS DER	IVED -	тот	AL CIRCUI	rs -	DATE	-

COST	\$ MILLION
CABLE	4.4
SUBMERGED ELECTRONICS	0,8
TERMINAL AND POWER FEED	1.8
TERMINAL STATIONS	0.4
INSTALLATION	0,5
TOTAL	7,9
SYSTEM DESIGN LIFE	24 years

RETIRED 1979

SYSTEM REFERENCE

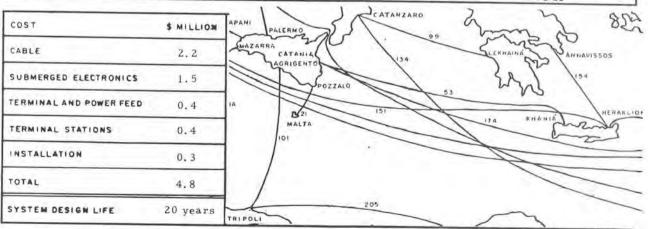
## SEACABLE SYSTEM DATA PROFILE

Catanzaro-Lekhainá			
Italy-Greece	MED 3		
Italy		COUNTRY B	Greece
Catanzaro		TERMINUS B	Lekhainá
Marina di Catanzaro		LANDING POINT B	Lekhainá
38 <sup>0</sup> 54' N x 16 <sup>0</sup> 38' E		COORDINATES B	37°58' N x 21°13' E
	Italy-Greece Italy Catanzaro Marina di Catanzaro	Italy-Greece MED 3 Italy Catanzaro Marina di Catanzaro	Italy-Greece     MED 3       Italy     COUNTRY B       Catanzaro     TERMINUS B       Marina di Catanzaro     LANDING POINT B

OWNER A Administration of Posts and Telecommunications CIRCUITS HELD 480 h OWNER B Hellenic Telecommunications Organization OTE

CIRCUITS HELD 480 h

DATE IN SERVICE 1969	NATURE OF SERVICE	commercial	CABLE	286	SINGLE OR TWIN	single	SYSTEM TYPE	Y
CABLE DESCRIPTION	unarmored	polyethylene c	oaxial			CABLE SIZ	ε 1.47" 37	. 3 mm
CABLE MANUFACTURER	Submarine	Cables Limite	d C	ABLESH	HIP USED:	ALER	T (4)	
REPEATER DESCRIPTION		iner inflexible al transistorize	ed		NUMBER OF	28	REPEATER	10 nm
REPEATER MANUFACTUR		rine Cables Lin						
NOMINAL TRANSMISSIO	N BANDWIDTH	198041980 kHz	TRANSMIS	SION FR	EQUENCIES 3	12-2292+	2792-4772	kHz
NUMBER OF EQUALIZER	s 1	EQUALIZATION	METHOD	adjust	ed on board	( ) ( )		
NOMINAL VOICE CIRCUI	T CAPACITY, N	ION-TASI, INITIAL	480		CHANNEL SPACING,	NITIAL 4	kHz	
TERMINAL EQUIPMENT M	ANUFACTURER	General Elec	ctric Com	pany (E	ngland) cons	TRUCTION	SCL	
POWER FEED MODE do	uble end	NOMINAL VOLT		0/400	100 C	URRENT	0.150 A	
TASI TYPE - CIRCUIT	SUSED -	CIRCUITS DER	IVED -	TOT	AL CIRCUITS		DATE	



OFFICIAL	Italy-Sardinia 2		NUMBER
OTHER	Civitavecchia-Golfo Aranci 2		
COUNTRY A	Italy (mainland)	COUNTRY B	Italy (Sardinia)
TERMINUS A	Civitavecchia	TERMINUS B	Olbia
LANDING POINT A	Civitavecchia	LANDING POINT B	Golfo Aranci
COORDINATES A	42°6' N x 11°48' E	COORDINATES B	41°0' N x 9°38' E

OWNER Ministero delle Poste e delle Telecommunicazione CIRCUIT

CIRCUITS HELD all

SYSTEM .

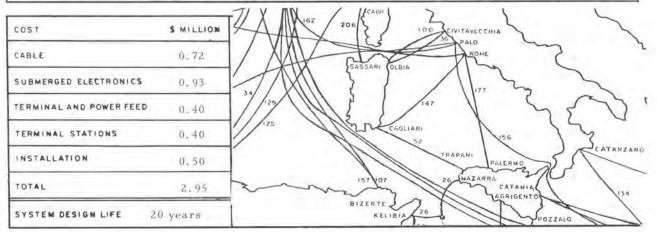
100

RU HOLDERS

CIRCUITS HELD

LESSEES

DATE IN SERVICE 1969	NATURE OF SERVICE	commercial	CABLE	135	SINGLE OR TWIN	single	SYSTEM TYPE	Y
CABLE DESCRIPTION	unarmore	d polyethylene	coaxial		c	ABLE SIZE	0.99" 25	. I mm
CABLE MANUFACTURER	Standard 1	Celephones & C	ables Lin	nited	CABLESHIP USED:	SA	LERNUM	
REPEATER DESCRIPTION		iner inflexible nal transistoriz	ed		NUMBER OF	20	REPEATER SPACING	7 nm
REPEATER MANUFACTU	RER Standa	ard Telephones	& Cables	a Limite	ed			
NOMINAL TRANSMISSIO	N BANDWIDTH	1980+1980 kH	ZTRANSMI	SSION F	REQUENCIES	312-2292	+2792-477	2 kHz
NUMBER OF EQUALIZER	<b>S</b> 1	EQUALIZATIO	N METHOD	adjust	ed on board			
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 480	now 480	CHANNEL SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT	ANUFACTURE	R Standard Tel	lephones	& Cable	- T 4.3	STRUCTION TRACTOR	STC	
POWER FEED MODE	double end	NOMINAL VO	LTAGE 4	00/400	SYSTEM	CURRENT	0.150 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DI	ERIVED -	Ť	OTAL CIRCUIT	5 -	DATE	



# SEACABLE SYSTEM DATA PROFILE SYSTEM 101

NAME	Agrigento-Tripoli		NUMBER
OTHER NAMES	Siciliy-Libya		
COUNTRY A	Italy	COUNTRY B	Libya
TERMINUS A	Agrigento, Sicily	TERMINUS B	Tripoli
LANDING POINT A	Agrigento	LANDING POINT B	Tripoli
COORDINATES A	37 <sup>0</sup> 19' N x 13 <sup>0</sup> 20' E	COORDINATES B	32 <sup>0</sup> 58' N x 13 <sup>0</sup> 13' E

 OWNER A
 Ministero delle Poste e delle Telecomunicazione
 CIRCUITS HELD
 120 h

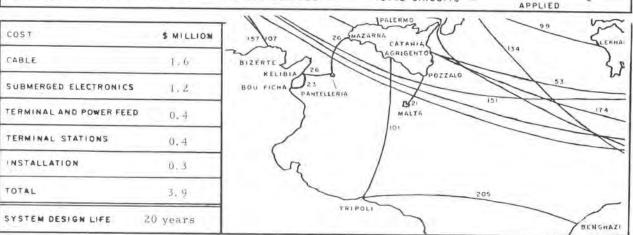
 OWNER B
 Ministry of Communications
 CIRCUITS HELD
 120 h

 I R U HOLDERS
 CIRCUITS HELD
 CIRCUITS HELD

LESSEES

CIRCUITS LEASED

DATE IN SERVICE 1969	SERVICE	commercial	MILES	298	SINGLE OR TWIN	single	SYSTEM TYPE	U Mk I
CABLE DESCRIPTION	unarmored	l polyethylene c	oaxial		c	CABLE SIZ	ZE 0.99"23	i. 1 mm
CABLE MANUFACTURER	Standard T	Celephones & Ca	ubles Lin	nited	CABLESHIF USED:	JOHN	W MACKA	
REPEATER DESCRIPTION	monoconta	iner inflexible	bidirectic	onal	NUMBER OF REPEATERS	24	REPEATER	17.1 nm
REPEATER MANUFACTU	RER Standa	rd Telephones	& Cables	Limit	ed			
NOMINAL TRANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSMI	SSION	FREQUENCIES	60-552+	672-1164 k	Hz
NUMBER OF EQUALIZER	IS 1	EQUALIZATION	METHOD	adju	sted on board	1		
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIAL	120 n	ow 120	SPACING,	INITIAL	4 kHz no	v 4 kHz
TERMINAL EQUIPMENT N	ANUFACTURER	Standard Tel	ephones	& Cabl	60 1 fc	TRUCTION	STC	
POWER FEED MODE ,	louble end	NOMINAL VOL	TAGE 150	0/150	O SYSTEM	CURRENT	0.415 A	_
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	1	TOTAL CIRCUITS	5 -	DATE	-



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SEACAB	LE SYSTEM	DATA PROFI	LE SYSTEM REFERENCE NUMBER
NAME	Japan Sea Cable		ACRONYM JASC
OTHER NAMES	Nakhodka - Naoetsu		
COUNTRY A	Japan	COUNTRY B	U.S.S.R.
TERMINUS A	Naoetsu, Niigata	TERMINUS B	Nakhodka, Maritime Territory
LANDING POINT A	Naoetsu	LANDING POINT B	Nakhodka
COORDINATES A	$37^{0}10^{\circ}N \times 138^{0}14^{+}E$	COORDINATES B	42°48' N x 132°49' E

SYSTEM

OWNER A	Kokusai Denshin Denwa Company Ltd.	CIRCUITS HELD	120h
OWNER B	The Great Northern Telegraph Co. Ltd. (Denmark)	CIRCUITS HELD	120h
RU HOLDERS	none		
CIRCUITS HELD	+ I		
LESSEES	none		
CIRCUITS LEASED			

DATE IN SERVICE 1969	NATURE OF SERVICE	commercial	CABLE	477	SINGLE OR TWIN	single	SYSTEM TYPE	Z1205
CABLE DESCRIPTION	unarmored	polyethylene c	oaxial			CABLE SIZE	1.00 <sup>11</sup> 2	5.4 mm
CABLE MANUFACTURER	Ocean Cabl	e Company Lto	1. (Japan)	CAB	LESHIP US	SED: KD	D MARU	
REPEATER DESCRIPTION		ner flexible al transistoriz	ed		NUMBER OF	28	REPEATER SPACING	17 nm
REPEATER MANUFACTU	RER United	States Unders	eas Cable	Corp.				
NOMINAL TRANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSMIS	SION FRE	QUENCIES	60-552+6	84-1176 k	Ηz
NUMBER OF EQUALIZER	2 2	EQUALIZATION	METHOD	comput	ed and ass	embled or	board	
				4				
NOMINAL VOICE CIRCU	IT CAPACITY, N	ION-TASI, INITIAL	. 120 r		CHANNEL	INITIAL 4		4 kHz
NOMINAL VOICE CIRCU TERMINAL EQUIPMENT I	MANUFACTURER	TEKADF-Fernmeldea	elten & Gu	now 120 villeaume	CHANNEL SPACING, CON	INITIAL 4 STRUCTION ITRACTOR		, 4 kHz
NOMINAL VOICE CIRCU TERMINAL EQUIPMENT I	MANUFACTURER	TEKADF-F	elten & Gu nlagen Gn	now 120 villeaume	CHANNEL SPACING, CON CON	STRUCTION	kHz nov	

COST	\$ MILLION
CABLE	2.4
SUBMERGED ELECTRONICS	1.8
TERMINAL AND POWER FEED	0,8
TERMINAL STATIONS	1.0
INSTALLATION	0.7
TOTAL	6.7
SYSTEM DESIGN LIFE	20 years

SEACAB	LE SYSTEM DA	TA PROFI	LE SYSTEM 103
NAME	Germany - Sweden 1		NUMBER
OTHER NAMES	G - S 1		
COUNTRY A	Federal Republic of Germany	COUNTRY B	Sweden
TERMINUS A	Burg, Fehmarn	TERMINUS B	Malmö
LANDING POINT A	Presen	LANDING POINT B	Fredshög
COORDINATES A	54°29' N x 11°15' E	COORDINATES B	55°23' N x 13°1' E

OWNER A	Deutsche Bundespost	CIRCUITS HELD 360h
OWNER B	Televerket	CIRCUITS HELD 240h
IRU HOLDERS	Telegrafstyret, Norway	
CIRCUITS HELD	120h	
LESSEES	nane	

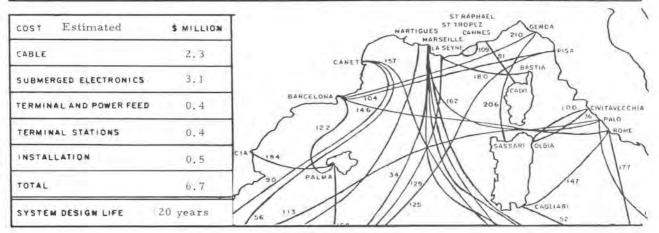
SERVICE 1969	NATURE OF SERVICE	commercial	CABLE	121	SINGLE OR TWIN	single	SYSTEM TYPE	Y
CABLE DESCRIPTION	armored p	olyethylene coa	ixial			CABLE SIZ	E 0.935"2	3.7 mm
CABLE MANUFACTURER	Standard ]	Telephones & C	ables Lin	nited	CABLESHI	USED: J	JOHN W M	ACKAY
REPEATER DESCRIPTION		iner inflexible al transistoriz	ed		NUMBER OF	15	REPEATER	7.5 nm
REPEATER MANUFACTU	RER Stan	dard Telephone	s & Cabl	es Lim	ited			
NOMINAL TRANSMISSIO	N BANDWIDTH	1980+1980 kH	ZTRANSMI	SSION	FREQUENCIES	312-2292-	+2792-4772	kHz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIAL	480 r	10w 480	SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	Standard Tele	phones &	Cable	s Itd. CON	STRUCTION	STC	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 1	90/190	SYSTEM	CURRENT	0.118 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	т	OTAL CIRCUIT	5 -	DATE	-

COST	\$ MILLION
CABLE	0.71
SUBMERGED ELECTRONICS	0.74
TERMINAL AND POWER FEED	0.39
TERMINAL STATIONS	0.41
INSTALLATION	0,25
TOTAL	2,50
SYSTEM DESIGN LIFE	20 years

SEACAB	LE SYSTEM	DATA PROF	LE	SYSTEM REFERENCE 104
NAME	Barcelona - Pisa		ACRONYM	BAPI
OTHER NAMES	Spain - Italy 1			
COUNTRY A	Spain	COUNTRY B	Italy	
TERMINUS A	Barcelona	TERMINUS B	Pisa	
LANDING POINT A	Barceloneta Beach	LANDING POINT B	Marina d	li Pisa
COORDINATES A	41°23' N x 2°12' E	COORDINATES B	430381 NJ	× 10 <sup>0</sup> 17" E

OWNER A	Compani	a Telefónica Na	cional de España	CIRCUITS HELD 480 h
OWNER B	Azienda	di Stato per i Se	rvizi Telefonici	CIRCUITS HELD 480 h
IRU HOLDERS	DBP	PTT Portugal	SACC	
CIRCUITS HELD	72	28	8	
LESSEES	Various			
CIRCUITS LEASED	12			

DATE IN SERVICE 1969	NATURE OF SERVICE	commercial	CABLE	430	SINGLE OR TWIN	single	SYSTEM TYPE	NG(Y)
CABLE DESCRIPTION	unarmore	d polyethylene	coaxial		c	ABLE SIZ	E 0.99" 25	.1 mm
CABLE MANUFACTURE	R Standard	Telephones & C	ables Lir	nited	CABLESHIP USED:	JOHN	W МАСКА	
REPEATER		ainer inflexible nal transistori:			NUMBER OF	59	REPEATER	7.5 nm
REPEATER MANUFAC	TURER Stand	ard Telephones	& Cable	s Limi	ted			
NOMINAL TRANSMISS		1980+1980 kH			FREQUENCIES	2	+2792-477	2 kHz
NOMINAL VOICE CIR	CUIT CAPACITY,	NON-TASI, INITIA	L 480 1	10w 48	0 CHANNEL SPACING,	INITIAL	kHz nov	4 kHz
TERMINAL EQUIPMEN	T MANUFACTURE	R Standard To	elephones	& Cal	ples i to.	TRUCTION	STC	
POWER FEED MODE	double end	NOMINAL VO	LTAGE 8	00/800	SYSTEM	CURRENT	0.150 A	
TASI TYPE - CIRC	UITS USED -	CIRCUITS DI	RIVED	1	TOTAL CIRCUIT	5 -	DATE	-



FOUNTS: 1	ortugal-South Africa		
COUNTRY & P			
	fortugal	COUNTRY B	Canary Is. (Spain)
TERMINUS A Se	esimbra	TERMINUS B	Santa Cruz de Tenerife
LANDING POINT A Se	esimbra	LANDING POINT B	Santa Cruz
FOORDINATES & 38	8 <sup>0</sup> 26' N x 9 <sup>0</sup> 6' W	COORDINATES B	28°27' N x 16°15' W
COUNTRY C C	ape Verde Is.	COUNTRY D	Ascension Is.
TERMINUS C B	aia da Mordeira	TERMINUS D	Georgetown
LANDING POINT C B	Baia da Mordeira	LANDING POINT D	Georgetown
COORDINATES C 16	6 <sup>0</sup> 41' N x 22°58' W	COORDINATES D	$7^{\circ}57' S \times 14^{\circ}25' W$
COUNTRY E R	epublic of South Africa	COUNTRY F	
TERMINUS E M	felkbosstrand	TERMINUS F	
LANDING POINT E M	felkbosstrand	LANDING POINT F	
COORDINATES E 33	3 <sup>0</sup> 43' S x 18 <sup>0</sup> 27' E	COORDINATES F	
CABLE AB 745	вс 862 ср. 1702	DE 2594	
DATE IN SERVICE 1969	NATURE OF SERVICE commercial	SINGLE OR TWIN single	SYSTEM 3 M
CABLE DESCRIPTION	unarmored polyethylene coaxia	al	CABLE 512E 1.00" 25.4 mm
CABLE MANUFACTURER	Standard Telephones & Cables	4) 52 167 78 140 111 103 125 139 139 105 105 105	

OWNERS	South A	tlantic	Cable C	Company I	Pty. Ltd.					
CIRCUITS HELD		16 -	+ 334 h							
IRU HOLDERS	UKPO	DBP	NL	France	Belgium	Italy	CPRM	CTNE	CH	C&W
CIRCUITS HELD	226 h	40h	10h	8h	5h	19h	6+13h	9h	1h	2 + 5 h
LESSEES										
CIRCUITS LEASED										
REPEATER DESCRIPT	non mo	noconta	iner in	flexible b	idirectiona	1			REPE SPA	ATER CING 9.8 nm
NUMBER OF A B	79 в с	92	CD	179	DE 277					
REPEATER MANUFAC	TURER Sta	ndard ]	Celepho	nes & Cal	oles Limite	ed				
NUMBER OF	6 B	c 8	C I	14	DE 2	2				
EQUALIZERS										

TERMINAL EQUIPMENT MANUFACTURER Standard Telephones & Cables Limited

 POWER FEED MODE
 A B double end
 DD double end
 DE double end

 NOMINAL VOLTAGE
 2350/2350
 8000/8000
 8000/8000
 SYSTEM CURRENT 0.502 A.

 NOMINAL TRANSMISSION BANDWIDTH
 1116+1116 kHz
 TRANSMISSION FREQUENCIES 312-1428+1848-2964 kHz.

NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 360 NOW 360 CHANNEL SPACING, INITIAL 3 KHz NOW 3 KHz

TASI TYPE - CIRCUITS USED - CIRCUITS DERIVED - TOTAL CIRCUITS - BATE APPLIED -

REMARKS CABLESHIPS USED: MONARCH (4), MERCURY, JOHN W MACKAY

CONSTRUCTION CONTRACTOR Standard Telephones & Cables Limited

COST	\$ MILLION
CABLE	21.6
SUBMERGED ELECTRONICS	33.5
TERMINAL AND POWER FEED	4.0
TERMINAL STATIONS	1.3
INSTALLATION	13.0
TOTAL	73.4
SYSTEM DESIGN LIFE	20 years

SEACAB	LE SYSTEM DA	TA PROFI	LE SYSTEM REFERENCE 106
NAME	Goonhilly-Sesimbra		Nomber
OTHER NAMES	U.K Portugal		
COUNTRY A	England	COUNTRY B	Portugal
TERMINUS A	Goonhilly Downs, Cornwall	TERMINUS B	Sesimbra
LANDING POINT A	Kennack Sands	LANDING POINT B	Sesimbra
COORDINATES A	50 <sup>0</sup> 01'N x 05 <sup>0</sup> 08'W	COORDINATES B	38°26' N x 9°6' W

OWNER A	British Post Office	
OWNER B	Companhia Portuguesa Rádio Marconi	
IRU HOLDERS	see accompanying page	
CIRCUITS HELD		
LESSEES		
CIRCUITS LEASED		

SERVICE 1969	NATURE OF SERVICE	commercial	CABLE	951	SINGLE OR TWIN	single	SYSTEM TYPE	Y
CABLE DESCRIPTION	unarmored	d polyethylene	coaxial			CABLE SIZ	E 0.99" 25	. 1 mm
CABLE MANUFACTURER	Standard J	Felephones & C	ables Lin	nited	CABLESHI USED:	P AL	ERT (4)	
REPEATER DESCRIPTION		uiner inflexible nal transistoriz			NUMBER OF	120	REPEATER	7.6 nm
REPEATER MANUFACTU	RER Standa	ard Telephones	& Cables	Limit	ed			
Sector and the sector of the sector								
NOMINAL TRANSMISSIO	N BANDWIDTH	1980+1980 kH	Z TRANSMI	SSION P	REQUENCIES	312-2292	+2792-4772	kHz
mark the state of the state		EQUALIZATIO		-	TREQUENCIES		+2792-4772	kHz
NOMINAL TRANSMISSIO NUMBER OF EQUALIZER NOMINAL VOICE CIRCU	<b>≀s</b> 10	EQUALIZATIO	N METHOD	-	ted on board			kHz 3 kHz
NUMBER OF EQUALIZER	RS 10	EQUALIZATION	N МЕТНОД L 480 г	adjust now 64(	ted on board CHANNEL D SPACING, es Itd CON			
NUMBER OF EQUALIZER NOMINAL VOICE CIRCU TERMINAL EQUIPMENT N	RS 10	EQUALIZATION	N METHOD L 480 1 lephones	adjust now 64(	ted on board CHANNEL SPACING, es Ltd. CON	INITIAL -	4 kHz now	

COST	\$ MILLION
CABLE	5.0
SUBMERGED ELECTRONICS	6.5
TERMINAL AND POWER FEED	3.3
TERMINAL STATIONS	0.1
INSTALLATION	0.4
TOTAL	15.3
SYSTEM DESIGN LIFE	20 years



#### ALLOCATIONS

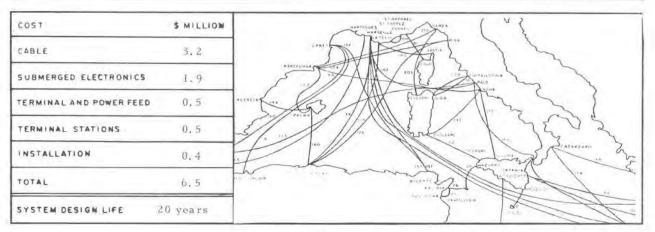
	ATT	ITTWC
BPO		10
Ireland	8	1
Denmark	7	
Finland	Z	ī
DBP	36	3
Norway	7	
Netherlands	9	3
Belgium	9	7
Sweden	15	1
U.S.S.R.		1

# SEACABLE SYSTEM DATA PROFILE SYSTEM 107

College Statistics			NO HOLA
NAME	Marseille-Bizerte		
OTHER NAMES	France - Tuni	sia l	
COUNTRY A	France	COUNTRY B	Tunisia
TERMINUS A	Marseille	TERMINUS B	Bizerte
LANDING POINT A	Marseille	LANDING POINT B	Bizerte
COORDINATES A	43 <sup>0</sup> 16' N x 5 <sup>0</sup> 23' E	COORDINATES B	37°26' N x 9°49' E

OWNER A	Administration of Posts and Telecommunications	CIRCUITS HELD	93h
OWNER B	Administration of PTT	CIRCUITS HELD	96h
IRU HOLDERS	ATT		
CIRCUITS HELD	3		
LESSEES			

DATE IN SERVICE 1969	NATURE OF SERVICE	commercial	CABLE	462	SINGLE OR TWIN	single	SYSTEM TYPE	SD
CABLE DESCRIPTION	unarmored	polyethylene	coaxial			CABLE SIZE	1.00" 25	5.4 mm
CABLE MANUFACTURER	Les Câbles	de Lyon Alsa	cienne		LESHIP SED:	MARCEL	BAYARD	
REPEATER DESCRIPTION	monocontai	ner flexible b	idirection	al	NUMBER OF	24	REPEATER	20 nm
REPEATER MANUFACTUR	RER Comp	agnie Industri	ielle de T	élécomu	nications			
NOMINAL TRANSMISSIO	N BANDWIDTH	384+384 kHz	TRANSMI	SSION FR	EQUENCIES	108-554+6	60-1052 k	Hz
NUMBER OF EQUALIZER	<b>s</b> 2	EQUALIZATION	METHOD	steppir	ng switch			
NOMINAL VOICE CIRCUI	T CAPACITY, N	ON-TASI, INITIAL	- 96	now 96	CHANNEL SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Compagnie Télécomuni		le de		STRUCTION	CIT	
POWER FEED MODE	double end	NOMINAL VOI	TAGE 15	00/1500	SYSTEM	CURRENT	0.325 A	
							DATE	



SEACAB	LE SYSTEM	DATA PROFI	LE SYSTEM REFERENCE 108
NAME	Mori-Muroran 1		
OTHER NAMES	Uchiura Bay 1		
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Mori, Hokkaido	TERMINUS B	Muroran, Hokkaido
LANDING POINT A	Mori	LANDING POINT B	Muroran
COORDINATES A	$42^{\circ}6' \text{ N} \ge 140^{\circ}35' \text{ E}$	COORDINATES B	42°18' N x 141°0' E

OWNER	Nippon Telegraph & Telephone Public Corporation	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED	÷	

SERVICE 1969	SERVICE CI	ommercial	CABLE	19	SINGLE OR TWIN	single	SYSTEM TYPE	CS-10M
CABLE DESCRIPTION	armored po	lyethylene coa	xial			CABLE SIZ	E 0.70118	. 0 mm
CABLE MANUFACTURER	Ocean Cable	e Company Lir	nited (Ja	C pan)	ABLESP USED:	TSU	GARU MA	RÜ
REPEATER DESCRIPTION	monocontair bidirectiona	ner flexible d transistoriza	ed		UMBER OF	6	REPEATER	3.3 nm
REPEATER MANUFACTU	RERS Nippon	Electric Com	pany and	Fujitsu L	td.			
	1.00000 co.	17.52 x 7 17 1 1 1 1 x 1						
					UENCIES	316-4188	+5712-9584	ł kHz
NOMINAL TRANSMISSIO	s none	EQUALIZATION	METHOD	×	CHANNEL			
	s none	EQUALIZATION	METHOD		CHANNEL		+5712-9584 kHz now	
NUMBER OF EQUALIZE	RS none	EQUALIZATION DN-TASI, INITIAL	<b>метнор</b> 900 г	- 10W 900	CHANNEL SPACING			
NUMBER OF EQUALIZER NOMINAL VOICE CIRCU TERMINAL EQUIPMENT P	RS none	EQUALIZATION DN-TASI, INITIAL	METHOD 900 n ric Co. a	- 10W 900	CHANNEL SPACING Ltd. co	INITIAL 4	kHz now	

COST N.A.* \$MILLION	HOKKAIDO
CABLE	
SUBMERGED ELECTRONICS	LOB MURORAN
TERMINAL AND POWER FEED	KIKONAL
TERMINAL STATIONS	14 Martin
INSTALLATION	J INDIA C
TOTAL *Prototype project	5 7
SYSTEM DESIGN LIFE 25 years	2 HONSHU 2

185

# SEACABLE SYSTEM DATA PROFILE SYSTEM 109

OFFICIAL St. Raphael - St. Tropez	(iow)den
OTHER NAMES	
COUNTRY A France	COUNTRY B France
TERMINUS A St. Raphael	TERMINUS B St. Tropez
LANDING POINT A St. Raphael	LANDING POINT B St. Tropez
COORDINATES A 43024'N x 6048'E	COORDINATES B 43°16'N x 6°39'E

OWNER Administration of Posts and Telecommunications

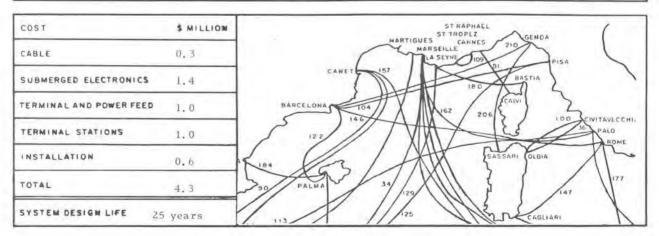
CIRCUITS HELD ALL

IRU HOLDERS DONE

CIRCUITS HELD -

LESSEES none

DATE IN 1970 SERVICE	SERVICE CC	mmercial	CABLE MILES	15		IGLE	single	SYSTEM TYPE	S 5
CABLE DESCRIPTION	unarmored po	olyethylene co	paxial			c	ABLE SIZ	E 1.00"	25.4mm
CABLE MANUFACTURER	Les Câbles	de Lyon	CABL	ESHII	USED:	MA	RCEL BA	AYARD	
REPEATER DESCRIPTION Monoc	ontainer flexi	ble bidirectio	nal trans	sistor	ized REPE	ER OF	2	REPEATER	9 nm
REPEATER MANUFACTU	RER Compagn	ie Industriell	e de Tél	écom	municatio	ns C	IT - AL	CATEL	
NOMINAL TRANSMISSIC	N BANDWIDTH ]	980+1980kHz	TRANSM	155101	N FREQUEN	CIES3	12-2292+	2792-4772	kHz
NUMBER OF EQUALIZED	s none	EQUALIZATION	METHOD	4					
NOMINAL VOICE CIRCU	IT CAPACITY, NO	ON-TASI, INITIAL	. 480 n	ow 4	СНА 5 РА	NNEL CING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	CIT - ALC/	ATEL				TRUCTION	SUBMAR	СОМ
POWER FEED MODE si	ngle end	NOMINAL VOL	TAGE	200	SY	STEM	URRENT	0.180 A	
TASI TYPE - CIRCUI	TS USED _	CIRCUITS DE	RIVED		TOTAL CI	RCUITS		DATE	4



SEACAB	LE SYSTEM	DATA PROFI	LE SYSTEM REFERENCE 110
NAME	Marseille-Beirut		
OTHER NAMES	France-Lebanon		
COUNTRY A	France	COUNTRY B	Lebanon
TERMINUS A	Marseille	TERMINUS B	Beirut
LANDING POINT A	Marseille	LANDING POINT B	Beirut
COORDINATES A	$43^{0}16^{1}$ N x $5^{0}23^{1}$ E	COORDINATES B	33 <sup>0</sup> 54' N x 35 <sup>0</sup> 30' E

OWNER	Societé de Développement des Télécomunications du Liban,
SODETH	L, a joint enterprise of France Cable et Radio and the government of Lebanon
IRU HOLDERS	DBP
CIRCUITS HELD	12
LESSEES	
CIRCUITS LEASED	

DATE IN SERVICE 1970	NATURE OF SERVICE	commercial	CABLE	1837	SINGLE OR TWIN	single	SYSTEM TYPE	S 1
CABLE DESCRIPTION	unarmored	polyethylene	coaxial			CABLE SIZ	E 1.00" 25	.4 mm
CABLE MANUFACTURER	Les Câbles	de Lyon	ĊA	BLESHIF	USED: N	MARCEL	BAYARD	
REPEATER DESCRIPTION	monoconta	iner flexible b	idirectio	nal	NUMBER OF	99	REPEATER	20 nm
REPEATER MANUFACTU	RER Compa	gnie Industrie	lle de Té	élécomun	ications			
NOMINAL TRANSMISSIO	N BANDWIDTH	492+492 kHz	TRANSM	ISSION FR	EQUENCIES	60-552+	672-1164 k	Hz
NUMBER OF EQUALIZER	rs 9	EQUALIZATION	METHOD	steppit	ng switch			
NOMINAL VOICE CIRCU	IT CAPACITY, N	ION-TASI, INITIAL	- 160	now 160	CHANNEL SPACING	INITIAL 3	kHz now	3 kHz
TERMINAL EQUIPMENT	ANUFACTURER	Cie Industri	elle de 7	Félécomu	nications COM	ISTPUCTION	CIT	
POWER FEED MODE	double end	NOMINAL VOI	TAGE 1	910/1910	SYSTEM	CURRENT	0.090 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	·s -	DATE	-

COST	\$ MILLION
CABLE	12.11
SUBMERGED ELECTRONICS	8.04
TERMINAL AND POWER FEED	0,50
TERMINAL STATIONS	0.48
INSTALLATION	0.34
TOTAL	21,47
SYSTEM DESIGN LIFE	20 years

# SEACABLE SYSTEM DATA PROFILE SYSTEM TI1

			NOMBER
NAME	Transatlantic No. 5		ACRONYM TAT-5
OTHER NAMES	Green Hill - Conil		
COUNTRY A	U.S.A.	COUNTRY B	Spain
TERMINUS A	Green Hill, Rhode Island	TERMINUS B	Conil (Cadiz)
LANDING POINT A	Green Hill Pt.	LANDING POINT B	Conil
COORDINATES A	41°22' N x 71°36' W	COORDINATES B	$36^{\circ}17^{\circ}$ N x $06^{\circ}06^{\circ}$ W

OWNER A \*

CIRCUITS HELD \*

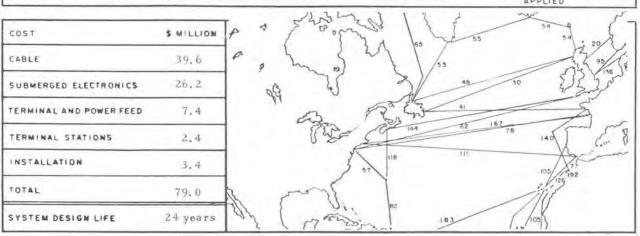
CIRCUITS HELD \*

RU HOLDERS \*

CIRCUITS HELD \* see following page

LESSEES

DATE IN SERVICE 1970	SERVICE C	ommercial	CABLE	3461	SINGLE OR TWIN	single	SYSTEM TYPE	SF
CABLE DESCRIPTION	unarmored p	olyethylene co	paxial			CABLE SIZ	E 1.5" 38.	l mm
CABLE MANUFACTURER	Western Ele	ctric Co., Sta	ndard T	elephone	es & Cable	s, and Câ	bles de Lyc	on
REPEATER DESCRIPTION	monocontain bidirectional	er flexible transistorize	d		NUMBER OF	261	REPEATER	10 nm
REPEATER MANUFACTU	RER Western	Electric Com	npany	CABLES USEI			LINES CABOT	
NOMINAL TRANSMISSIC	N BANDWIDTH Z	60+2160 kHz	TRANSMIS	SION FR	EQUENCIES	554-2920	+3575-5894	4 kHz
NUMBER OF EQUALIZE	RS 17	EQUALIZATION	METHOD	switche	ed network	s		
NOMINAL VOICE CIRCU	IT CAPACITY, NO	N-TASI, INITIAL	720 n	ow 845	CHANNEL	INITIAL	3 kHz now	3 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Western Elec	tric Co.			STRUCTION	ATT	
POWER FEED MODE	double end	NOMINAL VOLT	AGE 277	5/2775	SYSTEM	CURRENT	0.136 A	
TASI TYPE - CIRCU	TS USED -	CIRCUITS DER	IVED -	TOT	TAL CIRCUIT	·s -	DATE	-



# continued

#### ALLOCATIONS

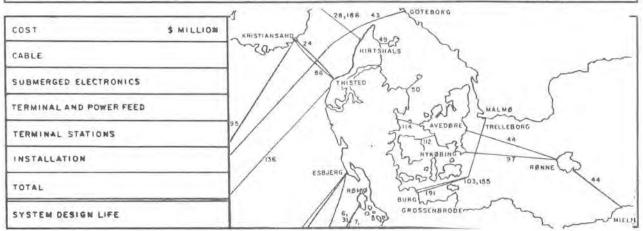
	ATT	AACRPI	RCDT	FTCC	ITTWC	RCAGC	TGC	TRTT	WUI
CINE	64	7	4		8	6	3	1	7
CPRM	29				2	2			1
ITALCABLE	123	1			5	9	14	ì	8
Austria	8				2	1			2
BPO					10	10			9
Belgium	13				7	5			4
Brazil	9				1	z			2
Cyprus	1								
Czechoslovakia	7								
Denmark	2								
Egypt					1				
Finland	2				1				
France	38			-4	2	T			1
Germany, Dem. Rep.									2 4
Germany, Fed. Rep.	56				3	4			4
Greece	9				1	ì			
Humary	2				1				
Indonesia						ĩ			
Ireland	8				1				2
Israel	23								
Kenya	5								
Lebanon	9				1	2			2
Luxembourg	4								
Netherlands	15					5			1
Norway	7					1			
Pakistan	3				1				
Saudi Arabia									3
Sweden	1.5				2	1			2
Switzer!and	17				9	12		I	3
Tunisia	1					1			
Turkey	2.					1			
South Africa	28				I	2			
U.S.S.R.	.9				1				ł
Yugoslavia						1			

# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 112

NAME	Copenhagen - Kolding		
(An ov	erland system with a subme	rged portion with repeate	rs)
COUNTRY A	Denmark	COUNTRY B	Denmark
TERMINUS A	Kristianslund	TERMINUS B	Halsskov
	This is the submerged	portion of a system betwe	en Copenhagen and Kolding

none	
none	

DATE IN SERVICE 1970	NATURE OF SERVICE	commercial	CABLE	10.2	SINGLE OR TWIN	twin mult	the later has been	12 0/112
CABLE DESCRIPTION	6 polyethyle	ne coaxials c	abled and	armored		CABLE SIZ	E 4.1/15	5.0 mm
CABLE MANUFACTURER	Norddeutsc	ne Seekabelwe	rke AG	CABLES	SHIP USE	D: PETE	R FABEI	R (2)
REPEATER DESCRIPTION		ner inflexible ifier transisto	rized		NUMBER OF	E	REPEATI	2
REPEATER MANUFACTU	RER N.V	. Philips' Tel . Underseas	ecommun		lustrie an	d		
NOMINAL TRANSMISSIO	N BANDWIDTH	2076+12076	TRANSMIS	SION FRE	QUENCIES	312-123	88+312-1	2388 kHz
NUMBER OF EQUALIZER	s none submerge	EQUALIZATION	METHOD	8				
NOMINAL VOICE CIRCU	T CAPACITY, N	ON-TASI, INITIAL	16200 n	ow 16200	CHANNEL	INITIAL 4	kHz	now 4 kHz
TERMINAL EQUIPMENT N	ANUFACTURER	Philips				NSTRUCTION NTRACTOR	F&G	
POWER FEED MODE	special	NOMINAL VOL	TAGE -		SYSTEM	CURRENT	0,050	A
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	TOT	AL CIRCUI	T\$ -	DATE	-



# SEACABLE SYSTEM DATA PROFILE SYSTEM

		N	OWBER
Mediterranean-Atlantic 1		ACRONYM	MAT 1
Estepona - Palo	Spain - Italy 2		
Spain	COUNTRY B	Italy	
Estepona, Malaga	TERMINUS B	Palo (Rome)	
Fstepona Beach	LANDING POINT B	Palo	
36°27' N x 5°5' W	COORDINATES B	41°55' N x 12	007'E
	Estepona - Palo Spain Estepona, Malaga Fstepona Beach	Estepona - PaloSpain - Italy 2SpainCOUNTRY BEstepona, MalagaTERMINUS BFstepona BeachLANDING POINT B	Mediterranean-Atlantic 1ACRONYMEstepona - PaloSpain - Italy 2SpainCOUNTRY BItalyItalyEstepona, MalagaTERMINUS BFstepona BeachLANDING POINT B

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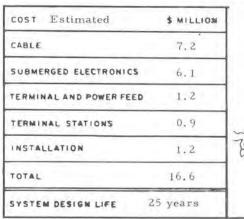
 OWNER A
 Compañía Telefónica Nacional de España
 CIRCUITS HELD \*

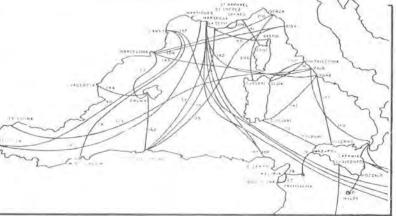
 OWNER B
 ITALCABLE Servizi Cablografici Radiotelegrafici
 CIRCUITS HELD \*

 I R U HOLDERS \*
 CIRCUITS HELD \*
 CIRCUITS HELD \*

LESSEES none

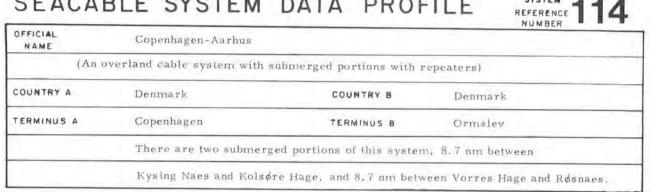
DATE IN SERVICE 1970	SERVICE	commercial	CABLE	986	SINGLE OR TWIN	single	SYSTEM TYPE	NC (5M)
CABLE DESCRIPTION	unarmor	ed polyethylen	e coaxial			CABLE SIZ	E 1.47" 3	7.3 mm
CABLE MANUFACTURER	Standard	Telephones &	Cables Ltd.	CA	BLESHIPS USED:		RCURY G LINES	
REPEATER DESCRIPTION		tainer inflexibl onal transistor			NUMBER OF	93	REPEATER	11 nm
REPEATER MANUFACTUR	RER Stand	ard Telephones	& Cables 1	imite	d			
NOMINAL TRANSMISSION	N BANDWIDTH	1980+1980 kH	Z TRANSMISS	ON FR	EQUENCIES	312-2292	+2792-477	2 kHz
NUMBER OF EQUALIZER	s 7	EQUALIZATION	N METHOD	adjust	ed on boar	d		
NOMINAL VOICE CIRCUI	T CAPACITY,	NON-TASI, INITIAL	480 now	640	CHANNEL SPACING,	INITIAL 4	kHz no	w 3 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Standard Te	elephones &	Cable	S I fr	STRUCTION	STC	
POWER FEED MODE	double end	NOMINAL VO	LTAGE 125(	/1250	SYSTEM	CURRENT	0.150	A
TASI TYPE - CIRCUIT							DATE	





#### ALLOCATION

American Telephone and Telegraph Company	50
with	
ITALCABLE	129
Austria	8
Cyprus	1
Czechoslovakia	1
Egypt	2
Germany, Fed. Rep.	20
Greece	9
Hungary	2
Israel	4
Lebanon	4
Libya	Z
Switzerland	17
Turkey	2
U. S. S. R.	3
Cía. Telefónica Nacional de España	
with	
Teleglobe Canada	19
SACC	27
Moracca	13
ITALCABLE	8
with	
TGC	19
TRTT	1
RCAGC	11
WÜI	10
CPRM	28
ITTWC	9
ITTCVI	4



SYSTEM

OWNER	Administration of Posts and Telegraphs	CIRCUITS HELD all
	*	
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED	-	

DATE IN SERVICE 1970	NATURE OF SERVICE	commercial	CABLE	17.4 sub- merged	SINGLE OR TWIN	twin multi tube cable		12 MHz
CABLE DESCRIPTION	6 polyethy	lene coaxials (	cabled an	d armored	L.	CABLE SIZE	4.1/15.	0 mm
CABLE MANUFACTURER	Norddeuts	che Seekabelw	erke AG	CABLE	SHIP US	ED: PETE	R FABER	(2)
REPEATER DESCRIPTION		iner inflexible difier transist			UMBER O	0.540	REPEATER	3 nm
REPEATER MANUFACTU	1 1 1 1 1	Philips' Telec Underseas Cal			trie and			
NOMINAL TRANSMISSIO				SSION FREC	UENCIES	312-1238	8+312-123	88 kHz
NUMBER OF EQUALIZER	s none submerge	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	T CAPACITY, N	ON-TASI, INITIAL	16200 n	ow 16200	CHANNEL	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	Philips				NSTRUCTION	F&G	
OWER FEED MODE 5	pecial	NOMINAL VOL	TAGE -		SYSTEM	CURRENT	0.050 #	1
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	NIVED -	TOTA	L CIRCUI	TS -	DATE	

COST	\$ MILLION
CABLE	KHISTIANSAND 24 HIRTSHALS
SUBMERGED ELECTRONICS	Re THISTED WASD
TERMINAL AND POWER FEED	(STA JORAND )
TERMINAL STATIONS	13 JIIA AVEDDRE TRELLEBORG
INSTALLATION	
TOTAL	ESBJERG ROMO 2000 TO3, 155 RBNNE 44
SYSTEM DESIGN LIFE	Si No BURG

NAME	Kure-Matsuyama 1 and 2 (par	allel systems)	
NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Kure, Hiroshima, Honshu	TERMINUS B	Matsuyama, Ebime, Shikoku
LANDING POINT A	Suruga	LANDING POINT B	Asanami
COORDINATES A	34 <sup>0</sup> 17' N x 132 <sup>0</sup> 32' E	COORDINATES B	33°50' N x 132°22' E

OWNER	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD	-	
LESSEES	none	
CIRCUITS LEASED	-	

DATE IN SERVICE 1971	NATURE OF SERVICE CC	mmercial	CABLE	17 + 17	SINGLE OR TWIN	single	SYSTEM TYPE	CS-36MS
CABLE DESCRIPTION	armored poly	ethylene coax	ial			CABLE SIZ	E 0.70" 1	8.0 mm
CABLE MANUFACTURER	Ocean Cable	Company Lin	nited	CABLE	SHIF USED	TSUGAL	RU MARU	
REPEATER	monocontaine bidirectional	r flexible transistorize	d		NUMBER OF	11+11	REPEATER	1,4 nm
REPEATER MANUFACTU	RER Nippon E	lectric Comp	any Ltd	l, and F	ujitsu Limi	ted		
NOMINAL TRANSMISSIO	N BANDWIDTH 1	1/20110/20	TRANCH			170/	A + 22204	204601.11
nemme minemiert	in parton 12	CD /2+120 /2	TRANSM	ISSION	REQUENCIES	4332-1700	14 + 66190	- 35408KM
NUMBER OF EQUALIZER		EQUALIZATION			REQUENCIES	4332-1700	14 + 22190	- 35408KH
NUMBER OF EQUALIZED	RS none	EQUALIZATION	METHOD	- 27(			4 + 22 190	
	RS none	EQUALIZATION	METHOD 2700 Pach ric Co.	- 27( now eac	00 CHANNEL ch SPACING nd CO			
NUMBER OF EQUALIZED	RS none NIT CAPACITY, NOP MANUFACTURER	equalization n-tasi, initial Nippon Elect	METHOD 2700 each ric Co.	- 27( now eac	00 CHANNEL ch SPACING nd CO CO	INITIAL -	łkHz nov	

COST \$ MILLION	HONSHU
CABLE	KATSUMIURA KURI
SUBMERGED ELECTRONICS	Ashiat for the for the former of the former
TERMINAL AND POWER FEED	HOKITA HATSUYANA SHIKOKU
TERMINAL STATIONS	C SC KYUSHU & S E
INSTALLATION	163 53 HEIHORU
TOTAL Prototype project	MIYAZAKI
SYSTEM DESIGN LIFE 20 years	$2$ C $^{m}$

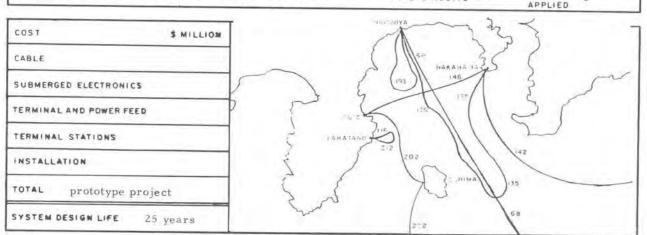
REFERENCE 6 OFFICIAL Sagami Bay Loop 1 NAME OTHER NAMES COUNTRY A COUNTRY B Japan Japan TERMINUS A Yahatano TERMINUS B Yahatano LANDING POINT A Yahatano LANDING POINT B Yahatano 34°50'N x 139°08'E COORDINATES A 34°50'N x 139°08'E COORDINATES B

RETIRED 1976

SYSTEM

OWNER	Nippon Telephone & Telegraph Public Corporation	CIRCUITS HELD all
	÷	
IRU HOLDERS	none	
CIRCUITS HELD	-	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1971	NATURE OF SERVICE EX	perimental	CABLE	13	SINGLE OR TWIN	single	SYSTEM	CS 36M D
CABLE DESCRIPTION	unarmored p	olyethylene c	oaxial		0	CABLE SIZE	1.5" 38	3.1 mm
CABLE MANUFACTURER	Ocean Cable	Company Lin	nited	CABLES	SHIP USED:	TSUGAR	U MARU	
REPEATER DESCRIPTION	monocontaine bidirectional		ed		NUMBER OF	4	REPEATER	2.6 nm
REPEATER MANUFACTUR	RER Nippon H	Ciectric Comp	pany Lir	nited and	d Fujitsu Li	mited		
NOMINAL TRANSMISSIO	N BANDWIDTH 12	672+12672	TRANSMI	SSION FR	REQUENCIES	1332-1700-	1+22796-3	5468 kH
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD					
NOMINAL VOICE CIRCUI	T CAPACITY, NON	-TASI, INITIAL	2700 n	ow 2700	CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	NEC and Fu	jitsu			TRACTOR	NTTPC	
POWER FEED MODE d	ouble end	NOMINAL VOLT	AGE 10	0/100	SYSTEM	CURRENT	0.156 A	
TASI TYPE - CIRCUIT	SUSED -	CIRCUITS DER	IVED -	TO	TAL CIRCUITS	5 -	DATE	2



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#### NOT IN SERVICE

#### SEACABLE SYSTEM DATA PROFILE

SYSTEM REFERENCE NUMBER

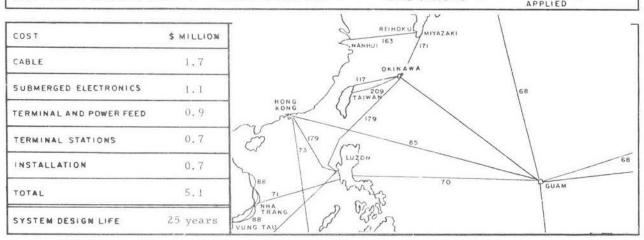
NAME	Taiwan-Okinawa	ACRONYM IJCS				
OTHER NAMES	Integrated Joint Communication System No. 1					
COUNTRY A	Taiwan	COUNTRY B	Okinawa			
TERMINUS A	Camp McCauley	TERMINUS B	Fort Buckner			
LANDING POINT A	Camp McCauley	LANDING POINT B	Futenma			
COORDINATES A	25°13' N x 121°39' E	COORDINATES B	26 <sup>0</sup> 18' N x 127 <sup>0</sup> 46' E			

 OWNER (when built) U.S. Government
 CIRCUITS HELD all

 The system was retired from service prior to 1980, in which year the U.S.
 Government Surplus Property Office offered the system for sale by international

 tender. It was purchased by private interests.
 Itender. It was purchased by private interests.

DATE IN SERVICE 1971	NATURE OF SERVICE	military	CABLE	363	SINGLE OR TWIN	single	SYSTEM TYPE	Z60S
CABLE DESCRIPTION	armored po	lyethylene co	baxial			CABLE SIZ	E 0.62" 15	.7 mm
CABLE MANUFACTURER	Simplex Wi	re & Cable C	ompany		ED:	NEPTUN	(3), OME	GA
REPEATER DESCRIPTION	monocontai	ner flexible b	oidirection	11	NUMBER OF	21	REPEATER	17 nm
REPEATER MANUFACTU	RER U.S.I	Jnderseas Ca	ble Corpo	ration				
NOMINAL TRANSMISSIO		240+240 kHz				Andres - Franker (1999)		1
					CHANNEL			
NOMINAL VOICE CIRCU	IT CAPACITY, N	ON-TASI, INITIA	u∟ 60 n	ow 60	SPACING,	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT N	ANUFACTURER	TEKADE-F anlagen Gr		nelde-	10.000	ISTRUCTION NTRACTOR	USUCC	
POWER FEED MODE	single end	NOMINAL VO	LTAGE 200	0	SYSTEM	CURRENT	0.426 A	
TASI TYPE - CIRCUI	TSUSED -	CIRCUITS D	ERIVED -	то	TAL CIRCUIT	'S -	DATE	-



## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 118

		NUMBER
Mill Village-Bermuda		ACRONYM CANBER
Canada-Bermuda		
Canada	COUNTRY B	Bermuda, B.C.C.
Mill Village, Nova Scotia	TERMINUS B	Flatts
Medway Harbour	LANDING POINT B	Sue Wood Bay
44 <sup>0</sup> 9' N x 64 <sup>0</sup> 40' W	COORDINATES B	32°18' N x 64°44' W
	Canada-Bermuda Canada Mill Village, Nova Scotia Medway Harbour	Canada-Bermuda Canada COUNTRY B Mill Village, Nova Scotia TERMINUS B Medway Harbour LANDING POINT B

OWNER A Canadian Overseas Telecommunications Corporation\* CIRCUITS HELD 480h

CIRCUITS HELD 480h

OWNER B Cable & Wireless Limited

RU HOLDERS

CIRCUITS HELD

\* now Teleglobe Canada

SERVICE 1971	NATURE OF SERVICE	commercial	CABLE	825	SINGLE OR TWIN	single	SYSTEM TYPE	TMkI
CABLE DESCRIPTION	unarmore	d polyethylene co	paxial			CABLE SIZE	1.47" 37	. 3 mm
CABLE MANUFACTURER	Submarine	Cables Limited	CA	BLESHI	USED:	MERCUI	RY	
REPEATER DESCRIPTION		iner inflexible nal transistorize	d		NUMBER OF	81	REPEATER	ll nm
REPEATER MANUFACTUR	ER Subma	arine Cables Lin	nited					
NOMINAL TRANSMISSION	N BANDWIDTH	1988+1988 kHz	TRANSMIS	SSION FRE	QUENCIES	308-2296	+2788-477	kHz
NUMBER OF EQUALIZER	5 5	EQUALIZATION	METHOD	adju	st on boar	·d		
NOMINAL VOICE CIRCUI	T CAPACITY,	NON-TASI, INITIAL	480 r	iow 480	CHANNEL SPACING.	INITIAL 4	kHz now	4 kHz
NUMBER OF EQUALIZER NOMINAL VOICE CIRCUI TERMINAL EQUIPMENT M	T CAPACITY,	NON-TASI, INITIAL	480 r	iow 480	CHANNEL SPACING.	INITIAL 4	kHz now SCL	4 kHz
OMINAL VOICE CIRCUI	T CAPACITY, ANUFACTURER	NON-TASI, INITIAL	480 r ectrical	iow 480	CHANNEL SPACING, s, Ltd.com	INITIAL 4 STRUCTION MTRACTOR	1	4 kHz

COST	\$ MILLION	43	S.	all	48 30	253
CABLE	6.7	d	Real	and too	62 167 78	A.
SUBMERGED ELECTRONICS	5.1		R	118		140 6.00
TERMINAL AND POWER FEED	1.3		rie Son	1		105 125 192
TERMINAL STATIONS	0.9	SE	Ui.	62	/1	10
INSTALLATION	1.0	1 hrs	2.0000	01.	15	600
TOTAL	15.0		Mar to	and a	129	Che .
SYSTEM DESIGN LIFE	20 years		5ed	3	~ /	105 189

SEACAB	LE SYSTEM DA	TA PROFI	LE	SYSTEM and REFERENCE NUMBER	119
NAME	U.K Spain 1		ACRONYM	UK-SP 1	
OTHER NAMES	England-Spain No. 1 Algo	rta-Goonhilly A			
COUNTRY A	England	COUNTRY B	Spain		
TERMINUS A	Goonhilly Downs, Cornwall	TERMINUS B	Algorta	(Bilbao)	
LANDING POINT A	Kennack Sands	LANDING POINT B	Azcorri	Beach	
COORDINATES A	50°01'N x 5°08'W	COORDINATES B	43°23' N	1 x 3 <sup>0</sup> 1' W	

OWNER A	British	Post Office			CIRCUIT	SHELD 480h
OWNER B	Companí	a Telefónica l	Nacional de Es	pana	CIRCUIT	SHELD 480h
IRU HOLDERS	DBP	CPRM	CTNE	Belgium	Netherlands	Sweden
CIRCUITS HELD	48	60	144	48	36	12
LESSEES	various					

SERVICE 1970	NATURE OF SERVICE	commercial	CABLE	482	SINGLE OR TWIN	single	SYSTEM TYPE	NC (Y)
CABLE DESCRIPTION	unarmored	polyethylene o	coaxial		c	ABLE SIZ	E 1.47" 37	.3 mm
CABLE MANUFACTURE	R Standard T	elephones & Ca	ables Lim	ited	CABLESH	IP USED	: MERCU	RY
REPEATER		iner inflexible al transistoriz	ed		NUMBER OF	52	REPEATER	11 nm
REPEATER MANUFACT	TURER Standa	rd Telephones	& Cables	Limited	1			
							2+2792-477	2 kHz
		1980+1980 kH2			equencies ed on board		2+2792-477	2 kHz
NUMBER OF EQUALIZ	ERS 4	EQUALIZATION	METHOD	adjust	ed on board	I	2+2792-477 4 kHz nov	
NOMINAL TRANSMISS NUMBER OF EQUALIZ NOMINAL VOICE CIRC TERMINAL EQUIPMENT	ERS 4 CUIT CAPACITY, N	EQUALIZATION	метнор 480 п	adjust ow 480	ed on board CHANNEL SPACING,	I		
NUMBER OF EQUALIZ	ERS 4 CUIT CAPACITY, N	EQUALIZATION	480 n	adjust ow 480	ed on board CHANNEL SPACING, I Ltd. CON	I INITIAL STRUCTION	4 kHz <sub>nov</sub>	

COST Estimated	\$ MILLION
CABLE	2,90
SUBMERGED ELECTRONICS	1.95
TERMINAL AND POWER FEED	0,35
TERMINAL STATIONS	0.10
INSTALLATION	0.30
TOTAL	5,60
SYSTEM DESIGN LIFE	20 years

NAME	Trans-Canary Cable		ACRONYM TRANSCAN
THER NAMES	Canary Inter-Island Cable	Gran Canaria-Fuerte	ventura- Lanzarote
COUNTRY A	Spain (Canary Is.)	COUNTRY B	Spain (Canary Is.)
ERMINUS A	Las Palmas, Gran Canaria	TERMINUS B	Puerto del Rosario, (Fuerteventura)
ANDING POINT A	San Cristóbal (Las Palmas)	LANDING POINT B	Playa Blanca
OORDINATES A	28°5' N x 15°25' W	COORDINATES B	28 <sup>0</sup> 29' N x 13 <sup>0</sup> 52' W
OUNTRY C	Spain (Canary Is.)	COUNTRY D	
ERMINUS C	Arrecife, Lanzarote	TERMINUS D	
ANDING POINT C	Playa del Cable	LANDING POINT D	
COORDINATES C	28 <sup>0</sup> 56' N x 13 <sup>0</sup> 34' W	COORDINATES D	
OUNTRY E		COUNTRY F	
ERMINUS E		TERMINUS F	
ANDING POINT E		LANDING POINT F	
COORDINATES E		COORDINATES F	
ABLE AB 143 MILES 143 DATE IN 1971 SERVICE 1971	SERVICE	SINGLE OR TWIN SIN	ngle SYSTEM NC (5M)
ABLE DESCRIPTIC	unarmored polyethylene co	baxial	CABLE SIZE 0.99" 25.1 mm
5	SANTA CRUZ CANDELARIA 126		LANZAHOTE ARRECIEL VIURA

# 120

OWNERS	Compañía Telefónica Nacional de España
CIRCUITS HELD	all
I R U. HOLDERS	none
CIRCUITS HELD	
LESSEES	none
CIRCUITS LEASED	
REPEATER DESCRIP	TION monocontainer inflexible bidirectional transistorized SPACING 7.6 nm
NUMBER OF A B	19 BC 6
REPEATER MANUFA	CTURER Standard Telephones & Cables Limited
NUMBER OF A	B ] B C none
EQUALIZATION ME	adjusted on board
TERMINAL EQUIPA	MENT MANUFACTURER Standard Telephones & Cables Limited
POWER FEED MOD	E ABC single end
NOMINAL VOLTAGE	800 SYSTEM CURRENT 0.150 A
NOMINAL TRANSMIS	SION BANDWIDTH 1980+1980 kHz TRANSMISSION FREQUENCIES 312-2292+2792-4772 kH
NOMINAL VOICE CIR	CUIT CAPACITY, NON-TASI, INITIAL 480 NOW 480 SPACING, INITIAL 4 kHz now 4 kHz
TASI TYPE - CIP	CUITS USED - CIRCUITS DERIVED - TOTAL CIRCUITS - DATE APPLIED -
REMARKS A S	tations: AB-Puerto del Rosario BC-Arrecife

r

CONSTRUCTION CONTRACTOR Standard Telephones & Cables Limited CABLESHIP USED: JOHN W MACKAY

COST Estimated	\$ MILLION
CABLE	1.7
SUBMERGED ELECTRONICS	0.8
TERMINAL AND POWER FEED	0.6
TERMINAL STATIONS	0.4
INSTALLATION	0.3
TOTAL	3.8
SYSTEM DESIGN LIFE	20 years

# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 121

			NUMBER
NAME	Kingston-Grand Cayman		
OTHER NAMES	Jamaica-Cayman		
COUNTRY A	Jamaica	COUNTRY B	Cayman Islands
TERMINUS A	Prospect Pen	TERMINUS B	Georgetown, Grand Cayman
LANDING POINT A	Prospect Pen	LANDING POINT B	Georgetown
COORDINATES A	19 <sup>0</sup> 17' N x 81 <sup>0</sup> 23' W	COORDINATES B	17°57' N x 76°47' W

CIRCUITS HELD

CIRCUITS HELD

OWNER A Jamaica International Telecommunications Ltd.

OWNER B Cable & Wireless Limited

I R U HOLDERS

CIRCUITS HELD

LESSEES

DATE IN SERVICE 1971	SERVICE	commercial	CABLE	388	SINGLE OR TWIN	single	SYSTEM TYPE	U Mk
CABLE DESCRIPTION	unarmored	polyethylene	coaxial		c	ABLE SIZ	E 0.99" 25	.1 mm
CABLE MANUFACTURER	Standard T	elephones & C	ables Lim	nited	CABLESHI	P USED;	MERCURY	1
REPEATER DESCRIPTION	monoconta	iner inflexible	bidirectic	onal	NUMBER OF	23	REPEATER	18 nm
REPEATER MANUFACTUR	ER Standa	rd Telephones	& Cables	Limite	ed			
NOMINAL TRANSMISSION	BANDWIDTH	492+492 kHz	TRANSMIS	SSION F	REQUENCIES	60-552+6	72-1164 kH	z
NUMBER OF EQUALIZERS	2	EQUALIZATION	METHOD	adjust	ed on board	-		
NOMINAL VOICE CIRCUIT	CAPACITY, I	NON-TASI, INITIAL	- 160 n	ow 160	CHANNEL SPACING,	INITIAL 3	kHz now	3 kHz
TERMINAL EQUIPMENT MA	NUFACTURER	Standard Tel	ephones &	Cable	a I to	TRUCTION	C&W	
POWER FEED MODE dos	uble end	NOMINAL VOL	TAGE 130	0/1300	SYSTEM (	URRENT	0.415 A	
TASI TYPÉ - CIRCUIT	S USED -	CIRCUITS DE	RIVED -	т	DTAL CIRCUITS	-	DATE -	

COST	\$ MILLION
CABLE	1.2
SUBMERGED ELECTRONICS	0.9
TERMINAL AND POWER FEED	0.4
TERMINAL STATIONS	0.6
INSTALLATION	0.4
TOTAL	3.5
SYSTEM DESIGN LIFE 2	0 years

SEACAE	BLE SYSTEM D	ATA PROF	ILE	SYSTEM REFERENCE 122 NUMBER
NAME	Peninsula - Balearic Islands	1	ACRONYM	PENBAL 1
OTHER NAMES	Barcelona - Palma de Mallore	ca		
COUNTRY A	Spain (Balearic Islands)	COUNTRY B	Spain (main	land)
TERMINUS A	Palma de Mallorca	TERMINUS B	Barcelona	
LANDING POINT A	Cala Mayor	LANDING POINT B	Barceloneta	a Beach
COORDINATES A	39 <sup>°</sup> 33'N x 02 <sup>°</sup> 36'Е	COORDINATES B	41°23'N x 0	2 <sup>0</sup> 12'E

OWNER	Compañía Telefónica Nacional de España	CIRCUITS HELD all
RU HOLDERS	none	
CIRCUITS HELD	4	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1971	NATURE OF	commercial	MILES	183	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14M)
CABLE DESCRIPTION	unarmored	polyethylene	coaxial			CABLE SIZ	E 1.47" 3	7.3 mm
CABLE MANUFACTURER	Standard T	elephones & C	ables Lir	nited				
REPEATER		iner inflexible al transistoriz			NUMBER OF	28	REPEATER	6.5 nm
REPEATER MANUFACTU				Limited	CABLI . USE	TC	OHN W MAG	CKAY
NOMINAL TRANSMISSIO	N BANDWIDTH	5704+5704 kH	ZTRANSM	SSION F	REQUENCIES	312-6016	5+7996-137	00 kHz
NUMBER OF EQUALIZER	s l	EQUALIZATION	METHOD	compu	ited and as	sembled o	on board	
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	900 n	ow 1380	CHANNEL	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT	ANUFACTURE	Standard Te	lephones	& Cabl	es Ltd. co	NSTRUCTION	STC	
POWER FEED MODE d	ouble end	NOMINAL VO	LTAGE 47	75/475	SYSTEM	CURRENT	0.500	A
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	т	OTAL CIRCUI	TS -	DATE	-

COST Estimated	\$ MILLION
CABLE	1.8
SUBMERGED ELECTRONICS	1.5
TERMINAL AND POWER FEED	0.5
TERMINAL STATIONS	0.4
INSTALLATION	0.3
TOTAL	4.5
SYSTEM DESIGN LIFE	25 years

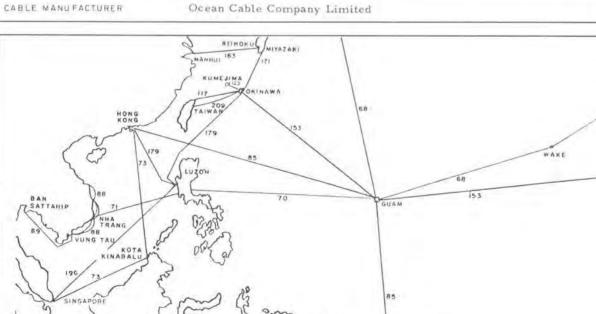
OFFICIAL
NAME
OTHER
NAMES

Okinawa - Zamami - Kumejima

COUNTRY A	Japan (Okinawa)	COUNTRY B	Japan (Zamamijima)
TERMINUS A	Ginowan	TERMINUS B	Zamami
LANDING POINT A	Ginowan	LANDING POINT B	Zamami
COORDINATES A	26 <sup>0</sup> 09'N x 127 <sup>0</sup> 44'E	COORDINATES B	26 <sup>0</sup> 14'N x 127 <sup>0</sup> 19'E
OUNTRY C	Japan (Kumejima)	COUNTRY D	
ERMINUS C	Gima	TERMINUS D	
ANDING POINT C	Gima	LANDING POINT D	
COORDINATES C	26 <sup>°</sup> 20'N x 126 <sup>°</sup> 46'E	COORDINATES D	
OUNTRY E		COUNTRY F	

COUNTRY E	COUNTRY F	
TERMINUS E	TERMINUS F	
LANDING POINT E	LANDING POINT F	
COORDINATES E	COORDINATES F	

DATEIN	NATURE OF	SINGLE		EVETEN
DATE IN 1972 SERVICE	SERVICE commercial	OR TWIN	single	TYPE CS 10M
CABLE DESCRIPT	ION armored polyethylene coas	cial	CABLE	SIZE 0.70" 18.0mm



ADANG

m

SYSTEM CURRENT 0.090 A

-

0	Ŵ	N	ε	R		

#### Nippon Telegraph and Telephone Public Corporation

CIRCUITS HELD A11

I R U HOLDERS none

CIRCUITS HELD -

LESSEES none

1 CIRCUITS LEASED

REPEATER SPACING 3.3 mm REPEATER DESCRIPTION monocontainer flexible bidirectional solid-state

NUMBER OF AB 8 BC 10 REPEATERS

Nippon Electric Company Limited and Fujitsu Limited REPEATER MANUFACTURER

NUMBER OF AB none BC none EQUALIZERS

EQUALIZATION METHOD 

NEC and Fujitsu TERMINAL EQUIPMENT MANUFACTURER

B C double POWER FEED MODE AB end

100/100 150/150 NOMINAL VOLTAGE

TRANSMISSION FREQUENCIES 312-4028+5872-9588 kHz NOMINAL TRANSMISSION BANDWIDTH 3716 + 3716 kHz

CHANNEL INITIAL 4 kHz now NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 900 now 900 4 kHz

TOTAL CIRCUITS \_ DATE APPLIED TASI TYPE - CIRCUITS USED \_ CIRCUITS DERIVED -

CABLESHIP USED: TSUGARU MARU

CONSTRUCTION CONTRACTOR

REMARKS

Nippon Telegraph and Telephone Public Corporation

COST	AB \$	MILLION BC
CABLE	0.17	0.26
SUBMERGED E	LECTRONICS 0.41	0.62
TERMINAL AN	DPOWER FEED 0. 1	9 0.29
TERMINAL ST	ATIONS 0, 17	0.25
INSTALLATIC	0.08	0.12
то	TAL 1.02	1.54
SYSTEM DES	IGN LIFE 20	years

# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 124

NAME	Winterton-Fedderwarden		NUMBER -
OTHER NAMES	Winterton-Spiekeroog	Fedderwarden-Winter	ton A
COUNTRY A	England	COUNTRY B	Federal Republic of Germany
TERMINUS A	Winterton, Norfolk	TERMINUS B	Fedderwarden
LANDING POINT A	Winterton	LANDING POINT B	Spiekeroog-Carolinensiel
COORDINATES A	52 <sup>0</sup> 43' N x 1 <sup>0</sup> 42' E	COORDINATES B	53°47' N x 7°42' E

OWNER A British Post Office

OWNER B Deutsche Bundespost

CIRCUITS HELD 1260h

I R U HOLDERS

CIRCUITS HELD

LESSEES

SERVICE	1972	NATURE OF SERVICE	commercial	CABLE	285	STNGLE OR TWIN	single	SYSTEM TYPE	NE (14M)
CABLE DES	CRIPTION	armore	d polyethylene	coaxial		c	ABLE SIZ	€ 1.47" 3	7.3 mm
CABLE MAN	FACTURER	Standard '	Telephones & C	ables Lin	nited	CABLESHIP USED:	ALI	ERT (4)	
REPEATER DESCRIPTIO	N		ainer inflexible nal transistori:			NUMBER OF REPEATERS	45	REPEATER	7 nm
REPEATER N	ANUFACTU	RER Stand	ard Telephones	& Cables	Limi	ted			
NOMINAL TR	ANSMISSIO	N BANDWIDTH	5704+5704 <b>k</b> H	Z TRANSMI	SSION	FREQUENCIES	312-6016	+7996-137	00 kHz
NUMBER OF	EQUALIZER	RS 2	EQUALIZATION	METHOD	comp	outed and asse	mbled or	board	
NOMINAL VO	ICE CIRCU	IT CAPACITY,	NON-TASI, INITIAL	1260	now 12	60 CHANNEL	NITIAL 4	kHz now	4 kHz
TERMINALEG	UIPMENT N	ANUFACTURE	R Standard Te	lephones	& Cabl	PS I tr	TRUCTION	STC	
POWER FEED	MODE	double end	NOMINAL VOL	TAGE 50	0/500	SYSTEM C	URRENT	0.495 A	
TASI TYPE	- CIRCUI	TS USED -	CIRCUITS DE	RIVED -		TOTAL CIRCUITS	1.4	DATE	-

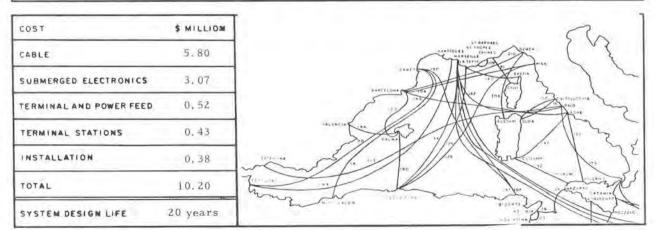
COST	\$ MILLION
CABLE	3.12
SUBMERGED ELECTRONICS	3.00
TERMINAL AND POWER FEED	0.22
TERMINAL STATIONS	0,02
INSTALLATION	0.16
TOTAL	6.52
SYSTEM DESIGN LIFE	25 years

SEACAB	LE SYSTEM	DATA	PROFI	LE	SYSTEM REFERENCE NUMBER	25	
NAME	Pisa-Algiers						
NAMES							
COUNTRY A	Italy	cou	INTRY B	Algeria			
TERMINUS A	Pisa	TER	MINUS B	Bordj El Kiffan			
LANDING POINT A	Marina di Pisa	LA	LANDING POINT B		Bordj El Kiffan		
COORDINATES A	43°38' N x 10°17' E	co	DRDINATES B	36 <sup>0</sup> 53'	N x 3 <sup>0</sup> 2' E		
OWNER A	Azienda di Stato per i S	Servizi Telefo	nici	c	IRCUITS HELD	444h	
OWNER B	Administration of Posts and Te		elecommunications		CIRCUITS HELD	480h	
IRU HOLDERS	Deutsche Bundespost						
CIRCUITS HELD	36						

SYSTEM

LESSEES none

DATE IN SERVICE 1972	NATURE OF SERVICE commerce	ial MILES	580	SINGLE OR TWIN	single	SYSTEM TYPE	Y S5
CABLE DESCRIPTION	unarmored polyethy	ylène coaxial		1.0	CABLE SIZ	E 1.47" 37	. 3 mm
CABLE MANUFACTURER	Standard Telephone	es & Cables Lir	nited	CABLESH USED:	IP ME	RCURY	
REPEATER DESCRIPTION	monocontainer infle bidirectional transi			NUMBER OF	57	REPEATER SPACING	11 nm
REPEATER MANUFACTUR	RER Standard Telep	hones & Cables	Limited				
NOMINAL TRANSMISSIO	N BANDWIDTH 1980+1	980 kHztransmi	SSION FRE	QUENCIES	312-2292	+2792-4772	kHz
NUMBER OF EQUALIZER	S 4 EQUALI	ZATION METHOD	adjuste	d on board			
NOMINAL VOICE CIRCU	IT CAPACITY, NON-TASI,	INITIAL 480	10w 480	CHANNEL SPACING,	INITIAL	łkHz now	4 kHz
TERMINAL EQUIPMENT N	MANUFACTURER Standa	rd Telephones	& Cables	Ltd.	STRUCTION	STC	
		rd Telephones	& Cables 800/800	Ltd. com		STC 0.150 A	



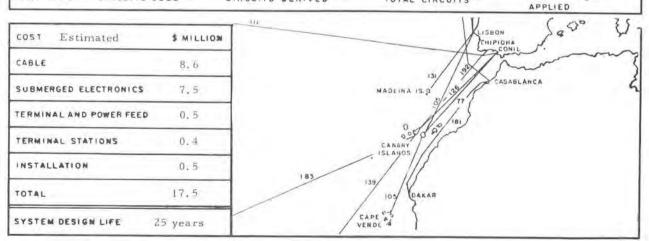
		NUMBER =
Peninsula - Canary Islands 2	ACRONYM PENCAN 2	
, Cadiz - Las Palmas de Gran C	anaria	
Spain (Canary Is.)	COUNTRY B	Spain (mainland)
Las Palmas, Gran Canaria	TERMINUS B	Conil (Cádiz)
Las Canteras	LANDING POINT B	Conil Beach
28 <sup>0</sup> 8' N x 15 <sup>0</sup> 27' W	COORDINATES B	36 <sup>0</sup> 16' N x 6 <sup>0</sup> 6' V.
	, Cadiz - Las Palmas de Gran C Spain (Canary Is.) Las Palmas, Gran Canaria Las Canteras	, Cadiz - Las Palmas de Gran Canaria Spain (Canary Is.) COUNTRY B Las Palmas, Gran Canaria TERMINUS B Las Canteras LANDING POINT B

SYSTEM

REFERENCE 126

DBP	PTT Austria	CPRM	EMBRATE1.	PTT France	ITALCABLE	Radio Austria	RCAGC
16	5	16	120	18	40	1	4
		ITTW	C SACC	PTT CH	KDD		
		2	16	18	16		

DATE IN NATURE OF CABLE SINGLE SYSTEM TYPE NE (14 M) 737 1971 commercial single SERVICE SERVICE MILES OR TWIN CABLE SIZE 1.47" 37.3 mm unarmored polyethylene coaxial CABLE DESCRIPTION CABLESHIP CABLE MANUFACTURER Standard Telephones & Cables Limited MERCURY USED: monocontainer inflexible REPEATER NUMBER OF REPEATER DESCRIPTION bidirectional transistorized 116 6.5 nm REPEATERS SPACING REPEATER MANUFACTURER Standard Telephones & Cables Limited NOMINAL TRANSMISSION BANDWIDTH 5704+5704 kHz TRANSMISSION FREQUENCIES 312-6016+7996-13700 kHz NUMBER OF EQUALIZERS 7 EQUALIZATION METHOD compute and assemble on board CHANNEL NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 1200 now 1840 SPACING, INITIAL 3 KHz now 3 kHz CONSTRUCTION TERMINAL EQUIPMENT MANUFACTURER STC STC CONTRACTOR POWER FEED MODE double end NOMINAL VOLTAGE 1700/1700 SYSTEM CURRENT 0.500 A DATE TASI TYPE - CIRCUITS USED -CIRCUITS DERIVED -TOTAL CIRCUITS -

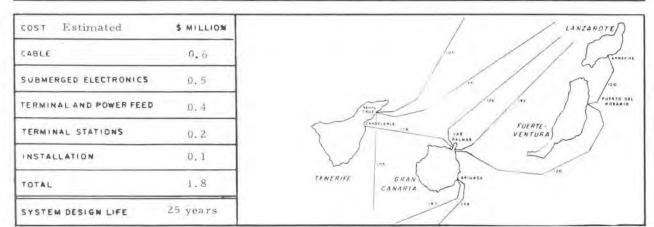


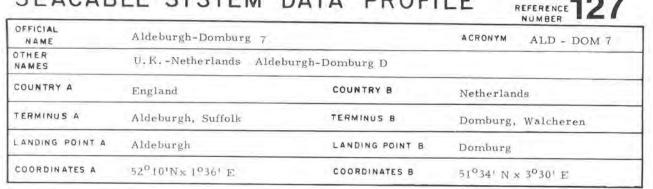
# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 126 B

Las Palmas - Tenerife		ACRONYM PENCAN 2 EXT
PENCAN 2 Extension		
Spain (Canary Is.)	COUNTRY B	Spain (Canary Is.)
Las Palmas, Gran Canaría	TERMINUS B	Candelaria, Tenerife
Las Canteras	LANDING POINT B	Candelaria Beach
28 <sup>0</sup> 8' N x 15 <sup>0</sup> 27' W	COORDINATES B	28 <sup>0</sup> 21 N x 16 <sup>0</sup> 22' W
	PENCAN Z Extension Spain (Canary Is.) Las Palmas, Gran Canaría Las Canteras	PENCAN Z Extension         Spain (Canary Is.)       COUNTRY B         Las Palmas, Gran Canaría       TERMINUS B         Las Canteras       LANDING POINT B

OWNER	Compañía Telefónica Nacional de España	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD	-	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1972	NATURE OF SERVICE	commercial	CABLE MILES	60	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14 M
CABLE DESCRIPTION	unarmo	red polyethylen	ne coaxial			CABLE SI	ZE 1.47"	7.3 mm
CABLE MANUFACTURER	Standar	d Telephones &	Cables 1	imited	CABLESH USED:	IP M	ERCURY	
REPEATER DESCRIPTION		ntainer inflexib ional transisto			NUMBER OF	9	REPEATER	6.5 nm
REPEATER MANUFACTU	RER Stand	lard Telephone	s & Cable	s Limite	d			
NOMINAL TRANSMISSIC	N BANDWIDT	H 5704+5704 kH	Z TRANSM	SSION FR	REQUENCIES	312-60	16+7996-13	700 kHz
NUMBER OF EQUALIZE	RS none	EQUALIZATIO	N METHOD	2				
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 1840	now 1840	CHANNEL SPACING,	INITIAL	3 kHz no	w 3 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R STC				STRUCTION	STC	
		52004-000-001 12-2	TACE	160/160	SUCTON	CURRENT	0 105 1	
POWER FEED MODE	double end	NOMINAL VO	LINGE	100/100	STSTEM	LUNRENI	0.495 A	





SYSTEM

OWNER A	British Post Office Administration of PTT		CIRCUITS HELD	1260h
OWNER B			CIRCUITS HELD	
IRU HOLDERS	DBF	Belgium		
CIRCUITS HELD	3.60	240		

DATE IN SERVICE 1972	NATURE OF SERVICE	commercial	CABLE	83	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14M)
CABLE DESCRIPTION	armore	d polyethylene	coaxial			CABLE SIZ	E 1.47"	37.3 mm
CABLE MANUFACTURE	R Standard	Felephones & C	ables Lin	nited.	CABLESHI USED:	P ALE	RT (4)	_
REPEATER		uner inflexible nal transistoriz			NUMBER OF	13	REPEATER	7 nm
REPEATER MANUFACT	URER Stands	ard Telephones	& Cables	Limite	ed	1.00		
NOMINAL TRANSMISSI					REQUENCIES	312-6016	+7996-137	00 kHz
NUMBER OF EQUALIZE	RS none	EQUALIZATION	METHOD .	-			_	
NOMINAL VOICE CIRC	UIT CAPACITY,	NON-TASI, INITIAL	1260	now 126	0 CHANNEL SPACING,	INITIAL	4kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURE	Standard Tele	ephones &	Cables	1 10	STRUCTION	STC	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 200	/200	SYSTEM	CURRENT	0.495 A	
TASI TYPE - CIRCU	ITS USED -	CIRCUITS DE	RIVED -	тс	TAL CIRCUIT	s -	DATE	

		1 ma	1	1 11	227	
COST	\$ MILLION	SB CLANCASTER	WEYBOURNE	214	TE SEGNOND	
CABLE	0.85	Jes 1	LOWESTOFT		SCHEVENINGEN	
SUBMERGED ELECTRONICS	0.50	HOLYHEAD	COVENITHE ALDEBURGH	32	ET DOM HUND	
TERMINAL AND POWER FEED	0.25	3	کے	39	IDDELKERKE	
TERMINAL STATIONS		8	DUMPTON GAP BROADSTAIRS	128 LAP	PANNE RNE	
INSTALLATION	0.10	ml	ST. NARGARETS	67 {		
TOTAL	1.70	BOURNEMOU	5 2 100	>		
SYSTEM DESIGN LIFE	25 years	Ins	38 168	ST VALERY EN	CAUR	

SEACAB	LE SYSTEM DA	TA PROFI	LE SYSTEM 128
NAME	Broadstairs- Oostende		
OTHER NAMES	Broadstairs- Oostende A(1)	U. K Belgium 3	Joss Bay-Middelkerke
COUNTRY A	England	COUNTRY B	Belgium
TERMINUS A	Broadstairs, Kent	TERMINUS B	Oostende
LANDING POINT A	Joss Bay	LANDING POINT B	Middelkerke
COORDINATES A	51°23'N x 1°27' E	COORDINATES B	51°11' N x 2°48' E

OWNER A	British Post Office Régie des Télégraphes et des Téléphones		British Post Office		British Post Office		A British Post Office		CIRCUITS HELD 390 h
OWNER B			CIRCUITS HELD 390h						
IRU HOLDERS	DBP	Luxembourg							
CIRCUITS HELD	360	9.0							
LESSEES	none								
CIRCUITS LEASED	6								

DATE IN SERVICE 1972	NATURE OF SERVICE	commercial	CABLE	64	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14M
CABLE DESCRIPTION	armored J	oolyethylene coa	axial			CABLE SIZ	ε 1.470 3	7.3 mm
CABLE MANUFACTURER	Standard	Telephones & C	ables Lir	nited	CABLESI USED:	HIP AL	ERT (4)	
REPEATER DESCRIPTION		ainer inflexible nal transistoriz	ed		NUMBER OF	10	REPEATER	7 nm
REPEATER MANUFACTU	RER Standa	rd Telephones	& Cables	Limite	d			
NOMINAL TRANSMISSIO	N BANDWIDTH	5704+5704 kHz	TRANSM	SSION F	REQUENCIES	312-6016	+7996-1370	00 kHz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	-				
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIAL	1260 n	ow 1260	CHANNEL SPACING	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT	ANUFACTURE	R Standard Tele	phones )	& Cable	s I tri	STRUCTION NTRACTOR	STC	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 12	0/120	SYSTEM	CURRENT	0.495 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED _	т	OTAL CIRCUIT	rs _	DATE	-

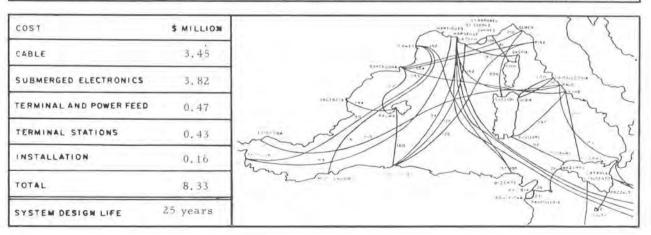
COST	\$ MILLION	A COVENTORY 18 SCHEVENINGEN
CABLE	0.65	ALDEBURGH
SUBMERGED ELECTRONICS	0,50	DUMPTON GAP 39 128 LAPANNE
TERMINAL AND POWER FEED	0.25	BROADSTAIRS ST. WARGARETS 157 BAY
TERMINAL STATIONS	0.03	EASTBOURNE
INSTALLATION	0.10	38 168
TOTAL	1,53	IS,14,
SYSTEM DESIGN LIFE	25 years	GUERNSEY D COURSEULLES

## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 129

			NUMBER
NAME	Marseilles - Bordj El Kiffan		
OTHER NAMES	Marseille-Algiers No. 2		
COUNTRY A	France	COUNTRY B	Algeria
TERMINUS A	Marseille	TERMINUS B	Bordj El Kiffan
LANDING POINT A	La Seyne	LANDING POINT B	Bordj El Kiffan
COORDINATES A	43°06' N x 5°54'E	COORDINATES B	36°53' N x 3°2' E

OWNER A	Administration of Posts and Telecommunications	CIRCUITS HELD 444h
OWNER B	Administration of Posts and Telecommunications	CIRCUITS HELD 480h
IRU HOLDERS	DBP	
CIRCUITS HELD	36	
LESSEES		
CIRCUITS LEASED		

DATE IN SERVICE 19	72 NATUR SERV	the second states of the second	ial CABLE MILES	444	SINGLE OR TWIN S		TYPE	S 5
CABLE DESCRIP	tion unar	mored polyethy	lene coaxial		CA	BLE SIZE 1.	00" 25	. 4 mm
CABLE MANUFAC	TURER Les	Câbles de Lyon	4	CAI	BLESHIP US	ED: MARC	EL BA	YARD
REPEATER DESCRIPTION		ocontainer flexi ectional transis	Care Mar		NUMBER OF	F 3	PEATER	8 nm
REPEATER MANU	FACTURER (	Compagnie Indu	strielle de Tél	ecomunio	ation			
NOMINAL TRANSP	SISSION BAND	WIDTH 1980+198	30 KHZ TRANSMI	SSION FR	EQUENCIES 3	12-2292+27	92-477	2 kHz
NUMBER OF EQU	ALIZERS 4	EQUALIZ	ATION METHOD	compute	ed and assen	ubled on boa	ard	
NOMINAL VOICE	CIRCUIT CAPA	CITY, NON-TASI, II	NITIAL 480	now 480	CHANNEL SPACING, 11	NITIAL 4 kH	s now	4 kHz
TERMINAL EQUIPH	MENT MANUFA	CTURER Cie. Ind	lustrielle de T	élécomur	nication CONST	RUCTION C	CIT	
POWER FEED MC	DE double	end NOMINA	L VOLTAGE 8	300/800	SYSTEM CI	JRRENT 0.	180 A	
TASI TYPE - C	IRCUITS USE	D - CIRCUIT	S DERIVED -	тот	AL CIRCUITS		PLIED	-



SEACAB	LE SYSTEM D	ATA PROFI	LE SYSTEM REFERENCE 130
NAME	St. Peter Port-Tuckton Brid	lge A	
OTHER NAMES	Tuckton Bridge-Lancress Ba	ау	
COUNTRY A	England	COUNTRY B	Guernsey, Channel Islands
TERMINUS A	Tuckton Bridge, Dorset	TERMINUS B	St. Peter Port
LANDING POINT A	Southbourne	LANDING POINT B	l'Ancress Bay
COORDINATES A	$50^{0}42' \text{ N} \ge 1^{0}48' \text{ W}$	COORDINATES B	$49^{0}30' \text{ N} \times 2^{0}32' \text{ W}$

OWNER A	British Post Office	CIRCUITS HELD	1380 h
OWNER B	Channel Islands Telecommunications Administrations	CIRCUITS HELD	1380 h
IRU HOLDERS	none		
CIRCUITS HELD	4		
LESSEES	none		
CIRCUITS LEASED			

DATE IN SERVICE 1972	NATURE OF SERVICE	commercial	CABLE	89	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14M)
CABLE DESCRIPTIO	N armored p	olyethylene co	axial		C	ABLE SIZ	E 1,47" 37.	3 mm
CABLE MANUFACTUR	ER Standard 7	elephones & C	ables Lit	nited	CABLESHIP USED:	ALE	RT (4)	
REPEATER		iner inflexible al transistori:			NUMBER OF	14	REPEATER	7 nm
REPEATER MANUFA	CTURER Standa	ard Telephones	& Cable	s Limite	d			
NOMINAL TRANSMIS NUMBER OF EQUALI	1000	5704+5704 kF		SSION FR	EQUENCIES	12-6016	+7996-137(	00 kHz
NOMINAL VOICE CI	RCUIT CAPACITY,	NON-TASI, INITIA	L 1380	now 1380	CHANNEL SPACING,	NITIAL 4	kHz nov	4 kHz
TERMINAL EQUIPME	NT MANUFACTURE	Standard Te	lephones	& Cables	z 1 tel	TRUCTION RACTOR	STC	
POWER FEED MODE	double end	NOMINAL VO	LTAGE ]	50/150	SYSTEM C	URRENT	0.495 A	
FORCE FEED MODE								

COST	\$ MILLION
CABLE	2.00
SUBMERGED ELECTRONICS	1.25
TERMINAL AND POWER FEED	0.50
TERMINAL STATIONS	0.25
INSTALLATION	0.13
TOTAL	4.13
SYSTEM DESIGN LIFE	25 years

SEACAB	LE SYSTEM DA	TA PROFI	LE SYSTEM REFERENCE 131
NAME	Lisboa - Funchal		
OTHER NAMES	Lisboa - Madeira Sesim	bra - Funchal CA	M 1
COUNTRY A	Portugal (mainland)	COUNTRY B	Portugal (Madeira)
TERMINUS A	Sesimbra, Estremadura	TERMINUS B	Funchal
LANDING POINT A	Sesimbra	LANDING POINT B	Funchal
COORDINATES A	$38^{\circ}26'N \ge 9^{\circ}6'W$	COORDINATES B	32 <sup>°</sup> 40'N x 16 <sup>°</sup> 48'W

OWNER	Companhia Portuguesa Rádio Marconi	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD	+	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1972	NATURE OF SERVICE commer	cial MILES	616	SINGLE OR TWIN	single	SYSTEM TYPE U MK I
CABLE DESCRIPTION	unarmored polyeth	nylene coaxial		c	ABLE SIZ	E 0.99" 25.1 mm
CABLE MANUFACTURER	Standard Telephon	ies & Cables Lin	nited	CABLESH USED:	IP JOHN	W MACKAY
REPEATER DESCRIPTION	monocontainer inf	lexible bidirecti	onal	NUMBER OF	35	REPEATER SPACING 18 nm
REPEATER MANUFACTU	RER Standard Tele	phones & Cable	s Limite	ed		
NOMINAL TRANSMISSIO	N BANDWIDTH 492+49	2 kHz TRANSM	SSION F	REQUENCIES	60-552+6	72-1164 kHz
NUMBER OF EQUALIZER	S 2 EQUAL	LIZATION METHOD	adjust	ed on board		
NOMINAL VOICE CIRCU	IT CAPACITY, NON-TASI	INITIAL 160	now 12	CHANNEL SPACING,	INITIAL 3	kHz now 4 kHz
TERMINAL EQUIPMENT	MANUFACTURER Standa	ard Telephones	& Cable	e I td	TRUCTION	STC
POWER FEED MODE	double end NOM)	NAL VOLTAGE 18	50/1850	SYSTEM	CURRENT	0.415 A
TASI TYPE - CIRCUI	TS USED - CIRCI	UITS DERIVED -	т	DTAL CIRCUIT	5 -	DATE -

COST	\$ MILLION
CABLE	2.1
SUBMERGED ELECTRONICS	1.6
TERMINAL AND POWER FEED	0.4
TERMINAL STATIONS	0.8
INSTALLATION	0.3
TOTAL	5.2
SYSTEM DESIGN LIFE	20 years

SISTEM REFERENCE NUMBER

132

NAME	Florida-Bahamas		
OTHER NAMES	West Palm Beach-Eight Mile R	lock-Nassau	
COUNTRY A	Bahama Islands	COUNTRY B	Bahama Islands
TERMINUS A	Nassau, New Providence	TERMINUS B	Eight Mile Rock, Grand Bahama
LANDING POINT A	Goodman Bay	LANDING POINT B	Brandie Pt.
COORDINATES A	25 <sup>0</sup> 4' N x 77 <sup>0</sup> 23' W	COORDINATES B	26 <sup>0</sup> 32' N x 78 <sup>0</sup> 49' W
COUNTRY C	U.S.A.	COUNTRY D	
TERMINUS C	West Palm Beach, Florida	TERMINUS D	
LANDING POINT C	Palm Beach	LANDING POINT D	
COORDINATES C	26 <sup>0</sup> 43' N x 80 <sup>0</sup> 2' W	COORDINATES D	
COUNTRY E		COUNTRY F	
TERMINUS E		TERMINUS F	
LANDING POINT E		LANDING POINT F	
COORDINATES E		COORDINATES F	
CABLE AB 149	вс 73		
DATE IN SERVICE 1972	NATURE OF SERVICE commercial	SINGLE OR TWIN	single SYSTEM NE(14M)
CABLE DESCRIPTI	on unarmored polyethylene co	axial	CABLE SIZE 1,47" 37,3 mm
CABLE MANUFACTU	RER Standard Telephones & Cal	oles Limited	
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	GRAND CAYMAH	92 72 87 GRAND 7 TURK 63 CO SANTO DOMINGO	BZ TORTOLA G3 ANTIGUA JAAMEY ST. THOS 98

OWNERS	American Telephone & Telegraph Company and Bahamas Telecommunications Corp							
CIRCUITS HELD	AB:	ATT/BTC 943	BTC 420	BC:	ATT/BTC 1360			
IRU HOLDERS	AB:	ITTWC/BTC	TRTT/BTC	BC:	ITTWC/BTC	TRTT/BTC	RCAGC/BTC	
CIRCUITS HELD		6	9		8	10	2	

REPEATER DESCRIPTION TO	onocontainer inflexible bidirectional transistorized	SPACING 0.6 MM
NUMBER OF	c 11	SPACING STO MAN
REPEATER MANUFACTURER St	andard Telephones & Cables Limited	
NUMBER OF A B I		
EQUALIZATION METHOD as	sembled on board	
TERMINAL EQUIPMENT MANUFA	ACTURER Standard Telephones & Cables Limited	
POWER FEED MODE AC do en	uble	
	0/570	SYSTEM CURRENT 0.495 A
NOMINAL TRANSMISSION BANDWI	IDTH 5704+5704 kHz TRANSMISSION FREQUENCIES 312-60	16+7996-13700 kH:
NOMINAL VOICE CIRCUIT CAPACITY	r, NON-TASI, INITIAL 1380 now 1380 CHANNEL INITIAL 4 kHz.	now 4 kHz
TASI TYPE - CIRCUITS USED		E APPLIED -
REMARKS A Stations: Al	B-Nassau BC-Eight Mile Rock USED: ALE	RT (4)

CONSTRUCTION CONTRACTOR Standard Telephones & Cables Limited

COST	\$ MILLION
CABLE	2.5
SUBMERGED ELECTRONICS	2.1
TERMINAL AND POWER FEED	3.2
TERMINAL STATIONS	0.9
INSTALLATION	0.5
TOTAL	9.2
SYSTEM DESIGN LIFE	25 years

SEACAB	LE SYSTEM DA	TA PROF	ILE SYSTEM REFERENCE 133
NAME	Orkney-Shetlands		
OTHER NAMES	Kirkwall-Lerwick		
COUNTRY A	United Kingdom (Orkney Is.)	COUNTRY B	United Kingdom (Shetland Is.)
TERMINUS A	Kirkwall	TERMINUS B	I erwick
LANDING POINT A	Yinstay Bay	LANDING POINT B	Voe of Sound
COORDINATES A	58 <sup>0</sup> 59' N x 2 <sup>0</sup> 49' W	COORDINATES B	60°07'N x 1°10' W

IV. MARK	2010/01/01/01/01	10 10 10 10 10 10 10 10 10 10 10 10 10 1
OWNER	British Post Office	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD	- · · · · · · · · · · · · · · · · · · ·	
LESSEES	none	
CIRCUITS LEASED	0	

DATE IN SERVICE 1971	NATURE OF SERVICE	comme reial	CABLE	108	SINGLE OR TWIN	single	SYSTEM TYPE	NC (5M)
CABLE DESCRIPTION	armored	polyethylene coa	xial		0	CABLE SIZ	e 0.935"	23.7 mm
CABLE MANUFACTURES	Standard	Telephones & Ca	ables Lim	ited (	CABLESHIP	USED:	ALERT (	4)
REPEATER DESCRIPTION		ainer inflexible nal transistoriz	ed		NUMBER OF	14	REPEATER	7.5 nm
REPEATER MANUFACT	JRER Stand	ard Telephones	& Cables	Limite	d			
NOMINAL TRANSMISSI	ON BANDWIDTH	H 19 <b>8</b> 0+1980 kH	ZTRANSMIS	SION F	REQUENCIES	312-2292	+2792-477	72 kHz
NUMBER OF EQUALIZE	RS none	EQUALIZATION	METHOD	8				
NOMINAL VOICE CIRC	UIT CAPACITY,	NON-TASI, INITIAL	480 n	ow 480	CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R STC				STRUCTION TRACTOR	STC	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 3	00/300	SYSTEM	CURRENT	0.118	
TASI TYPE - CIRCU	ITS USED -	CIRCUITS DE	RIVED -	TO	TAL CIRCUIT	s	DATE	1

COST	\$ MILLION			20
CABLE	0.77	53	VESTMANNAEYJAB	TORSHAVN
SUBMERGED ELECTRONICS	0.73	DAL		51 54 135 BERG
TERMINAL AND POWER FEED	0.46			STOR NAWAY
TERMINAL STATIONS	0.42			OHAN 2 ABENDEEN
INSTALLATION	0.13	48	//	Syla -
TOTAL	2,51	30		3 Sout SCARBO
SYSTEM DESIGN LIFE 2	5 years			WIDEHOUTH Sounds

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SEACAB	LE SYSTEM DAT	TA PROF	ILE	SYSTEM REFERENCE 133
NAME	Lerwick-Torshavn		ACRONYM	SHEFA
OTHER NAMES	Shetlands-Faeroes			
COUNTRY A	United Kingdom (Shetland Is.)	COUNTRY B	Denmark	(Faroe Is.)
TERMINUS A	Lerwick	TERMINUS B	Torshavn	
LANDING POINT A	Westerquarff	LANDING POINT B	Hvidanes	
COORDINATES A	60°6' N x 1°16' W	COORDINATES B	62°3' N x	6046' W

OWNER A	British Post Office	CIRCUITS HELD 480 h
OWNER B	General Directorate of Posts and Telegraphs	CIRCUITS HELD 480 h
IRU HOLDERS	none	
CIRCUITS HELD	-	
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1972	NATURE OF SERVICE	commercial	CABLE	235	SINGLE OR TWIN	single	SYSTEM TYPE	NC (5M)
CABLE DESCRIPTION	unarmored pe	olyethylene coa	xial			CABLE SIZ	E 1.47" 3	37.3mm
CABLE MANUFACTURER	Standard T	elephones & Ca	ables Lin	nited	CABLESHIF	USED:		1 1 C 3 C 1 C
REPEATER DESCRIPTION		iner inflexible al transistoriz	ed		NUMBER OF	27	REPEATER	7.5 nm
REPEATER MANUFACTU	RER Stand	lard Telephones	& Cable	s Limi	ted			
NOMINAL TRANSMISSIC	N BANDWIDTH	1980+1980 kH	ZTRANSMI	SSION F	REQUENCIES	312-229	2+2792-475	72 kHz
NUMBER OF EQUALIZED	s i	EQUALIZATION	METHOD	asser	nbled on bo	ard		
NOMINAL VOICE CIRCU	IT CAPACITY, M	ION-TASI, INITIAL	480	now 480	CHANNEL SPACING	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Standard Te	lephones	& Cabl	es ita.	NTRACTOR	STC	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 37	0/370	SYSTEM	CURRENT	0.118 /	<i>J</i>
TASI TYPE - CIRCU	TS USED -	CIRCUITS DE	RIVED -	T	OTAL CIRCUIT	rs –	DATE	4

COST	\$ MILLION	24
CABLE	I.10	VESTMANHALYJAN TORSHAVN UI HAICK
SUBMERGED ELECTRONICS	1.30	DAL
TERMINAL AND POWER FEED	0.12	STOR HAWAY DRINKWALL 20
TERMINAL STATIONS	-	
INSTALLATION	0.28	an Sugar 136
TOTAL	2,80	South Scarbonc
SYSTEM DESIGN LIFE 2	5 years	WIDEMOUTH John Stand

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SEACAB	LE SYSTEM	DATA PRO	FILE REFERENCE 134
OFFICIAL	Catanzaro-Alexandria		NUMBER -
OTHER NAMES			
COUNTRY A	Italy	COUNTRY 8	Egypt
TERMINUS A	Catanzaro	TERMINUS B	Alexandria
LANDING POINT A	Marina di Catanzaro	LANDING POINT 8	Alexandria
COORDINATES A	$38^{\circ}54' \text{ N} \ge 16^{\circ}38' \text{ E}$	COORDINATES B	31 <sup>0</sup> 11' N × 29 <sup>0</sup> 52' E

SYSTEM

OWNER A	Administration of Posts and Telecommunications		CIRCUITS HELD 425h
OWNER B	Telecommur	ications Organization	CIRCUITS HELD 480h
IRU HOLDERS	DBP	ATT	
CIRCUITS HELD	12	13	
LESSEES			
CIRCUITS LEASED			

DATE IN SERVICE 1972	NATURE OF SERVICE commercial	CABLE	890	SINGLE OR TWIN	single	SYSTEM Type NC (5M)
CABLE DESCRIPTION	unarmored polyethyle	ne coaxial			CABLE SIZ	E 1.47" 37.3 mm
CABLE MANUFACTURER	Standard Telephones &	& Cables Lin	nited	CABLESHI	USED:	MERCURY
REPEATER DESCRIPTION	monocontainer inflexil bidirectional transisto			NUMBER OF	85	REPEATER SPACING 11 nm
REPEATER MANUFACTUR	ER Standard Telephon	nes & Cable	s Limit	ed		
NOMINAL TRANSMISSION	BANDWIDTH 1980+1980	kHz TRANSMI	SSION	FREQUENCIES	312-229	2+2792-4772 kHz
NUMBER OF EQUALIZER	5 6 EQUALIZAT	ION METHOD	adjus	ted on board		
OMINAL VOICE CIRCUI	T CAPACITY, NON-TASI, INIT	TIAL 480	now 48(	) CHANNEL SPACING,	INITIAL	4 kHz now 4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER Standard T	Celephones &	c Cable	e I td	STRUCTION	STC
OWER FEED MODE	double end NOMINAL	VOLTAGE 10	00/100	0 SYSTEM	CURRENT	0.150 A
TASI TYPE - CIRCUIT	SUSED - CIRCUITS	DERIVED -	1	OTAL CIRCUIT	5 ~	DATE APPLIED

COST	\$ MILLION
CABLE	9.08
SUBMERGED ELECTRONICS	5.16
TERMINAL AND POWER FEED	0.52
TERMINAL STATIONS	0,43
INSTALLATION	0.58
TOTAL	15.77
SYSTEM DESIGN LIFE	20 years

## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 135

RELOCATED 1974

NAME	Sagami Bay 2		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Miura	TERMINUS B	Ninomiya
LANDING POINT A	Nahama	LANDING POINT B	Ninomiya
COORDINATES A	35 <sup>0</sup> 9' N x 139 <sup>0</sup> 40' E	COORDINATES B	35017'N x 139 <sup>0</sup> 16'E

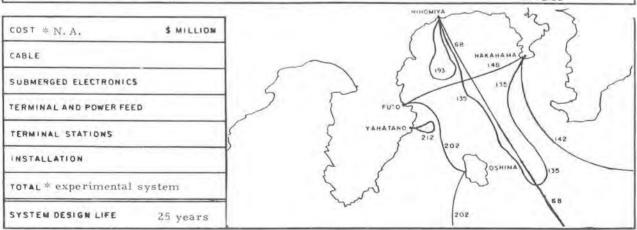
OWNER

Kokusai Denshin Denwa Co. Ltd.

CIRCUITS HELD all

Relocated in 1974 as No. 148 and transferred to NTTPC

DATE IN SERVICE 1972	NATURE OF SERVICE	experimental	CABLE	65	SINGLE OR TWIN	single	SYSTEM TYPE	CS 12 M
CABLE DESCRIPTION	armored	polyethylene co	axial			CABLE SIZ	E 1.5 <sup>14</sup> 38.	l mm
CABLE MANUFACTURER	Ocean Ca	ble Company L	imited	CABL	ESHIP USED	KDD N	ARU	
REPEATER DESCRIPTION		ainer flexible mal transistori:	zed		NUMBER OF	10	REPEATER	6.5 nm
REPEATER MANUFACTUR	RER Nippo	n Electric Co.	Ltd. and	Fujitsu	1 Limited			
NOMINAL TRANSMISSIO	N BANDWIDTH	H 5032+5032 kH	ZTRANSM	ISSION	FREQUENCIES	564-5596	+7356-123	88 kHz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	4				
NOMINAL VOICE CIRCU	T CAPACITY,	NON-TASI, INITIAL	1200	now 120	0 CHANNEL SPACING	INITIAL 2	kHz nov	v 4 kHz
TERMINAL EQUIPMENT N	IANUFACTURE	R Nippon Ele Fujitsu Lte		. Ltd.		STRUCTION	NTTPC	
POWER FEED MODE d	ouble end	NOMINAL VOI	LTAGE 20	0/200	SYSTEM	CURRENT	0.100 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED		TOTAL CIRCUIT	s -	DATE	-



SEACAB	LE SYSTEM	DATA PROFI	LE SYSTEM REFERENCE 136
NAME	Scarborough-Thisted		NOMBER
OTHER NAMES	Cayton Bay-Klitmøller	U.K Denmar	k 2
COUNTRY A	England	COUNTRY B	Denmark
TERMINUS A	Scarborough, Yorkshire	TERMINUS B	Thisted, Thy
LANDING POINT A	Cayton Bay	LANDING POINT B	Klitmøller
COORDINATES A	54°15' N x 0°22' W	COORDINATES B	57°2' N × 8°28' E

British Post Of	fice		CIRCUITS HELD	1260h
Administration	of Posts and Telegraphs		CIRCUITS HELD	300h
Finland	Norway	Sweden		
60h	300h	600h		
001	30011	600h		
	Administration of Finland	Norway	Administration of Posts and Telegraphs Finland Norway Sweden	Administration of Posts and Telegraphs     CIRCUITS HELD       Finland     Norway     Sweden

CIRCUITS LEASED

DATE IN SERVICE 1973	NATURE OF SERVICE	commercial	CABLE	381	SINGLE OR TWIN	single	SYSTEN TYPE	NE(14M
CABLE DESCRIPTION	armored p	oolyethylene co	axial			CABLE SIZ	E 1.47"	37.3 mm
CABLE MANUFACTURER	Standard 7	Celephones & C	ables Lim	ited	CABLESHI	P USED:	ALERT (	4)
REPEATER DESCRIPTION		iner inflexible nal transistori:			NUMBER OF	60	REPEATE	7 nm
REPEATER MANUFACTU	RER Standa	ard Telephones	& Cables	Limite	d			
NOMINAL TRANSMISSIO	N BANDWIDTH	5704+5704 kH	2 TRANSMIS	SION F	REQUENCIES	312-6016	+7996-13	700 kHz
NUMBER OF EQUALIZER	<b>s</b> 3	EQUALIZATIO	N METHOD	compu	ted and asso	embled on	board	
NOMINAL VOICE CIRCU	T CAPACITY,	NON-TASI, INITIA	L 1260 n	ow 1260	CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT N	ANUFACTURE	Standard Te	lephones &	Cable	2 1 4 4	STRUCTION TRACTOR	STC	
POWER FEED MODE	double end	NOMINAL VO	LTAGE 80	0/800	SYSTEM	CURRENT	0,495 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	5 -	DATE	-

COST	\$ MILLION
CABLE	4.2
SUBMERGED ELECTRONICS	3.5
TERMINAL AND POWER FEED	0,5
TERMINAL STATIONS	0.4
INSTALLATION	0.2
TOTAL	8.8
SYSTEM DESIGN LIFE	25 years

SEACAB	LE SYSTEM	DATA PROFI	LE REFERENCE 137
NAME	Alexandria-Beirut		
OTHER NAMES			
COUNTRY A	Egypt	COUNTRY B	Lebanon
TERMINUS A	Alexandria	TERMINUS B	Beirut
LANDING POINT A	Alexandria	LANDING POINT B	Beirut
COORDINATES A	$31^{0}11' \text{ N} \ge 29^{0}52' \text{ E}$	COORDINATES B	33 <sup>0</sup> 54' N x 35 <sup>0</sup> 30' E

SYSTEM

OWNER A	Telecommunications Organization	CIRCUITS HELD 120h
OWNER B	Administration of PTT SODETEL	CIRCUITS HELD 120h
IRU HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEAS	ED	

DATE IN SERVICE 1972	NATURE OF SERVICE	commercial	CABLE	375	SINGLE	single	SYSTEM TYPE	S 1
CABLE DESCRIPTION	unarmored	polyethylene	coaxial		X	CABLE SI	ZE 1.00" 25	.4 mm
CABLE MANUFACTURER	Les Câbles	de Lyon		CABLE	SHIP USEI	: MAR	CEL BAYAI	RD
REPEATER	monoconta	iner flexible b	idirectior	nal	NUMBER OF	20	REPEATER	17 nm
REPEATER MANUFACTU	RER Compa	gnie Industriel	le de Tél	écommun	ications			
NOMINAL TRANSMISSIC	N BANDWIDTH	492+492 kHz	TRANSM	SSION FR	EQUENCIES	60-552	+672-1164 k	Hz
NUMBER OF EQUALIZED	RS 1	EQUALIZATION	N METHOD	adjusted	on board			
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 120	now 120	CHANNEL SPACING,	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT	MANUFACTURER	Compagnie I	ndustriel	le de Tél	écomm <sup>.</sup> con	STRUCTION	CIT	
POWER FEED MODE	double end	NOMINAL VO	LTAGE ]	300/1300	SYSTEM	CURRENT	0.090 A	
TASI TYPE - CIRCU	TS USED -	CIRCUITS DE	RIVED -	TO	TAL CIRCUIT	s -	DATE	

COST	\$ MILLION
CABLE	4,50
SUBMERGED ELECTRONICS	1.98
TERMINAL AND POWER FEED	0,45
TERMINAL STATIONS	0,42
INSTALLATION	0,18
TOTAL	7.53
SYSTEM DESIGN LIFE	20 years



OFFICIAL NAME OTHER

St. Thomas-St. Maarten-Curaçao

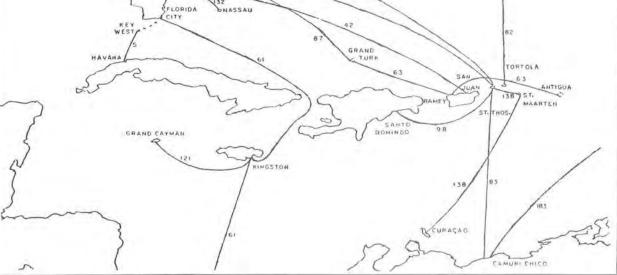
#### Netherlands Antilles Cable NAMES

COUNTRY A	U.S.A. (Virgin Islands)	COUNTRY B	Netherlands Antilles
TERMINUS A	Magens Bay	TERMINUS B	Sint Maarten
LANDING POINT A	Magens Bay	LANDING POINT B	Sint Maarten
COORDINATES A	18°22' N x 64°56' W	COORDINATES B	1895' N x 6397' W
COUNTRY C	Netherlands Antilles	COUNTRY D	
TERMINUS C	Willemstad, Curaçao	TERMINUS D	
LANDING POINT C	Willemstad	LANDING POINT D	
COORDINATES C	12°7' N x 68°55' W	COORDINATES D	

COUNTRY E	COUNTRY F	
TERMINUS E	TERMIN S F	
LANDING ROINT E	LANDING POINT F	
COORDINATES E	COORDINATES F	

MILES AB						
DATE IN SERVICE	1973	NATURE OF SERVICE	commercial	SINGLE OR TWIN	single	SYSTEM U Mk I
CABLE DES	SCRIPTION	unarmore	d polyethylene coaxial		CABLE SIZE	1.00º 25.4 mm

W. PALM 132 G.B.I. BEACH 132 BNASSAU FLORIDA WE 82 GRAND TURK 63 SAN 63 QUAN RAME



# 138

OWNERS *	NAG		ITT	JVI		AAC	R	
CIRCUITS HELD	275 h		27	h		18	h	
IRU HOLDERS	NAG with 17	TCVI, A	AACR,	RCAGC,	WUI,	ATT,	NAG	
CIRCUITS HELD A	B: 17 C: 8		22 12	3 3	2 2		Remainder Remainder	
	NAG with	Codetel	NPT'	T FPTT				
	B: C:	6 6	0 24	2 0				
REPEATER DESCRIP	nov monoco	ntainer i	nflexib	le bidirect	ional			REPEATER SPACING 20 nm
NUMBER OF A B	7 вс 2	17						
REPEATER MANUFAC	TURER Standa	ard Telep	hones	& Cables 1	imited			
NUMBER OF A I	none BC							
EQUALIZATION ME	тнов adjust	ed on bo	ard					
TERMINAL EQUIPM	ENT MANUFACTUR	ER Stan	dard Te	elephones	& Cable	s Limi	ited	
POWER FEED MODE	A 8 single end	BC dou end						
NOMINAL VOLTAGE	1200	576/	576					SYSTEM CURRENT 0.210 A
NOMINAL TRANSMISS	NON BANDWIDTH	492 +	492 kH:	Z TRA	NSMISSIO	N FREQU	ENCIES 60-55	2+672-1164 kHz
NOMINAL VOICE CIRC	UIT CAPACITY, NON-	TASI, INITIAL	160	now 160	CHAN SPAC	INEL INIT	ial 3 kHz	now 3 kHz
TASI TYPE - CIR	CUITS USED -	CIRCUI	IS DERIV	ED -	TOTAL	CIRCUITS	- DA	RE APPLIED -
REMARKS						ALC: THE	and the second second	OHN W MACKAY

CONSTRUCTION CONTRACTOR Standard Telephones & Cables Limited

COST	\$ MILLION
CABLE	5.110
SUBMERGED ELECTRONICS	2.255
TERMINAL AND POWER FEED	0.540
TERMINAL STATIONS	0.440
INSTALLATION	0.390
TOTAL	8.735
SYSTEM DESIGN LIFE	20 years

\*Netherlands Antilles Government, ITT Communications, Inc., Virgin Is., and All America Cables & Radio, Inc.

## SEACABLE SYSTEM DATA PROFILE SYSTEM 139

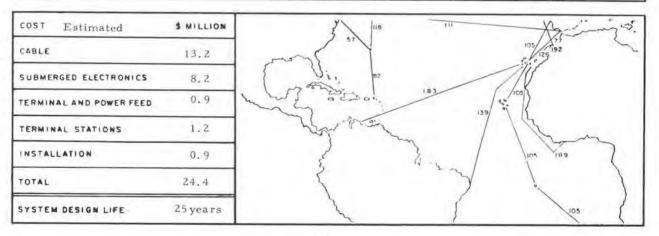
			NUMBER -
NAME	Brazil-Canary Islands No. 1		ACRONYM BRACAN 1
OTHER NAMES	Recife - Las Palmas	Brazil	- Spain
COUNTRY A	Spain (Canary Islands)	COUNTRY B	Brazil
TERMINUS A	Agüimes, Gran Canary Is.	TERMINUS B	Recife, Pernambuco
LANDING POINT A	Arinaga Beach	LANDING POINT B	Boa Viagem Beach
COORDINATES A	27°51' N x 15°24'W	COORDINATES B	8 <sup>0</sup> 8'S x 34 <sup>0</sup> 53'W

OWNER A	Cía. Telefónica Nacional de España	CIRCUITS HELD	32h
OWNER B	Emprêsa Brasileira de Telecomunicações	CIRCUITS HELD	160h
I RU HOLDERS	See opposite page		

LESSEES

CIRCUITS LEASED

DATE IN SERVICE 1973	SERVICE	commercial	CABLE	2634	SINGLE OR TWIN	single	SYSTEM TYPE	NA (UMk
CABLE DESCRIPTION	unarmored	l polyethylene	coaxial			CABLE SI	ZE 0.99" 25	5.1 mm
CABLE MANUFACTURER	Standard 7	'elephones & C	ables Li	mited	CABLESHI	P USED:	MERCUR	Y
REPEATER DESCRIPTION		iner inflexible al transistori:			NUMBER OF	137	REPEATER	19.8nm
REPEATER MANUFACTUR	ER Standa	rd Telephones	& Cable	s Limit	ted			
NOMINAL TRANSMISSION	BANDWIDTH	492+492 kHz	TRANSM	SSION	FREQUENCIES	60-552+	672-1164 k)	Hz
NUMBER OF EQUALIZER	s 11	EQUALIZATION	METHOD	adjust	ed on board			
NOMINAL VOICE CIRCUI	T CAPACITY, I	ION-TASI, INITIAL	- 160 r	now 160	CHANNEL SPACING,	INITIAL	3 kHz now	3 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Standard Te	lephones	& Cabl	es Itd.	STRUCTION	STC	
POWER FEED MODE do	puble end	NOMINAL VOL	TAGE 24	00/2400	) SYSTEM	CURRENT	0.210 A	
TASI TYPE _ CIRCUIT	SUSED -	CIRCUITS DE	RIVED -	Ţ	OTAL CIRCUIT	s _	DATE	



#### ALLOCATIONS

E MBRATEL

with	(160)	
CINE	32	
ITALCABLE	24	
Switzerland	18	
CPRM	16	
KDD	30	171
DBP	16	
MPT France	18	
Radio Austria	1	
PTT Austria	5	
ATT	9	
RCAGC	2	
WUI	2	
ITTWC	1	

SEACABLE SYSTEM	HEICHENCE.
OFFICIAL Penmarch - Casablanca	NUMBER I V
OTHER France - Morocco 2	
COUNTRY A France	COUNTRY B MOTOCCO
TERMINUS A Penmarch	TERMINUS B Casablanca
LANDING POINT & Penmarch	LANDING POINT B Casablanca
COORDINATES A $47^{\circ}50'N \times 04^{\circ}21'W$	COORDINATES B 33°51'N x 7°38'W

OWNER A	Administration of Posts and Telecommunications	CIRCUITS HELD 592h
OWNER B	Administration of P T T	CIRCUITS HELD 640h
RU HOLDERS	DBP	
CIRCUITS HELD	48	
LESSEES	none	

SERVICE 1973	NATURE OF SERVICE commercial	CABLE	1035	SINGLE OR TWIN single	SYSTEM TYPE S 5
CABLE DESCRIPTION	unarmored polyethylene	coaxial		CABLE S	IZE 1.5" 38.1mm
CABLE MANUFACTURER	Les Câbles de Lyon		CAB	LESHIP USED: MA	
REPEATER DESCRIPTION Monocon	ntainer flexible bidirection	al transi	storized	NUMBER OF REPEATERS 92	REPEATER SPACING 12nm
REPEATER MANUFACTU	RER Compagnie Industriel	le de Tél	écommu	nications CIT-AL	CATEL
NOMINAL TRANSMISSIO	N BANDWIDTH 1980+1980 kHz	TRANSMI	SSION FF	REQUENCIES 312-229	2+2792-4772 kHz
NUMBER OF EQUALIZER	S 8 EQUALIZATION	METHOD	Steppi	ng switch	
NOMINAL VOICE CIRCUI	T CAPACITY, NON-TASI, INITIAL	- 640 1	now 640	CHANNEL SPACING, INITIAL	3 kHz now 3 kHz
TERMINAL EQUIPMENT M		ATEL		CONSTRUCTION	SUBMARCOM
OWER FEED MODE do				SYSTEM CURRENT	0.180 A
ASI TYPE _ CIRCUIT	SUSED _ CIRCUITS DE	RIVED	то	TAL CIRCUITS	DATE APPLIED -

COST	\$ MILLION
CABLE	14.18
SUBMERGED ELECTRONICS	6.80
TERMINAL AND POWER FEED	0.48
TERMINAL STATIONS	0.44
INSTALLATION	0.28
TOTAL	22.18
SYSTEM DESIGN LIFE 25 y	ears

SEACAB	LE SYSTEM	DATA PROFI	LE REFERENCE 141
OFFICIAL NAME	Aomori-Hakodate		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Yamazaki, Aomori	TERMINUS B	Kikonai, Hokkaido
LANDING POINT A	Yamazaki	LANDING POINT B	Kikonai
COORDINATES A	40°47' Nx 140°44' E	COORDINATES B	41°48' N x 140°49' E

SYSTEM

OWNER	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD	F	
LESSEES	none	
CIRCUITS LEASED		

W 17 1 W 117 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SERVICE C	ommercial	CABLE	30	SINGLE OR TWIN	single	SYSTEM TYPE	CS36MS
CABLE DESCRIPTION	armored pol	lyethylene coa	ixial			CABLE SIZ	E 1,00" 2	5.4 mm
CABLE MANUFACTURER	Ocean Cable	e Company Li	mited	CABLES	HP USED	TSUGA	RU MARU	
REPEATER DESCRIPTION	monocontair	ner fiexiole il transistoriz	ed		NUMBER OF	15	REPEATER	2 nm
REPEATER MANUFACTUR	ER Nippon	Electric Com	pany Ltd	l. and Fu	jitsu Ltd.			
Carls Area Martin		2672+12672kH			EQUENCIES	4332-170	04+22796-	35468kH
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD	8			4 kHz no	
NOMINAL TRANSMISSION NUMBER OF EQUALIZER NOMINAL VOICE CIRCUI TERMINAL EQUIPMENT M	S none T CAPACITY, NO	EQUALIZATION	METHOD 2700 ectric C	- now 2700	CHANNEL SPACING nd cor		4 kHz no	w 4 kHz
NUMBER OF EQUALIZER	S none T Capacity, NC ANUFACTURER	EQUALIZATION ON-TASI, INITIAL Nippon Ele	METHOD 2700 ectric C mited	- now 2700 o. Ltd. a	CHANNEL SPACING nd con CO	, INITIAL INSTRUCTION INTRACTOR	4 kHz no NTTI	w 4 kHz PC

COST *N.A. \$ MILLION	S HOKKAIDO
CABLE	m (
SUBMERGED ELECTRONICS	LIOB MURDRAN
TERMINAL AND POWER FEED	MORI KIKONAL
TERMINAL STATIONS	(a)
INSTALLATION	AGMORI
TOTAL * prototype installation	HONSHU
SYSTEM DESIGN LIFE 20 years	2 HONSHO }

229

# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 142

			NUMBER
NAME	Miura-Ibaraki		
OTHER NAMES	Tokyo By-Pass		
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Miura, Kanagawa	TERMINUS B	Ajigaura, Ibaraki
LANDING POINT A	Nahama	LANDING POINT B	Ajigaura
COORDINATES A	35 <sup>0</sup> 09'N x 139 <sup>0</sup> 40' E	COORDINATES B	36°20' N x 140°35' E

OWNER	Nippon Telephone & Telegraph Public Corporation	CIRCUITS HELD all
RU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE 1973	NATURE OF SERVICE	commercial	CABLE	244	SINGLE OR TWIN	single	SYSTEM TYPE CS36M		
CABLE DESCRIPTION	unarmore	d polyethylene	coaxial			CABLE SIZ	E 1.5" 38.1 mm		
CABLE MANUFACTURER Ocean Cable Company Limited					CABLESHIPS TSUGARU MARU USED: KDD MARU				
REPEATER DESCRIPTION		iner flexible al transistoriz	ed		NUMBER OF	0.4	REPEATER SPACING 3.1 nm		
REPEATER MANUFACTU	RER Nippo	n Electric Com	pany Ltd.	and Fu	ijitsu Ltd.				
NOMINAL TRANSMISSIO	N BANDWIDTH	12672+12672kH	ZTRANSMIS	SION FR	EQUENCIES	4332-170	04+22796-35468kH:		
NUMBER OF EQUALIZER		EQUALIZATION							
NOMINAL VOICE CIRCUI	T CAPACITY, I	NON-TASI, INITIAL	2700 nc	w 2700	CHANNEL SPACING,	INITIAL 4	kHz now 4 kHz		
FERMINAL EQUIPMENT M	ANUFACTURER	NEC and Fuj	itsu			STRUCTION	NTTPC		
OWER FEED MODE	louble end	NOMINAL VOL	TAGE 800	/800	SYSTEM	CURRENT	0.156 A		
ASI TYPE - CIRCUIT									

COST	\$ MILLION	AJIGAURA
CABLE	3, 3	
SUBMERGED ELECTRONICS	4.9	K HONSHU
TERMINAL AND POWER FEED	0.Ġ	FUTOS TO MILLERA
TERMINAL STATIONS	0.5	Res PALE
INSTALLATION	0.2	05HIMAC 142
TOTAL	9.5	HIVANI JURA C
SYSTEM DESIGN LIFE	20 years	Y \

#### 143 unassigned

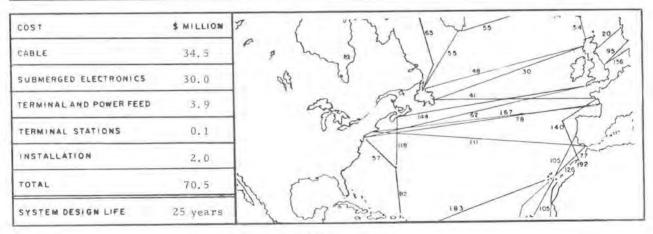
## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 144

Widemouth-Halifax		ACRONYM CANTAT 2
Canada Transatlantic No. 2		
England	COUNTRY B	Canada
Widemouth, Cornwall	TERMINUS B	Halifax, Nova Scotia
Widemouth Bay	LANDING POINT B	Beaver Harbor
50 <sup>°</sup> 47'N x 4 <sup>°</sup> 34'W	COORDINATES B	$44^{\circ}54'N \times 62^{\circ}25'W$
	Canada Transatlantic No. 2 England Widemouth, Cornwall Widemouth Bay	Canada Transatlantic No. 2EnglandCOUNTRY BWidemouth, CornwallTERMINUS BWidemouth BayLANDING POINT B

OWNER A	British Post Of	British Post Office			
OWNER B	Ganadian Overs	* CIRCUITS HELD	1840h		
IRU HOLDERS	DBF/TGC	ATT/BPO	RCAGC/BPO	WUI/BPO	
CIRCUITS HELD	100	373	3	I	

\* Now Teleglobe Canada (TGC)

DATE IN SERVICE 1974	NATURE OF SERVICE	commercial	CABLE	2805	SINGLE OR TWIN	single	SYSTEN TYPE	NE (14 M
CABLE DESCRIPTION	unarmored	l polyethylene o	coaxial			CABLE SIZ	ε <sub>1.47"</sub> 3	7.3 mm
CABLE MANUFACTURER	Standard T	elephones & C	ables Li	mited		_		
REPEATER	1.4.4.6.1.1.1.0.3.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	iner inflexible al transistoriz	ad		NUMBER OF	473	REPEATE	
REPEATER MANUFACTU		rd Telephones		s Ltd.	CABLESHI USED:		RCURY A	
NOMINAL TRANSMISSIC	N BANDWIDTH	5704+5704 kH	Z FRANSM	ISSION I	REQUENCIES	312-6016	5+7996-13	700 kHz
NUMBER OF EQUALIZED	RS 31	EQUALIZATION	METHOD	comp	uted and as	sembled o	n board	
NOMINAL VOICE CIRCU	UT CAPACITY,	NON-TASI, INITIAL	1840	now 184	0 SPACING	INITIAL	3 kHz no	w 3 kHz
TERMINAL EQUIPMENT	MANUFACTURE	Standard Tel	ephones	& Cabl	ar I td	NSTRUCTION	STC	
POWER FEED MODE	double end	NOMINAL VOL	TAGE	5000/50	00 SYSTEM	CURRENT	0.490/	<i>Y</i>
TASI TYPE - CIRCU	ITS USED -	CIRCUITS DE	RIVED -	. 1	TOTAL CIRCUI	TS -	DATE	-



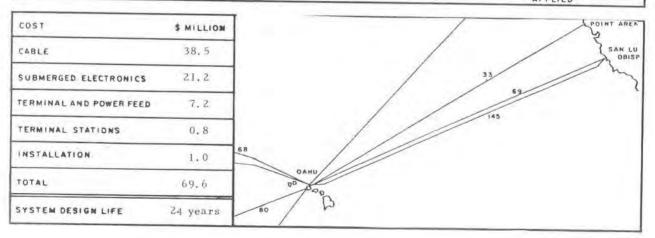
# SEACABLE SYSTEM DATA PROFILE SYSTEM 145

OFFICIAL		NUMBER S			
NAME	Hawaii No. 3		ACRONYM HAW 3		
OTHER NAMES					
COUNTRY A	U.S.A. (Hawaii)	COUNTRY B	U.S.A.		
TERMINUS A	Makaha, Oahu	TERMINUS B	San Luis Obispo, California		
LANDING POINT A	Makaha	LANDING POINT B	San Luis Obispo		
COORDINATES A	21 <sup>°</sup> 29'N x 158 <sup>°</sup> 13 W	COORDINATES B	35 <sup>°</sup> 18'N x 120 <sup>°</sup> 53'W		

OWNER A	American Telephone & Telegraph Company	CIRCUITS HELD		
OWNER B	Hawaiian Telephone Company	CIRCUITS HELD		
IRU HOLDERS *	see following page			
CIRCUITS HELD				
LESSEES				

CIRCUITS LEASED

DATE IN SERVICE 1974	NATURE OF SERVICE C	ommercial	CABLE	2379	SINGLE OR TWIN	single	SYSTEM	SF
CABLE DESCRIPTION	unarmored	polyethylene	coaxial		c	ABLE SIZ	E 1.50" 38	1 mm
CABLE MANUFACTURER	Ocean Cable	e Co. Ltd., S	tandard 7	elephon	es & Cables	Ltd., IT	TT (San Die	ego)
REPEATER DESCRIPTION	monocontair				NUMBER OF	245	REPEATER	10 nm
REPEATER MANUFACTU	RER Western	Electric Con	npany	CABL	ESHIP USE	D: LON	G LINES	
NOMINAL TRANSMISSIO	N BANDWIDTH 2	2160+2160 kHz	TRANSMI	SSION FR	EQUENCIES	554-2920	+3575-5894	kHz
NUMBER OF EQUALIZER	<b>s</b> 12	EQUALIZATION	METHOD	switch	ed networks			
NOMINAL VOICE CIRCU	T CAPACITY, NO	ON-TASI, INITIAL	845	now 845	CHANNEL SPACING,	NITIAL	3 kHz now	3 kHz
TERMINAL EQUIPMENT N	IANUFACTURER	Western Ele	ectric Cor	npany		RACTOR	ATT	
OWER FEED MODE	double end	NOMINAL VOL	TAGE 190	0/1900	SYSTEM C	URRENT	0.136 A	
ASI TYPE - CIRCUI	IS USED -	CIRCUITS DE	RIVED -	TOT	AL CIRCUITS	1 A.	DATE	-



#### ALLOCATIONS

	ATT	HTC	KDD	ITTWC	RCAGC	WUI	OTC(A)	POOL *	
ATT	25	234	207		13				
PLDT	10								
ITA	12								
DPT	2								
SEACOM	4								
KDD			16	20	28	1.8			
ITTWC				29			2		
RCAGC					38		2		
WUI						39	2		
OTC(A)							42		
POOL*								115	

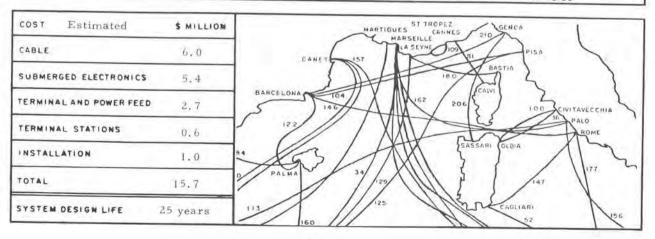
\*POOL: ATT, HTC, ITTWC, RCAGC, WUI

## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 146

OFFICIAL	Barcelona-Rome		ACRONYM BARO
OTHER NAMES	Spain - Italy 3		
COUNTRY A	Italy	COUNTRY B	Spain
TERMINUS A	Pomezia	TERMINUS B	Cabrera de Mar (Barcelona)
LANDING POINT A	Castelportziano	LANDING POINT B	Cabrera Beach
COORDINATES A	41°40' N x 12°25' E	COORDINATES B	41°31' N x 2°24' F
			and the second se

OWNER A	Azienda d	i Stato per	i Servizi Telefonici	CIRCUITS HELD 1380h
OWNER B	Compania	Telefonica	Nacional de España	CIRCUITS HELD 1380h
IRU HOLDERS	DBP	вро	TGC	
CIRCUITS HELD	300	180	12	
LESSEES	Various			
CIRCUITS LEASED	35			

DATE IN SERVICE 1974	NATURE OF SERVICE	commercial	CABLE	513	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14 M
CABLE DESCRIPTION	unarmor	ed polyethylene	coaxial		(	CABLE SIZ	E 1.47" 3	
CABLE MANUFACTURER	Standard	Telephones &	Cables Li	mited	CABLES	HIP USEI	D: MERCI	URY
REPEATER DESCRIPTION		tainer inflexibl onal transistor			NUMBER OF	82	REPEATER	
REPEATER MANUFACTU	RER Stand	ard Telephone:	& Cables	Limite	ed			
NOMINAL TRANSMISSIO	N BANDWIDTH	5704+5704 kH	ZTRANSMIS	SION FR	EQUENCIES	312-6016	+7996-137	00 kHz
NUMBER OF EQUALIZER	<b>s</b> 5	EQUALIZATION	METHOD	comp	uted and as:	sembled c	on board	
NOMINAL VOICE CIRCUI	T CAPACITY, I	NON-TASI, INITIAL	1380 n	ow 1380	CHANNEL SPACING,	INITIAL 4	kHz nov	v 4 kHz
TERMINAL EQUIPMENT M	ANUFACTURER	Standard Te	lephones (	& Cable		TRUCTION	STC	
OWER FEED MODE d	ouble end	NOMINAL VOL	TAGE 12	00/1200	SYSTEM (	URRENT	0.490	A.
TASI TYPE - CIRCUIT	SUSED -	CIRCUITS DE	RIVED -	то	TAL CIRCUITS	-	DATE	*



OLHOND	LE GIGIEM E		NUMBER
NAME	Civitavecchia-Cagliari		
OTHER NAMES	Italy-Sardinia No. 3	Rome - Cagliari	
COUNTRY A	Italy	COUNTRY B	Italy
TERMINUS A	Civitavecchia	TERMINUS B	Cagliari, Sardinia
LANDING POINT A	Civitavecchia	LANDING POINT B	Cagliari
COORDINATES A	$42^{\circ}6^{\circ}$ N x $11^{\circ}48^{\circ}$ E	COORDINATES B	39 <sup>0</sup> 13' N x 9 <sup>0</sup> 6' E

OWNER Ministero delle Poste e delle Telecomunicazione

CIRCUITS HELD all

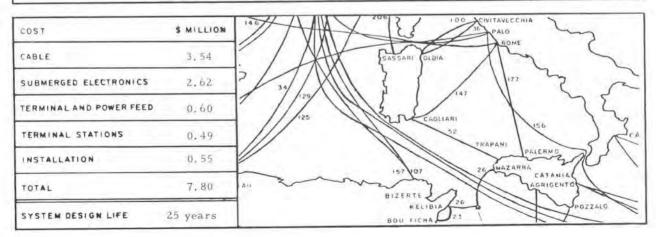
SYSTEM

REFERENCE 14

I R U HOLDERS none CIRCUITS HELD -LESSEES none

CIRCUITS LEASED -

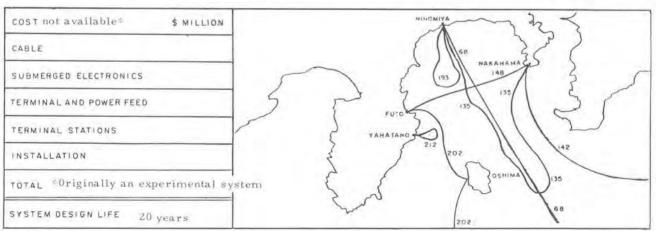
DATE IN SERVICE 1974	NATURE OF SERVICE	commercial	CABLE	301	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14M
CABLE DESCRIPTION	unarmore	d polyethylene	coaxial		(	CABLE SIZ	ZE 1.47º 3	7.3 mm
CABLE MANUFACTURER	Standard 1	Felephones & C	ables Lin	nited	CABLESHI	USED:	JOHN W N	ACKAY
REPEATER		iner inflexible nal transistoriz			NUMBER OF	48	REPEATER	7 nm
REPEATER MANUFACTU	RER Stand	ard Telephones	& Cables	Limite	ed			
NOMINAL TRANSMISSIO	N BANDWIDTH	5704+5704 kH	ZTRANSMI	SSION F	REQUENCIES	312-6016	6+7996-137	00 kHz
NUMBER OF EQUALIZER	<b>IS</b> 3	EQUALIZATION	METHOD	compu	ted and asse	mbled or	n board	
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 1380 no	ow 1380	CHANNEL SPACING,	INITIAL	4 kHz nov	∾4 kHz
TERMINAL EQUIPMENT	ANUFACTURE	8 Standard Te	lephones &	& Cable	n 1 +d	STRUCTION	STC	
POWER FEED MODE	louble end	NOMINAL VO	LTAGE 40	0/400	SYSTEM	CURRENT	0.495 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	ERIVED -	т	OTAL CIRCUIT	s -	DATE	44



NAME	Miura - Itoh		
OTHER NAMES	(Relocation of No. 135)	Yokosuka - Itoh	Sagami Bay 2 Relocated
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Miura, Kanagawa	TERMINUS B	Futo, Shizuoka
LANDING POINT A	Nahama	LANDING POINT B	Futo
COORDINATES A	35 <sup>0</sup> 09'N x 139 <sup>0</sup> 40'E	COORDINATES B	34 <sup>0</sup> 55'N x 139 <sup>0</sup> 08'E

OWNER Nippon Telegraph & Telephone Public Corporation CIRCUITS HELD A11 I R U HOLDERS none CIRCUITS HELD -LESSEES none CIRCUITS LEASED -

DATE IN 1974 NATURE OF SERVICE SERVICE commercial	CABLE	34	SINGLE OR TWIN	single	SYSTEM TYPE CS 12 N
CABLE DESCRIPTION unarmored polyethylene co	axial		0	ABLE SIZ	E 1.5" 38.1mm
CABLE MANUFACTURER Ocean Cable Compan	y Limited				
REPEATER monoconatiner flexible bidirection	al transisto	rized	NUMBER OF	5	REPEATER 6.5 nm
REPEATER MANUFACTURER Nippon Electric Co.	Ltd. and Fu	ijitsu L	.td.		
NOMINAL TRANSMISSION BANDWIDTH 5192+5192 kH	Z TRANSMIS	SION FF	REQUENCIES	16-55084	-7196-12388 kHz
NUMBER OF EQUALIZERS none EQUALIZATIO	N METHOD	-			
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	L 1200	now 12	CHANNEL 200 SPACING,	INITIAL 4	kHz now 4 kHz
TERMINAL EQUIPMENT MANUFACTURER NEC and	Fujitsu			TRUCTION TRACTOR	NTTPC
OWER FEED MODE single end NOMINAL VO	LTAGE 1	00	SYSTEM	CURRENT	0.100 A



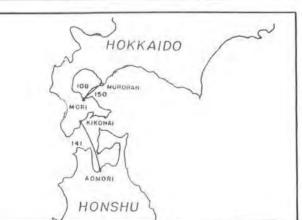
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SEACAB	LE SYSTEM	DATA PROFI	LE SYSTEM REFERENCE 150
OFFICIAL	Mori-Muroran Z		
OTHER NAMES	Uchiura Bay 2		
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Mori, Hokkaido	TERMINUS B	Muroran, Hokkaido
LANDING POINT A	Mori	LANDING POINT B	Muroran
COORDINATES A	42°6' N x 140°35' E	COORDINATES B	42 <sup>0</sup> 18' N x 141 <sup>0</sup> 0'E

OWNER	Nippon Telegraph & Telephone Public Corporation	CIRCUITS HELD all
IRU HOLDERS	none	
CIRCUITS HELD	+	
LESSEES	none	
CIRCUITS LEASED	6	

DATE IN SERVICE 1974	SERVICE CON		ABLE 1	9 SINGI ORTW	and the second se	SYSTEM CS-36
CABLE DESCRIPTION	armored poly	ethylene coas	xial		CABLE SIZ	E 1.00" 25.4 mm
CABLE MANUFACTURER	Ocean Cable (	Company Lin	nited	CABLESHI	P USED: T	SUGARU MARU
REPEATER DESCRIPTION	monocontaine bidirectional		ed	NUMBER	10	REPEATER SPACING 2nm
REPEATER MANUFACTU	RER Nippon Elec	tric Compan	y Limited	and Fujitsu	Limited	
NOMINAL TRANSMISSIO	N BANDWIDTH 126	72+12672 ₮	RANSMISSI	ON FREQUENCI	<b>ES</b> 4332-1700	4+22796 <b>-</b> 35468kI
NUMBER OF EQUALIZER	as none EQ	UALIZATION M	ETHOD -			
NOMINAL VOICE CIRCU	IT CAPACITY, NON-T	ASI, INITIAL 2	2700 now	2700 CHANE	NG, INITIAL 4	kHz now 4 kH
the second second second second second		ine and pair	.00		CONSTRUCTION	AUGUEDO
TERMINAL EQUIPMENT	MANUFACIURER :	VEC and Fuji	tsu		CONTRACTOR	NTTPC
TERMINAL EQUIPMENT		OMINAL VOLTA		200 SYST	CONTRACTOR EM CURRENT	0.156 A

COST	\$ MILLION
CABLE	0.48
SUBMERGED ELECTRONICS	0.62
TERMINAL AND POWER FEED	0.55
TERMINAL STATIONS	0.45
INSTALLATION	0.10
TOTAL	2.20
SYSTEM DESIGN LIFE 2	0 years





OFFICIAL France-Greece-Cyprus-Lebanon
OTHER ARIANE APHRODITE ADONIS

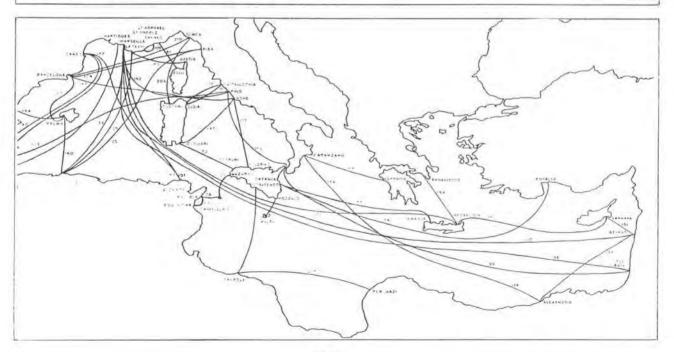
COUNTRY &	France	COUNTRY 8	Greece
TERMINUS A	Marseille	TERMINUS B	Heraklion, Crete
LANDING POINT A	Marseille	LANDING POINT B	Amnissos
COORDINATES A	$43^{\circ}16'N \ge 05^{\circ}23' E$	COORDINATES B	35 <sup>0</sup> 20'N x 25 <sup>0</sup> 12'E
COUNTRY C	Cyprus	COUNTRY D	Lebanon

coon n c	Cyprus	COUNTRY D	Lebanon
TERMINUS C	Larnaka	TERMINUS D	Beirut
LANDING POINT C	Larnaka	LANDING POINT D	Beirut
COORDINATES C	34 <sup>°</sup> 54'N x 33 <sup>°</sup> 38'E	COORDINATES D	33 <sup>0</sup> 54'N x 25 <sup>0</sup> 12'E

COUNTRY E	COUNTRY F	
TERMINUS E	TERMINDS F	
LANDING POINT E	LANDING POINT F	
COORDINATES E	COORDINATES F	

CABLE AB 1343 MILES	вс 521	C D 117			
DATE IN ABC: 1974 SERVICE CD: 1975	NATURE OF SERVICE	commercial	SINGLE OR TWIN	single	SYSTEM S 5
CABLE DESCRIPTION	unarmored	polyethylene coaxial		CABLE	SIZE 1.5" 38.1 mm

#### CABLE MANUFACTURER Les Câbles de Lyon



# 151

OWNERS* AB: Helltelca S.A.	BC: OTE and CYTA	CD: SDTL + CYTA + OTE
CIRCUITS HELD All	A11	A11
See following	page.	
REPEATER DESCRIPTION monocont	ainer flexible bidirectional tran	asistorized REPEATER SPACING 12 nm
NUMBER OF A B 123 B C REPEATERS	45 CD 10	
REPEATER MANUFACTURER Cie. In	dustrielle de Télécommunicatio	on CIT - ALCATEL
NUMBER OF AB 9 BC	3 CD none	
EQUALIZATION METHOD adju	sted on board	
TERMINAL EQUIPMENT MANUFACTUR	ER CIT - ALCATEL	
POWER FEED MODE ABdouble en	d B,C double end≎ D double end	
NOMINAL VOLTAGE 3000/3000	1100/1100 265/265	SYSTEM CURRENT 0. 180 A
NOMINAL TRANSMISSION BANDWIDTH	1980 + 1980 kHz TRANSMI	SSION FREQUENCIES 312-2292 + 2792-4772 kHz
NOMINAL VOICE CIRCUIT CAPACITY, NON-	TASI, INITIAL 480 now 480	CHANNEL SPACING, INITIAL 4 kHz now 4 kHz and 3 kHz
TASI TYPE - CIRCUITS USED -	CIRCUITS DERIVED TO	DTAL CIRCUITS _ DATE APPLIED _
REMARKS		CABLESHIP USED: MARCEL BAYARD

CONSTRUCTION CONTRACTOR

SUBMARCOM

COST \$	MILLION AB	BC	CD
CABLE	12.10	4.62	1.10
SUBMERGED ELECTRONICS	8,50	3.15	0.69
TERMINAL AND POWER FEED	1,05	0.84	0.84
TERMINAL STATIONS	0,35	0,35	0.36
INSTALLATION	2,81	1.57	0.52
TOTAL	24,81	10,53	3.51
SYSTEM DESIGN LIFE 25	vears		

\*Helltelca S.A. is a joint enterprise of the governments of France and Greece.

OTE is the Hellenic Telecommunications Organization

CTA is the Cyprus Telecommunications Authority

SDTL is the Societé de Development des Telecommunications du Liban

#### IRU HOLDERS AB:

OTE CYTA Liban France BTI Spain Suisse Netherlands RCA ITT WUI ATT TGC 156\* 

#### IRU HOLDERS BC:

BTIFranceTGCITTATT ItalyAustriaRCAWUIRadio AustriaIsrael20101746121252112

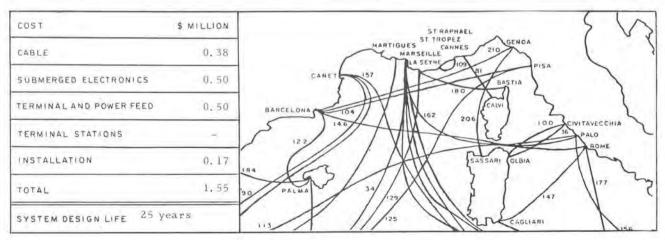
First number = 4 kHz-spaced circuits Second number = 3 kHz-spaced circuits



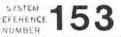
NAME	St. Raphael-La Foux		
OTHER NAMES			
COUNTRY A	France	COUNTRY B	France
TERMINUS A	St. Raphael	TERMINUS B	La Foux
LANDING POINT A	St, Raphael	LANDING POINT B	La Foux
COORDINATES A	$43^{\circ}24'N \ge 06^{\circ}48'E$	COORDINATES B	$43^{\circ}16'N \ge 06^{\circ}35'E$

Administration of Posts and Telecommunications	CIRCUITS HELD AI
	Administration of Posts and Telecommunications

SERVICE 1975	NATURE OF SERVICE	experimental	CABLE	19	SINGLE single	SYSTEM S.25 TYPE
CABLE DESCRIPTION	unarmored p	olyethylene coa	xial		CABLE S	ZE 1.50" 38.1mm
CABLE MANUFACTURE	e Le	s Câbles de Ly	non	CAE	LESHIP USED: VI	ERCORS
REPEATER monoc	ontainer flexit	le bidirectiona	l solid-sta	te	NUMBER OF 5 REPEATERS	REPEATER SPACING 5 nm
REPEATER MANUFACT	URER Cie. I	ndustrielle de 7	Félécommu	inicatio	ns CIT - ALCATH	Ş LÎ.
NOMINAL TRANSMISSI	ON BANDWIDTH	10652+10652kH	ZTRANSMISS	ION FRE	QUENCIES 812-1146	4+14576-25228 kHz
NUMBER OF EQUALIZE	RS 1	EQUALIZATION	METHOD	remo	te controlled	
OMINAL VOICE CIRC	UIT CAPACITY, N	ON-TASI, INITIAL	2340 now	2340	CHANNEL SPACING, INITIAL	4 kHz now 4 kHz
		1.34.1 5.3	Contraction of the second		in addition with the sector of	
TERMINAL EQUIPMENT	MANUFACTURER	CIT - AI	LCATEL		CONSTRUCTION	SUBMARCOM
TERMINAL EQUIPMENT		CIT - AI		/100		SUBMARCOM



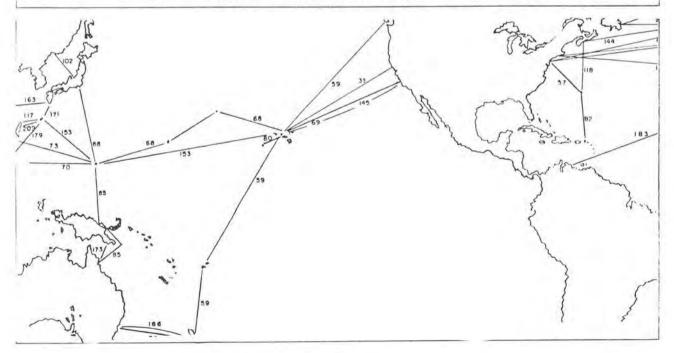
## SEACABLE SYSTEM DATA PROFILE SYSTEM 153



			NUMBER -
OFFICIAL NAME	TRANSPAC 2		ACRONYM TPC 2
OTHER United	l States-Japan Hawaii-G	uam-Okinawa	
CUUNTRY A	U. S. A.	COUNTRY B	U. S. A.
TERMINUS A	Makaha, Oahu, Hawaii	TERMINUS B	Agana, Guam
LANDING POINT A	Makaha	LANDING POINT B	Tanguisson Point
COORDINATES A	21 <sup>°</sup> 29'N x 158 <sup>°</sup> 13'W	COORDINATES B	13 <sup>°</sup> 33'N x 144 <sup>°</sup> 48'E
COUNTRY C	Japan	COUNTRY D	
TERMINUS C	Gushikami, Okinawa	TERMINUS D	
LANDING POINT C	Gushikami	LANDING POINT D	
COURDINATES C	26 <sup>°</sup> 07'N x 127 <sup>°</sup> 45'E	COORDINATES D	
COUNTRY E		COUNTRY F	
TERMINUS E		TERMINUS F	
LANDING POINT E		LANDING POINT F	
COURDINATES E		COORDINATES F	

CABLE AN 34 MILES	483 в с	1397			_	
BATE IN AB: 1			commercial	SINGLE	single	SYSTEM SF
SERVICE BC: I	976 SERV	CE	Construction of the second	OR TWIN		TYPE

CABLE MANUFACTURER ITT Cable/Hydrospace Div., Standard Telephones & Cables Ltd., Ocean Cable Co. Ltd.



153

OWNERS ATT, HTC, ITT, RCA, WUI, KDD, OTC(A) CIRCUITS HELD See following page I R U HOLDERS CIRCUITS HELD LESSEES CIRCUITS LEASED REPEATER SPACING 10 nm REPEATER DESCRIPTION monocontainer flexible bidirectional solid-state NUMBER OF A B 381 BC 141 REPEATERS REPEATER MANUFACTURER Western Electric Company NUMBER OF A B 18 8 C 6 EQUALIZERS EQUALIZATION METHOD switched networks TERMINAL EQUIPMENT MANUFACTURER Western Electric Company POWER FEED MODE A B double end B Cdouble end SYSTEM CURRENT 0, 136 A NOMINAL VOLTAGE 2780/2780 1050/1050 TRANSMISSION FREQUENCIES 554-2920+3575-5894 kHz NOMINAL TRANSMISSION BANDWIDTH 2160 + 2160 kHz NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 845 NOW 845 SPACING, INITIAL 3 kHz. now 3kHz TOTAL CIRCUITS \_ DATE APPLIED TASI TYPE - CIRCUITS USED - CIRCUITS DERIVED -÷ CABLESHIPS USED: LONG LINES, KDD MARU REMARKS

CONSTRUCTION CONTRACTOR ATT Long Lines Division

COST	\$ MILLION
CABLE	86
SUBMERGED ELECTRONICS	30
TERMINAL AND POWER FEED	1
TERMINAL STATIONS	
INSTALLATION	6
TOTAL	123
SYSTEM DESIGN LIFE 24 y	ears

#### ALLOCATIONS

	TTA	HTC	KDD	ITTWC	RCAGC	WUI	OTC(A)
ATT	128						
RCAGC	13	10	33		37		
OTC(A)	15	4		2	2	.2	42
KDD	139	30					
PLDT	10						
ITA	12						
DPT	2						
ITTWC			24	43			
WUI			18			55	
HTC		10					
POOL¢							



NAME			
OTHER NAMES	Heraklion-Lagonissi	Crete-Greece(mainland)	
COUNTRY A	Greece	COUNTRY B	Greece
TERMINUS A	Heraklion, Crete	TERMINUS B	Athens (Lagonissi)
LANDING POINT	A Amnissos	LANDING POINT B	Lagonissi
COORDINATES A	35 <sup>°</sup> 20'N x 25 <sup>°</sup> 12'E	COORDINATES B	37 <sup>9</sup> 45'N x 23 <sup>9</sup> 55'E

OWNER Hellenic Telecommunications Organization OTE

CIRCUITS HELD All

IRU HOLDERS none

CIRCUITS HELD -

LESSEES none

CIRCUITS LEASED -

DATE IN 1975 NATURE OF SERVICE SERVICE commercial	CABLE 184 MILES	SINGLE OR TWIN	SYSTEM NE (14 M) TYPE
CABLE DESCRIPTION unarmored polyethyle	ne coaxial	CABLE SI	ze 1.47" 37.3 mm
CABLE MANUFACTURER Standard Telepho	ones & Cables Li	mited CABLESHII USED:	JOHN W MACKAY
REPEATER DESCRIPTION monocontainer inflexible bidirectic	onal solid-state	NUMBER OF REPEATERS 28	REPEATER SPACING 6.5 nm
REPEATER MANUFACTURER Standard Teleph	ones & Cables L	imited	
NOMINAL TRANSMISSION BANDWIDTH 5704 + 5704 kF	ZTRANSMISSION	FREQUENCIES 312-6016	+7996-13700 kHz
NUMBER OF EQUALIZERS 1 EQUALIZATIO	м метнов сотри	ted and assembled on	board
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	L 1380 now 138	O CHANNEL SPACING, INITIAL	4 kHz now 4 kHz
TERMINAL EQUIPMENT MANUFACTURER Standard Tele	phones & Cables	Ltd. CONSTRUCTION CONTRACTOR	STC STC
POWER FEED MODE double end NOMINAL VO	LTAGE 875/875	SYSTEM CURRENT	0.500 A
TASI TYPE - CIRCUITS USED - CIRCUITS DE	ERIVED -	TOTAL CIRCUITS -	DATE -

COST	\$ MILLION
CABLE	5
SUBMERGED ELECTRONICS	3
TERMINAL AND POWER FEED	2
TERMINAL STATIONS	1
INSTALLATION	1
TOTAL	12
SYSTEM DESIGN LIFE 25 y	ears

Germany-Sweden 2		
G - S 2		
Federal Republic of Germany	COUNTRY B	Sweden
Burg, Fehmarn	TERMINUS B	Trelleborg
A Presen	LANDING POINT B	Trelleborg
$54^{\circ}29'N \ge 11^{\circ}15'E$	COORDINATES B	$55^{\circ}23'N \times 13^{\circ}10'E$
	G - S 2 Federal Republic of Germany Burg, Fehmarn A Presen	G - S 2 Federal Republic of Germany COUNTRY B Burg, Fehmarn TERMINUS B A Presen LANDING POINT B

OWNER A Deutsche Bundespost		CIRCUITS HELD 1200h
OWNER B Televerket		CIRCUITS HELD 1200h
IRU HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEASE	D	

DATE IN 1975 NATURE OF SERVICE SERVICE	commercial	CABLE	113	SINGLE OR TWIN	SYSTEM TYPE KS 1200
CABLE DESCRIPTION	armored polye	thylene co	oaxial	CABLE S	IZE 1.00" 25,4 mm
CABLE MANUFACTURER	Ocean Cable C	ompany L	imited	CABLESHIP US	ED: SALERNUM
REPEATER monocontainer fl DESCHIPTION with femperatu	exible bidirectio tre-actuated gain	nal solid- control (	state TAGC)	NUMBER OF 29 REPEATERS	REPEATER SPACING 4.0 nm
REPEATER MANUFACTURER	Fujîtsu Limite	d			
NOMINAL TRANSMISSION BANDWIDT	<sup>TH</sup> 5248 + 5248	FRANSMI	SSION FR	REQUENCIES 316-5564	4+7804-13052 kHz
NUMBER OF EQUALIZERS 1	EQUALIZATION	METHOD	assen	rbled on board	
NOMINAL VOICE CIRCUIT CAPACITY	, NON-TASI, INITIAL	1200 n	ow 1200	CHANNEL SPACING, INITIAL	4 kbz now 4 kHz
		-		Extended for	
TERMINAL EQUIPMENT MANUFACTUR	ER Fujits	u Limited	1	CONSTRUCTION	N Fujitsu Ltd.
TERMINAL EQUIPMENT MANUFACTUR			1/0/270		Fujitsu Ltd.

COST	\$ MILLION
CABLE	2.6
SUBMERGED ELECTRONICS	1.0
TERMINAL AND POWER FEED	0.6
TERMINAL STATIONS	-
INSTALLATION	1.7
TOTAL	5.9
SYSTEM DESIGN LIFE 25	years

NAME	TELPAL		ACRONYM TELPAL
OTHER NAMES	Tel Aviv-Palo		
COUNTRY A	Israel	COUNTRY B	Italy
TERMINUS A	Tel Aviv	TERMINUS B	Palo
LANDING POINT A	Tel Aviv	LANDING POINT B	Palo
COORDINATES A	$32^{0}04'N \ge 34^{0}46'E$	COORDINATES B	$41^{\circ}55'N \ge 12^{\circ}07'E$

SYSTEM

REFERENCE 156

OWNER	International Submarine Cable Company Limited	CIRCUITS HELD
	(a joint enterprise of the governments of Israel, Italy	, and France)
IRU HOLDE	RS See following page	

CIRCUITS HELD

LESSEES

CIRCUITS LEASED

DATE IN 1975 NATURE OF SERVICE SERVICE	commercial	CABLE	1470	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14 M)
CABLE DESCRIPTION	unarmored poly	ethylene	coaxial		CABLE S	ZE 1.47" 3	7.3 mm
CABLE MANUFACTURER	Standard Telep	nones & (	Cables Ltd	L. CABLI	ESHIPS D:	ALERT ( JOHN W M	ACKAY
REPEATER monocontainer infl DESCRIPTION	lexible bidirectio	nal Solid	-state	NUMBER OF	231	R EPEATER S PACING	6.5 nm
REPEATER MANUFACTURER	Standard Telepl	hones & (	Cables Li	mited			
NOMINAL TRANSMISSION BANDWIDT	гн 5704 + 5704 kH	Z TRANSM	ISSION FR	EQUENCIES	312-6016	5 + 7996-137	00 kHz
NUMBER OF EQUALIZERS 15	EQUALIZATIO	м метнор	compute	d and asse	mbled o	n board	
NOMINAL VOICE CIRCUIT CAPACITY	, NON-TASI, INITIA	L 1380	now 1380	CHANNEL	INITIAL	4 kHz no	w 4 kHz
TERMINAL EQUIPMENT MANUFACTUR	ER Standard Tel	lephones	& Cables	I tel	STRUCTION NTRACTOR	N STC	
POWER FEED MODE double end	NOMINAL VO	LTAGE 326	5/3265	SYSTEM	CURREN	0.490 A	2
TASI TYPE - CIRCUITS USED	- CIRCUITS DE	RIVED	- TO	TAL CIRCUI	rs –	DATE	

COST	\$ MILLION
CABLE	12,0
SUBMERGED ELECTRONICS	15.6
TERMINAL AND POWER FEED	4.4
TERMINAL STATIONS	1.0
INSTALLATION	3.0
TOTAL	36.6
SYSTEM DESIGN LIFE 25 y	ears



#### ALLOCATIONS

	Israel	Cyprus
ATT	300	
ITTWC	4	
RCAGC	4	
WUI	4	
DBP	240	
France	185	
ITALCABLE	182	
BPO	96	12
Belgium	48	
Austria	36	
Radio Austria	3	
TGC	36	
Netherlands	24	
Scandinavia	12	
CINE	12	
OTE	12	
Israel, Western	12	
Turkey	Z	

Administration of PTT



NAME	ANNIBAL		
OTHER NAMES	Perpignan-Bizerte	France - Tun	isia 2
COUNTRY A	France	COUNTRY B	Tunisia
TERMINUS A	Perpignan	TERMINUS B	Bizerte
LANDING POINT A	Canet Plage	LANDING POINT B	Bizerte
COORDINATES A	42 <sup>0</sup> 42'N x 03 <sup>0</sup> 00'E	COORDINATES B	$37^{0}26'N \ge 09^{0}49'E$

OWNER A

Administration of Posts and Telecommunications

OWNER B

nunications CIRCUITS HELD

CIRCUITS HELD 640h

640h

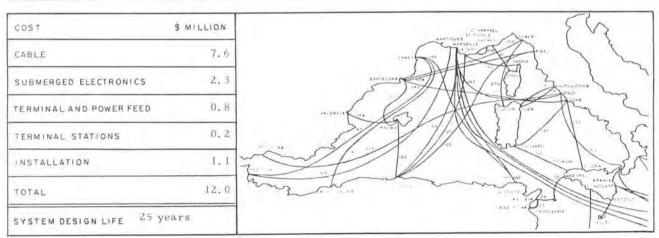
IRU HOLDERS

CIRCUITS HELD

LESSEES

CIRCUITS LEASED

DATE IN 1975 NATURE OF commercial SERVICE	1 CABLE 509 MILES	SINGLE single OR TWIN	SYSTEM S 5 TYPE
CABLE DESCRIPTION unarmored polyethyler	ne coaxial	CABLE SIZE	1.5" 38,1 mm
CABLE MANUFACTURER Les Càbles	s de Lyon	CABLESHIP USED:	VERCORS
REPEATER DESCRIPTION	ctional solid-state	NUMBER OF 47 REPEATERS	REPEATER SPACING 12 nm
	e Industrielle de Télé	communications CIT A	ALCATEL
NOMINAL TRANSMISSION BANDWIDTH 1980+1980	A TRANSMISSION	EREQUENCIES 312-2292 +	2792_4772 kHz
		integer of the server	LI / L- III C KIII
NUMBER OF EQUALIZERS 3 EQUALIZ		djusted on board	2172-1112 8112
	ATION METHOD a	djusted on board	
NUMBER OF EQUALIZERS 3 EQUALIZ NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, IN TERMINAL EQUIPMENT MANUFACTURER Cie. In	ATION METHOD ai NITIAL 540 now 540	djusted on board CHANNEL SPACING, INITIAL 31	
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, IN TERMINAL EQUIPMENT MANUFACTURER Cie. In	ATION METHOD ai NITIAL 540 now 540	djusted on board CHANNEL SPACING, INITIAL 3 nm. CONSTRUCTION S CONTRACTOR	kHz now 3 kHz



SEACAB	LE SYSTEM DA	ATA PROF	ILE	SYSTEM REFERENCE NUMBER 158
NAME	U.KSpain No.2		ACRONYM	UK - SP 2
OTHER NAMES	Sopelana - Goonhilly 3	England - Spain No.	2	
COUNTRY A	England	COUNTRY B	Spain	
TERMINUS A	Goonhilly Downs, Cornwall	TERMINUS B	Azcorri,	Vizcaya
LANDING POINT A	Kennack Sands	LANDING POINT B	Sopelana	Beach
COORDINATES A	50 <sup>0</sup> 01'N x 5 <sup>0</sup> 08'W	COORDINATES B	43°23'N x 0	3°oo'W

OWNER A	British Post Office		CIRCUITS HELD 1	380h
OWNER B	Compañía Telefónica Na	cional de España	CIRCUITS HELD 1	380h
IRU HOLDERS	ASST	ITALCABLE		
CIRCUITS HELD	180	12		
LESSEES	Various			
CIRCUITS LEASED	2			

DATE IN SERVICE 1975 SERVICE	commercial	CABLE MILES	465	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14 M)
CABLE DESCRIPTION	unarmored pol	yethylene	coaxial		CABLE SIZ	E 1.47" 3	7.3 mm
CABLE MANUFACTURER	Standard Telej	ohones & C	Cables Lim	ted C.	AB LESHIP USED:	MERC	URY
REPEATER DESCRIPTION monocontainer in	iflexible bidirec	tional soli	r otsto	UMBER OF	73	REPEATER	6.5 nm
REPEATER MANUFACTURER	Standard Telej	ohones & C	Cables Limi	ted			
NOMINAL TRANSMISSION BANDWIDT	н 5704+5704 kH2	TRANSM	SSION FRED	UENCIES	312-6016+	7996-1370	0 kHz
NUMBER OF EQUALIZERS 4	EQUALIZATIO	N METHOD	compu	ted and a	djusted or	board	
NOMINAL VOICE CIRCUIT CAPACITY	NON-TASI, INITIA	L 1380 r	now 1380	CHANNEL SPACING,	INITIAL	4 kHz no	w 4 kHz
TERMINAL EQUIPMENT MANUFACTUR	ER Standard Te	lephones &	Cables Lt		STRUCTION	STC	
POWER FEED MODE double end	NOMINAL VC	LTAGE 90	90/990	SYSTEM	CURRENT	0.490 A	
TASI TYPE - CIRCUITS USED	- CIRCUITS D	ERIVED	- TOTA	CIRCUIT	S -	DATE	-

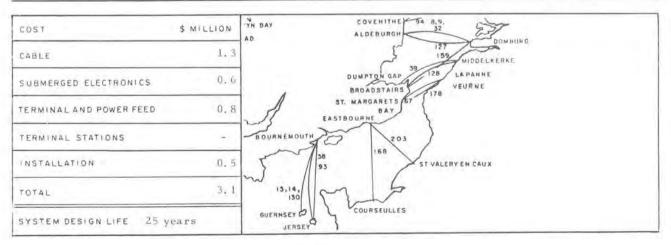
COST Estimated	\$ MILLION
CABLE	8.7
SUBMERGED ELECTRONICS	4,4
TERMINAL AND POWER FEED	0.9
TERMINAL STATIONS	0.3 -
INSTALLATION	1.3
TOTAL	15,6
SYSTEM DESIGN LIFE 25	years



NAME	U.K Netherlands 9		
OTHER NAMES	Joss Bay-Domburg	Broadsta	irs - Domburg
COUNTRY A	England	COUNTRY B	Netherlands
TERMINUS A	Broadstairs, Kent	TERMINUS B	Domburg, Walcheren
LANDING POINT A	Joss Bay	LANDING POINT B	Domburg
COORDINATES A	$51^{\circ}23'N \times 01^{\circ}27'E$	COORDINATES B	$51^{\circ}34'N \ge 03^{\circ}30'E$

OWNER A	British Post Office	CIRCUITS HELD 1380h
OWNER B	Administration of PTT	CIRCUITS HELD 4801
IRU HOLDERS		
CIRCUITS HELD		
	Additional owner: Deutsche Bundespost - 900h	

DATE IN SERVICE	1975	NATURE OF SERVICE	commercial	CABLE MILES	82	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14 M)
CABLE DES	SCRIPTION		armored poly	ethylene co	oaxial	4	CABLE SIZ	E 1,47 <sup>(1)</sup> 3	7.3 mm
CABLE MAN	NUFACTURE	s Star	idard Telephon	es & Cable	s Limited	CABLES USED	A	LERT (4)	
REPEATER		ontainer infl	exible bidirecti	onal solid-	-state	NUMBER OF	13	REPEATER SPACING	6.5 nm
REPEATER	MANUFACT	URER	Standard Tele	phones & (	Cables Lir	nited			
NOMINAL T	RANSMISSI	ON BANDWIDT	H 5704+5704 kH:	Z TRANSMI	SSION FRE	QUENCIES	12-6016	+ 7996-137	00 kHz
NUMBER O	FEQUALIZE	RS none	EQUALIZATIO	N METHOD	-				
NOMINAL V	OICE CIRC	UIT CAPACITY,	NON-TASI, INITIA	L 1380	now 1380	CHANNEL SPACING,	INITIAL 4	kHz n	ow 4 kHz
TERMINAL	EQUIPMENT	MANUFACTURE	R Standard	Felephones	and Cabl		STRUCTION	STC	
OWER FEI	ED MODE	double end	NOMINAL VO	LTAGE 200	/200	SYSTEM	CURRENT	0.500/	A
TASI TYPE	CIRCU	ITS USED	CIRCUITS D	ERIVED	тоти	L CIRCUIT	S	DATE	



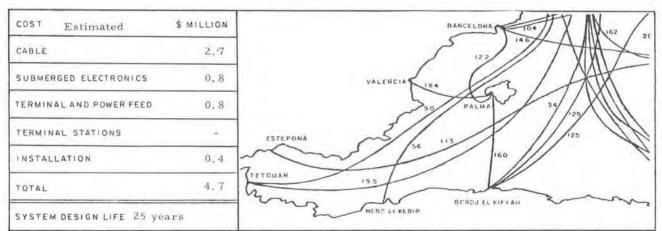
NAME	Algeria-Spain		ACRONYM ALPAL
OTHER NAMES	Alger - Palma	Alger - Balearic	Islands
COUNTRY A	Spain	COUNTRY B	Algería
TERMINUS A	Palma de Mallorca	TERMINUS B	Bordj El Kiffan (Alger)
LANDING POINT A	Cala Mayor	LANDING POINT B	Bordj El Kiffan
COORDINATES A	$39^{\circ}33'N \ge 02^{\circ}36E$	COORDINATES B	36 <sup>°44</sup> 'N x 03 <sup>°</sup> 10'E

SYSTEM REFERENCE NUMBER

160

OWNER A	Compañía Telefónica Nacional de España	CIRCUITS HELD 480h
OWNER B	Administration of Posts and Telecommunications	CIRCUITS HELD 480h
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	Various	
CIRCUITS LEASED	121	

DATE IN 1975 NATURE OF SERVICE SERVICE	cial CABL MILE		SINGLE OR TWIN SIN	gle TYP	63.00
CABLE DESCRIPTION unarmor	ed polyethylen	e coaxial	CAB	LE SIZE 1.5"	38.1 mm
CABLE MANUFACTURER Les Câb	les de Lyón	CABLE	SHIP USED: 1	MARCEL BAY	ARD
REPEATER monocontainer flexible bidi	rectional solid	-state	NUMBER OF REPEATERS	17 REPEA SPACI	TER NG 12 nm
REPEATER MANUFACTURER Compagnie Indu	astrielle de Té	lécommun	ications CIT	ALCATEL	
NOMINAL TRANSMISSION BANDWIDTH $1980+1$	980 kHz trans	SMISSION F	REQUENCIES 312	-2292 + 2792-	4772 kHz
NUMBER OF EQUALIZERS none EQUA	LIZATION METH	- dc			
NOMINAL VOICE CIRCUIT CAPACITY, NON-TAS	I, INITIAL 480	now 480	CHANNEL SPACING, INI	TIAL 4 KHz	
					now 4 kHz
TERMINAL EQUIPMENT MANU FACTURER	CIT ALCATE	L	CONSTR	UCTION CITENA	ARCOM
And a state of the	CIT ALCATE	L 230/230	CONSTR	CTOR SUBM	ARCOM

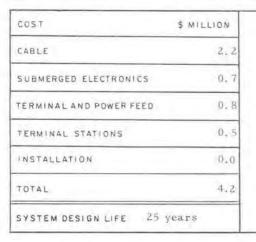


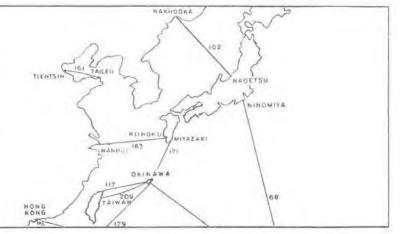
SYSTEM	á	0	ai i
REFERENCE	٦	6	1
NUMBER	8	-	

NAME	Tientsin-Tailen		
OTHER NAMES			
COUNTRY A	People's Republic of China	COUNTRY B	People's Republic of China
TERMINUS A	Tientsin	TERMINUS B	Tailen
LANDING POINT A	Tientsin	LANDING POINT B	Tailen
COORDINATES A	$39^{\circ}10'N \ge 117^{\circ}42'E$	COORDINATES B	38 <sup>0</sup> 56'N x 121 <sup>0</sup> 12'E

OWNER	Post and Telegraph Bureau	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD	÷	
LESSEES	no në	
CIRCUITS LEASED		

DATE IN 1975 NATURE OF SERVICE SERVICE	commercial	CABLE MILES	216	SINGLE OR TWIN	single	SYSTEM TYPE	KS 120
CABLE DESCRIPTION	armored poly	ethylene o	coaxial		CABLE SIZE	E 1.00" 2	5.4 mm
CABLE MANUFACTURER	Ocean Cable (	Company	Limite	d CABLES	HIP USED:	YOUDIAN	VIHAO
REPEATER DESCRIPTION monocontainer flex	ible bidirection	nal solid-	state	NUMBER OF	1.55	REPEATER	19 nm
REPEATER MANUFACTURER	Fujitsu	Limited					
NOMINAL TRANSMISSION BANDWIDTH	240 + 240 kH	Z TRANSM	ISSION	FREQUENCIES	312-552 +	768-1008	kHz
NUMBER OF EQUALIZERS none	EQUALIZATIO	N METHOD	1.0				
NOMINAL VOICE CIRCUIT CAPACITY,	NON-TASI, INITIA	L 120	now	120 CHANNEL	INITIAL 4	kHz a	now 4 kH:
TERMINAL EQUIPMENT MANUFACTURE	R Fujita	su Limite	d		STRUCTION NTRACTOR	Fujitsu L	td.
POWER FEED MODE double end	NOMINAL VO	LTAGE 20	0/200	SYSTEM	CURRENT	0.150 A	
TASI TYPE - CIRCUITS USED -	CIRCUITS D	ERIVED	=	TOTAL CIRCUI	rs -	DATE	-





NAME	MARPAL		ACRONYM MARPAL
OTHER NAMES	Marseille-Palo		
COUNTRY A	France	COUNTRY B	Italy
TERMINUS A	Marseille	TERMINUS B	Palo
LANDING POINT A	Marseille	LANDING POINT B	Palo
COORDINATES A	43°16'N x 05°23'E	COORDINATES B	$^{11}$ <sup>0</sup> 55'N x 12 <sup>0</sup> 07'E

SYSTEM REFERENCE 162

OWNER Societá Impianti Cablofonici SRL, a joint enterprise of Azienda di Stato per i

Servizi Telefonici, France Cable et Rádio , Italcable, and the PTTs of France and Israel

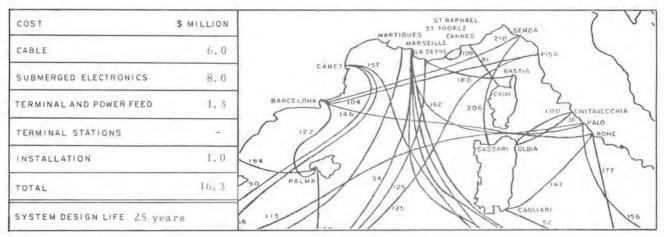
IRU HOLDERS See opposite page

CIRCUITS HELD

LESSEES

CIRCUITS LEASED

DATE IN 1976 SERVICE	NATURE OF SERVICE	commercial	CABLE	370	SINGLE OR TWIN	single	SYSTEM TYPE	S 25
CABLE DESCRIPTION	unarn	wored polyethyle	me coaxia	1		CABLE SIZ	E 1.56" 38	. 1 mm
CABLE MANUFACTURER	1	Les Câbles de L	yon C	ABLESH	P USED:	MARCE	L BAYARD	
REPEATER monoc DESCRIPTION	ontainer flex	tible bidirection	nal solid-s	state	UMBER OF	81	REPEATER	5 nm
REPEATER MANUFACTU	RER Con	npagnie Industri	ielle de T	élécommu	nications	CIT AI	CATEL	
NOMINAL TRANSMISSIO	N BANDWIDTH	10652+10652kH	ZTRANSMIS	SSION FRE	DUENCIES ;	812-1146	1+14576-252	28 kHz
NUMBER OF EQUALIZER	<b>s</b> 4	EQUALIZATION	METHOD	remote	controlled	0		
	IT CAPACITY, I	NON-TASI, INITIAL	2580 no	w 2580	CHANNEL SPACING,	INITIAL 4	kHz no	w 4kH:
NOMINAL VOICE CIRCU TERMINAL EQUIPMENT N				w 2580	SPACING, CON	INITIAL 4	kHz no SUBMARC	
NOMINAL VOICE CIRCU	ANU FACTURER		ATEL		SPACING, CON CON	STRUCTION TRACTOR		





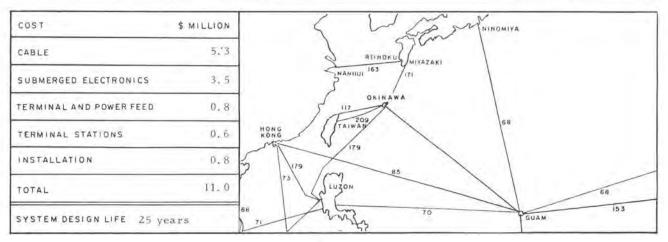
#### ALLOCATIONS

	Israel	Italcable	ASST	FCR/France	
Owners	840h	340h	1380h	2560h	
IRU Holders w	ith Israel				
ATT	300				
France	185				
DBP	120				
Switzerland	84				
BPO	64				
TGC	36				
Belgium	24				
Netherlands	24				
Austría	13				
ITTWC	4				
RCAGC	4				
WUI	4				
FTCC	1				

SEACAB	LE SYSTEM	DATA	PROF	ILE	SYSTEM REFERENCE NUMBER	163
OFFICIAL	East China Se	a Cable		ACRONYM	ECSC	
OTHER Japa NAMES Japa	n - People's Republic of C	China				
COUNTRY A	Japan	COU	NTRY B	People's Re	public of C	Ihina
TERMINUS A	Reihoku, Kumamoto, K	yushu TERM	MINUS B	Nanhui, Shar	nghai	
LANDING POINT A	Reihoku	LAN	DING POINT B	Nanhui Hsie	n	
COORDINATES A	32 <sup>0</sup> 30'N x 130 <sup>0</sup> 03' E	coo	RDINATES B	30 <sup>0</sup> 52'N x 1	21 <sup>0</sup> 52'E	

OWNER A	Kokusai Denshin Denwa Company Limited	CIRCUITS HELD 480h				
OWNER B	Post and Telegraph Bureau, People's Republic of China CIRCUITS HELD 480h					
	Operating Agency: The Postal and Telecommunications Adu	ministration				
	of Shanghai					

DATE IN SERVICE	1976	NATURE OF SERVICE	commercial	CABLE	470	SINGLE OR TWIN single	SYSTEM TYPE	CS 5 M
CABLE DES	CRIPTION		unarmored poly	ethylene o	coaxial	CABLE	SIZE 1.0011	25.4 mm
CABLE MAN				Cable Com	A	CABLESHIP I. USED:	KDD MARU	
REPEATER DESCRIPTIO			ible bidirection introlled gain	al solid-s	tate	NUMBER OF REPEATERS	R E P E A T E F S P A C I N G	7.3 nm
REPEATER	MANUFACT	URER Nij	opon Electric C	ompany a	nd Fujits	u Limited		
NOMINAL T	RANSMISSI	ON BANDWIDTH	1980+1980 kHz	TRANSMI	SSION FF	EQUENCIES 312-22	92+3068-504	3 kHz
NUMBER OF	EQUALIZE	rs 4	EQUALIZATION	N METHOD	fixed an	d variable-comput	ed and assen	nbled
NOMINAL V	OICE CIRC	UIT CAPACITY,	NON-TASI, INITIA	480	now 4	CHANNEL SPACING, INITIAL	4 kHz r	ow 4 kHz
TERMINAL E	QUIPMENT	MANUFACTURE	R Fujitsu a	nd NEC		CONSTRUCTIO	KDD	_
POWER FEE	D MODE	double end	NOMINAL VO	LTAGE 580	/580	SYSTEM CURREN	0.100 A	
TASI TYPE	- CIRCU	ITS USED -	CIRCUITS DE	RIVED -	τo	TAL CIRCUITS -	DATE	-



### SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 164

			NUMBER
OFFICIAL	Okinawa-Miyako		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Gushichan, Okinawa	TERMINUS B	Miyako Jima
LANDING POINT A	Gushichan	LANDING POINT B	Ueno
COORDINATES A	$26^{0}07'N \times 127^{0}44'E$	COORDINATES B	24 <sup>°</sup> 40'N x 125 <sup>°</sup> 28'E

OWNER 0	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD -	8	
LESSEES	none	
CIRCUITS LEASED		

DATE IN 1975 NATURE OF SERVICE SERVICE	commercial	CABLE MILES	194	SINGLE OR TWIN	single	SYSTEI TYPE	M CS 36M D2
CABLE DESCRIPTION	unarmored poly	ethylene	coaxial		CABLE	SIZE 1. 50"	38.1 mm
CABLE MANUFACTURER	Ocean Cable	Compan	y Limited	CABLI d USE		KUROSHIO	MARU
REPEATER DESCRIPTION monocontainer flex	cible bidirectiona	l solid-s	tate	NUMBER OF	64	R E P E A T E S P A C I N G	R 3,1 nm
REPEATER MANUFACTURER	Nippon Electric	Compan	y and Fuj	itsu Ltd.			
NOMINAL TRANSMISSION BANDWIDT	H 20605+3872 kHz	TRANSM	ISSION FR	EQUENCIES	4979-2	5584+31612-	35484 kHz
NUMBER OF EQUALIZERS Z	EQUALIZATION	METHOD	magnet	ic externa	l stepp	ing	
NOMINAL VOICE CIRCUIT CAPACITY	900 + 2 color te	levision	channels	C HANNEL S PACING	INITIA	L4kHz nov	4 kHz
TERMINAL EQUIPMENT MANUFACTUR	ER Fujitsu and	NEC			NTRACTO	NUTTI	PC
POWER FEED MODE double end	NOMINAL VOL	TAGE 6	00/600	SYSTEM	CURRE	NT 0.156	A
TASI TYPE - CIRCUITS USED -	CIRCUITS DE	RIVED	- TO	TAL CIRCUI	ts _	DATE	a un

COST	\$ MILLION
CABLE	2,33
SUBMERGED ELECTRONICS	4,86
TERMINAL AND POWER FEED	0.37
TERMINAL STATIONS	0.30
INSTALLATION	0.66
TOTAL	8.52
SYSTEM DESIGN LIFE 20 y	ears

SEACAE	LE SYSTEM DA	TA PROF	ALLENENCE
NAME	Fridtorp - Hornsudde		NUMBER
OTHER NAMES	Gotland - Swedish Mainland		
COUNTRY A	Sweden	COUNTRY B	Sweden
TERMINUS A	Fridtorp, Gotland	TERMINUS B	Hornsudde
LANDING POINT A	Fridtorp	LANDING POINT B	Hornsudde
COORDINATES A	57 <sup>0</sup> 44'N x 18 <sup>0</sup> 20'E	COORDINATES B	57°37'N x 16°44'E

Administration of Telecommunications - TELEVERKET OWNER CIRCUITS HELD All In 1976 four repeaters were inserted in the previously-laid (1947) cable, raising the circuit capacity from 23 to 120

DATE IN 1977 SERVICE	SERVICE	commercia	I CAB MIL		0	SINGLE OR TWIN	single	SYSTEM TYPE	
CABLE DESCRIPTION	armored j	polyethylene	coaxial				CABLE S	IZE 0.620	15.7mm
CABLE MANUFACTURER	Submarin	ne Cables Li	mited	CA	BLESHI	P USED:	PETE	R FABER (2	
REPEATER DESCRIPTION	tainer infle	xible bidired	tional sol	lid-sta	t in	UMBER OF		REPEATER	11,9 nm
REPEATER MANUFACTUR	ER Stan	dard Teleph	ones and	Cables	Limited				
NOMINAL TRANSMISSION	BANDWIDTH	492 + 492 k	HZ TRAN	SMISSI	ON FREQ	UENCIES	60-552	+ 812-1304	Hz
NUMBER OF EQUALIZERS	none	EQUALIZAT	ION METH	OD -					
NOMINAL VOICE CIRCUIT	CAPACITY,	NON-TASI, INI	TIAL 120	1974	120	CHANNEL SPACING,	INITIAL	4 kHz 1974	4 kHz
TERMINAL EQUIPMENT MA	NUFACTURER	2	STC				STRUCTION	STC	
LOWING CODIENENT MA									
OWER FEED MODE dou		NOMINAL	VOLTAGE	80/80		SYSTEM	CURRENT	0.210 A	

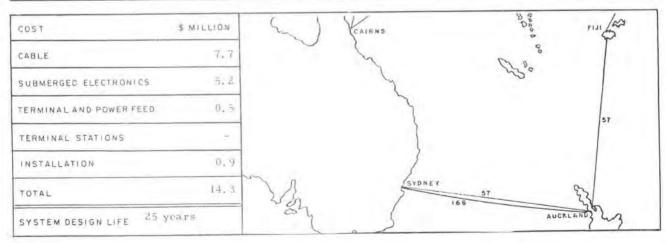
COST	\$ MILLION	15	Sec.	at star	L
CABLE	0,15	د. الب ۲	Contraction of the second	ſ	23
SUBMERGED ELECTRONICS	0,25	14 5	Sheer )	1 17	15th
TERMINAL AND POWER FEED	0,10	60 200 50	50 50	: 20 . 5 .	23
TERMINAL STATIONS	Α.	> ) / >>		1 95 (3-1-5-65)	5
INSTALLATION	0.10	46	10 in	Sund and Sund	
TOTAL	0.60	Tun 62 11	67 76 7	A mar (	35 Jar
SYSTEM DESIGN LIFE 20 yea	ırs	111	140	225	~ > >



NAME	Tasman Sea Cable		
OTHER NAMES	TASMAN		
COUNTRY A	Australia	COUNTRY B	New Zealand
TERMINUS A	Sydney	TERMINUS B	Auckland
LANDING POINT A	Bondi Beach	LANDING POINT B	Muriwai Beach
COORDINATES A	$33^{0}44^{i}N \ge 151^{0}16^{i}E$	COORDINATES B	$36^{\circ}48'N \ge 174^{\circ}25'E$

OWNER A	Qverseas Telecommunications Commission (Australia)							CIRCUITS HELD	480h
OWNER B	New Ze	CIRCUITS HELD 4801							
IRU HOLDERS	Netherlands	SACC	Suisse	Ireland	Austria	Norfolk	DBP	BTI	_
CIRCUITS HELD	10	7	4	Z	2	5	7	50	

DATE IN SERVICE	1976	NATURE OF SERVICE	commercial	CABLE	1190	SINGLE OR TWIN	single	SYSTEM TYPE	NC (5 M)
CABLE DES	CRIPTION		unarmored po	lyethylend	coaxia	1	CABLE SIZE	o. 99"	25.1 mm
CABLE MAN	UFACTURER		Standard Tele	phones &	Cables	Limited	ABLESHIP USED:	MERC	URY
REPEATER	monoco	ontainer inf	lexible bidirec	tional soli	d-state	NUMBER O	1 2 3	REPEATER SPACING	7.6 nm
REPEATER	MANUFACTU	RER	Standard Tele	phones &	Cables	Limited			
NOMINAL T	RANSMISSIC	N BANDWIDT	н 1980+1980 кн	IZ TRANSM	ISSION	FREQUENCIES	312-2292 ·	+ 2792-47	72 kHz
NUMBER OF	FEQUALIZE	RS 12	EQUALIZATI	ON METHOD	adjus	sted on board	1		
NOMINAL	OICE CIRCU	UIT CAPACITY	, NON-TASI, INITI	AL 480	now	480 CHANNE	, INITIAL 4	kHz nov	4 kHz
TERMINALE	QUIPMENT	MANUFACTUR	ER Standard T	elephones	& Cabl	es Ltr	INSTRUCTION	STC	
POWER FEE	ED MODE d	ouble end	NOM INAL V	OLTAGE 30	000/300	0 SYSTEN	CURRENT	0.150 A	
			CIRCUITS	DERIVED		TOTAL CIRCU		DATE	

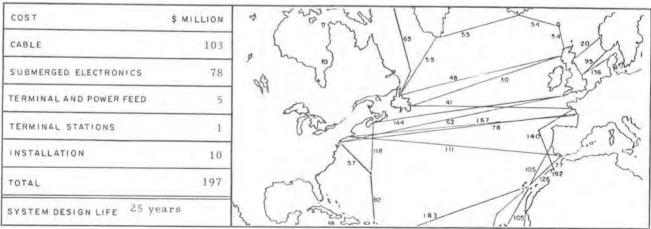


# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 167

OFFICIAL			NUMBER -
NAME	Transatlantic 6		ACRONYM TAT 6
OTHER NAMES			
COUNTRY A	United States	COUNTRY B	France
TERMINUS A	Green Hill, Rhode Island	TERMINUS B	St.Hilaire de Riez, Vendee
LANDING POINT A	Green Hill Point	LANDING POINT B	St. Hilaire de Riez
COORDINATES A	$41^{\circ}22'N \ge 71^{\circ}36W$	COORDINATES B	$46^{\circ}44'N \ge 01^{\circ}59'W$

See opposite page for details of participation

DATE IN 1976 NATURE OF commercial SERVICE	CABLE 339 MILES	6 SINGLE OR TWIN	single	SYSTEM TYPE	SG
CABLE DESCRIPTION unarmored polyethylene	coaxial		CABLE SI	ZE 1.70" 4	3.2 mm
CABLE MANUFACTURER Standard Telephones & C	Cables Ltd., Le	s Càbles de Lyc	on, and S	Simplex	
REPEATER DESCRIPTION monocontainer flexible bidirectio	onal solid-state	NUMBER OF REPEATERS	604	REPEATER	5.1 nm
REPEATER MANUFACTURER Western Electric C	Company CAE	LESHIPS USED	: LONG	LINES, VE	RCORS
NOMINAL TRANSMISSION BANDWIDTH 12000+12000	Hurrania	2.00000.000			
	R1121RANSMISSIO	N FREQUENCIES	1.0-13.5	+16.7-29.3	MHz
	ON METHOD TEL		1.0-13.5	+16.7-29.3	MHz
	ON METHOD rei	note control			
NUMBER OF EQUALIZERS 37 EQUALIZATI	ON METHOD ren	note control CHANNEL SPACING, CON		3 kHz nov	
NUMBER OF EQUALIZERS 37 EQUALIZATI NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITI TERMINAL EQUIPMENT MANUFACTURER CIT - ALC	ON METHOD ren	note control 00 CHANNEL SPACING, CON CON	INITIAL	3 kHz nov ATT	MHz v 3kHz



# 

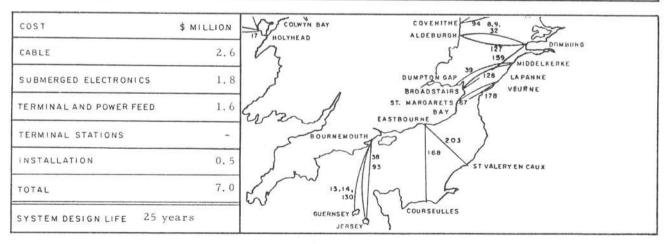
#### ALLOCATION OF CHANNELS

		FTCC	TRTT	ITTWC	RCAGC	TGC	WUI	
BPO	466	24	5	24	34	84	32	
CPRM	8				1			
Spain(CTNE)	36	1						
Cyprus	5			1				
Ireland	37	1			r			
Luxembourg	10			1				
Switzerland	132	1	1	7	11		2	
Denmark	20				1			
Finland	14							
Turkey	7			1				
Hungary	4				1			
Greece	78			1				
ITALCABLE	69		3	4	1		5	
Kenya	3			1				
Tunisia	4			1	1			
U.S.S.R.	4			1	1			
Poland				1				
Lebanon	9			1	3		1	
Austria	24	1	1	1			2	
Israel	57		- C	1	1		1	
Kuwait	6				0			
Algeria	0				1			
Czechoslovakia	2				1			
Germany, Dem.								
		4	4	4	9		5	
Germany, Fed. F	(ep.200	4	4	4	1			
Bulgaria Morocco	2			1	ī		-1	
Saudi Arabia	1			ì				
	20			1	1			
Norway	51			3	1		2	
India Sri Lanka	51			2	4			
	18			ī				
Indonesia				*				
Libya	4			17	13		12	
Netherlands	123	1	3	1	1		2	
Egypt	12		7	8	4		2	
Belgium	120	62	,Z	7	10		6	
France	261	02		I I	T.O.		9	
Ivory Coast				1			2	
Sweden	18						4	
South Africa				1				
Syria	3			1				
Senegal				1				
Bangladesh	2							
Peru					1			
Spain (ENTE)				1			1	
Themselves			2	1.				
Pakistan	2							

NAME	France-U.K. 1		
OTHER NAMES	Courseulles-	Eastbourne	
COUNTRY A	France	COUNTRY B	England
TERMINUS A	Courseulles	TERMINUS B	Eastbourne
LANDING POINT A	Graye-Sur-Mer	LANDING POINT B	Cuckmere
COORDINATES A	49 <sup>°</sup> 20'N x 00 <sup>°</sup> 28'W	COORDINATES B	50 <sup>°</sup> 45'N x 00 <sup>°</sup> 09'E

OWNER A	Administration of Posts and Telecommunications	CIRCUITS HELD	3440h
OWNER B	British Post Office	CIRCUITS HELD	3440h
IRU HOLDERS	See page opposite		
CIRCUITS HELD			
LESSEES			
CIRCUITS LEASED			

DATE IN 1976 NATURE OF SERVICE SERVICE	commercial	CABLE	104	SINGLE OR TWIN	single	SYSTEM TYPE	S 25
CABLE DESCRIPTION armored	polyethylene coa	xial			CABLE SIZ	E 1.00"	25.4 mm
CABLE MANUFACTURER	Les Câbles de	Lyon	C	ABLESHI	USED:	VERCORS	
REPEATER DESCRIPTION monocontainer flex	tible bidirectiona	ıl solid-sta	te	NUMBER OF	26	REPEATER	4.4 nm
REPEATER MANUFACTURER	Compagnie Ind	ustrielle d	e Téléc	ommunicat	ions CII	ALCATE	L
NOMINAL TRANSMISSION BANDWIDT	н 10562+10562 kI	- Iztransmis	SION FR	EQUENCIES	812-11464	+14576-25	228 kHz
NUMBER OF EQUALIZERS 2	EQUALIZATION	METHOD	remo	te controlle	ed		
NOMINAL VOICE CIRCUIT CAPACITY,	NON-TASI, INITIAL	. 3440 no	w 3440	CHANNEL SPACING	INITIAL	3 kHz nov	w 3 kHz
NOMINAL VOICE CIRCUIT CAPACITY,			w 344(	SPACING	INITIAL ISTRUCTION	3 kHz nov SUBMAR	
		ATEL		SPACING CON CON	ISTRUCTION		



#### ALLOCATION OF CHANNELS

	ATT	FTCC	ITTWC	RCAGC	TGC	WUI
BPO	466	12	24	34	84	32
Ireland	37			T.		
Denmark	20			I		
Finland	14					
Kenya	3					
Norway	2.0		1	F		
India	29		1	1		
Sri Lanka	2					
Sweden	18		1			2
Bangladesh	2					
Peru				1		
Saudi Arabia			1			

### 169) unassigned

#### SEACABLE SYSTEM DATA PROFILE



NAME	Okinawa - Miyazaki		
OTHER NAMES			
COUNTRY A	Japan (Okinawa)	COUNTRY B	Japan (Kyushu)
TERMINUS A	Chinen	TERMINUS B	Miyazaki
LANDING POINT A	Chinen	LANDING POINT B	Esabaru
COORDINATES A	$26^{\circ}10'N \ge 127^{\circ}50'E$	COORDINATES B	31 <sup>0</sup> 51'N x 131 <sup>0</sup> 27'E

 OWNER
 Nippon Telegraph and Telephone Public Corporation
 CIRCUITS HELD
 All

I R U HOLDERS

CIRCUITS HELD

LESSEES

CIRCUITS LEASED

* / 1 1	REOF commercial	CABLE 483 MILES	SINGLE single	SYSTEM TYPE CS 36M D1
CABLE DESCRIPTION	unarmored polyeth	nylene coaxial	CABLE SI	ZE 1,50" 38,1 mm
CABLE MANUFACTURER	Ocean Cable C	ompany Limited	CABLESHIP KU USED:	ROSHIO MARU
REPEATER DESCRIPTION monocontain	er flexible bidirection	nal solid-state	NUMBER OF 161 REPEATERS	REPEATER 3.1 nm
REPEATER MANUFACTURER	Nippon Electric	Company Ltd. an	d Fujitsu Ltd.	
NOMINAL TRANSMISSION BAN	оwidth 12672+12672 k	HZTRANSMISSION F	FREQUENCIES 4332-170	04+22796-35468 kHz
	i subscher brande	a standard a stand	and the second second	
NUMBER OF EQUALIZERS	7 EQUALIZATIO	N METHOD mag	netic adjustment by e	external stepping
27 1 12 12 13 19 19 19 19 19 19 19 19 19 19 19 19 19			CHANNEL	
NUMBER OF EQUALIZERS	PACITY, NON-TASI, INITIA		CHANNEL	4 kHz now 4 kHz
NOMINAL VOICE CIRCUIT CAP	PACITY, NON-TASI, INITIA ACTURER Fujitsu Lt	L 2700 now 27 d. and NEC	700 CHANNEL SPACING, INITIAL CONSTRUCTION CONTRACTOR	4 kHz now 4 kHz NTTPC

COST	\$ MILLION
CABLE	7.61
SUBMERGED ELECTRONICS	12.36
TERMINAL AND POWER FEED	0.29
TERMINAL STATIONS	0.30
INSTALLATION	1,52
TOTAL	22.08
SYSTEM DESIGN LIFE 20 )	/ears

#### 172 unassigned

### SEACABLE SYSTEM DATA PROFILE

SEACAB	LE SYSTEM I	DATA PROF	ILE	SYSTEM REFERENCE NUMBER 173
NAME	Australia-Papua New Gui	nea Cable	ACRONYM	A - PNG
OTHER NAMES				
COUNTRY A	Australia	COUNTRY B	Papua New	Guinea
TERMINUS A	Cairns, Queensland	TERMINUS B	Port Mores	by, Papua
LANDING POINT A	Cairns	LANDING POINT B	Port Mores	by
COORDINATES A	$17^{\circ}08'S \ge 145^{\circ}29'E$	COORDINATES B	$09^{\circ}24'S \ge 1$	47 <sup>0</sup> 09'E

OWNER A	Overseas Telecommunications Commission (Australia)	CIRCUITS HELD 480h		
OWNER B	Government of Papua New Guinea	CIRCUITS HELD 480h		
RU HOLDERS	New Zealand Post Office			
CIRCUITS HELD	26			
LESSEES	none			
CIRCUITS LEASED	-			

DATE IN 1976 NATURE OF commercial SERVICE	CABLE MILES	485	SINGLE OR TWIN	single	SYSTEM N TYPE	IC (5 M)
CABLE DESCRIPTION unarmored polyeth	ylene coax	ial		CABLE SI	ZE 0.99" 25	.1 mm
CABLE MANUFACTURER Standard Tele	phones & 0	Cables Li	mitad	BLESHIE JSED:	JOHN W M.	ACKAY
REPEATER DESCRIPTION monocontainer inflexible bidirec	tional soli	d-state	NUMBER OF	0 3	REPEATER SPACING	7,5 nm
REPEATER MANUFACTURER Standard Tele	phones & (	Cables Li	mited			
NOMINAL TRANSMISSION BANDWIDTH 1980-1980 kH	Z TRANSM	ISSION FR	EQUENCIES	312-2292	+ 2792-4772	kHz
NUMBER OF EQUALIZERS 4 EQUALIZATIO	N METHOD	adjuste	d on board			
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITI	AL 480 n	ow 480	C H A N N E L S P A C I N G	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT MANUFACTURER Standard To	lephones	& Cables	T.t.d.	NSTRUCTION NTRACTOR	STC	
POWER FEED MODE double end NOMINAL V	OLTAGE 1	100/1100	SYSTEM	CURRENT	0.150 A	
TASI TYPE _ CIRCUITS USED _ CIRCUITS I	DERIVED	- то	TAL CIRCUI	TS _	DATE	-

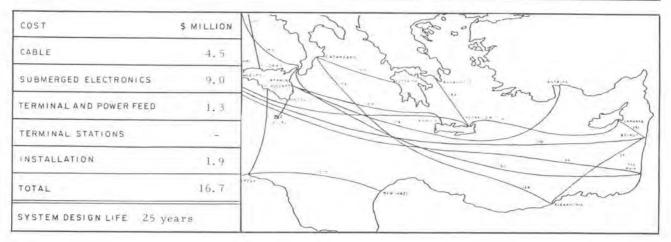
COST	\$ MILLION
CABLE	6.2
SUBMERGED ELECTRONICS	4.2
TERMINAL AND POWER FEED	1.0
TERMINAL STATIONS	0.3
INSTALLATION	0,6
TOTAL	12.3
SYSTEM DESIGN LIFE 25	years



			NUMBER
NAME	Italy-Turkey		
OTHER NAMES			
COUNTRY A	Italy	COUNTRY B	Turkey
TERMINUS A	Catania, Sicily	TERMINUS B	Antalya
LANDING POINT A	Catania	LANDING POINT B	Antalya
COORDINATES A	$37^{0}29'N \ge 15^{0}04'E$	COORDINATES B	36 <sup>0</sup> 52'N x 30 <sup>0</sup> 43'E

OWNER A	Administration of Posts and Telecommunications	CIRCUITS HELD	480h
OWNER B	Administration of Posts, Telegraphs, and Telephones	CIRCUITS HELD	480h
IRU HOLDERS			
CIRCUITS HELD			-
LESSEES			
CIRCUITS LEASE	D		

DATE IN 1976 NATURE OF commercial SERVICE	CABLE 1083 MILES	SINGLE OR TWIN single	SYSTEM NC (5 M) TYPE
CABLE DESCRIPTION unarmored polyethyle	ene coaxial	CABLE S	IZE 0.99" 25.1 mm
CABLE MANUFACTURER Standard Tele	phones & Cables	Limited CABLESHII USED:	D MERCURY
REPEATER monocontainer inflexible bidirect	ional solid-state	NUMBER OF 143 REPEATERS	REPEATER SPACING 7.5 nm
REPEATER MANUFACTURER Standard Tele	phones & Cables	Limited	
NOMINAL TRANSMISSION BANDWIDTH 1980+1980 kH	Z TRANSMISSION	FREQUENCIES 312-229	2 + 2792-4772 kHz
NUMBER OF EQUALIZERS II EQUALIZATIC	ON METHOD adju	sted on board	
NUMBER OF EQUALIZERS II EQUALIZATIC		CHANNEL	
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA		CHANNEL SPACING, INITIAL	4 kHz now 4 kHz
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	AL 480 now 48	0 CHANNEL SPACING, INITIAL CONSTRUCTION CONTRACTOR	4 kHz now 4 kHz <sup>N</sup> STC



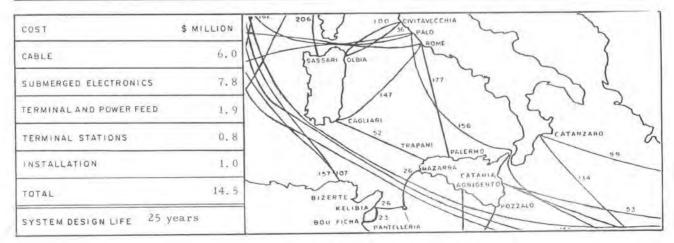
### Unassigned SEACABLE SYSTEM DATA PROFILE



NAME	Rome-Palermo		
OTHER NAMES			
COUNTRY A	Italy	COUNTRY B	Italy
TERMINUS A	Pomezia	TERMINUS B	Palermo, Sicily
LANDING POINT A	Castelpotziana	LANDING POINT B	Palermo
COORDINATES A	$41^{\circ}40^{1}N \times 12^{\circ}25^{1}E$	COORDINATES B	38 <sup>0</sup> 08'N x 13 <sup>0</sup> 20'E

OWNER	Azienda di Stato per i Servici Telefonici	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD	÷	
LESSEES	none	
CIRCUITS LEASED		

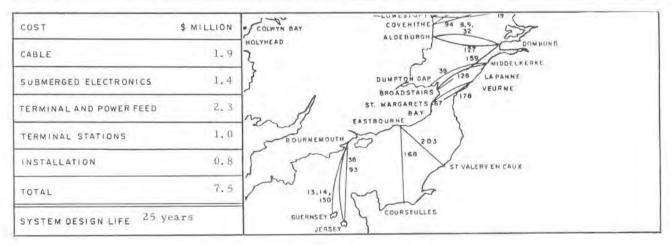
DATE IN 1977 NATURE OF COR SERVICE SERVICE	nmercial CAE MIL	6.2	SINGLE single	SYSTEM TYPE NG (45 M
CABLE DESCRIPTION unarmored po	lyethylene coaxia	1	CABLE SI	ZE 1.47" 37.3 mm
CABLE MANUFACTURER Sta	ndard Telephones	& Cables I	imited CABLESHI	P MERCURY
REPEATER DESCRIPTION monocontainer inflexi	le bidirectional s	olid-state	NUMBER OF REPEATERS	REPEATER SPACING 2.75 nm
REPEATER MANUFACTURER Sta	ndard Telephones	& Cables I	imited	
NOMINAL TRANSMISSION BANDWIDTH 17 NUMBER OF EQUALIZERS 4	000+17000kHztra equalization meti		REQUENCIES 1900-190 mbled on board	00+27200-44300kHz
NOMINAL VOICE CIRCUIT CAPACITY 1	800 + 2-way color	television	CHANNEL SPACING, INITIAL	4 kHz now 4 kHz
	Standard Telepho	nes & Cable	s Ltd. CONSTRUCTION	STC
TERMINAL EQUIPMENT MANUFACTURER	and the second second		CONTRACTOR	
POWER FEED MODE double end	NOMINAL VOLTAGE	525/525		



NAME	U.K BELGIUM 4		
OTHER NAMES	St, Margaret's Bay - Veurne	St. Margaret's B.	ay - St. Idesbald
COUNTRY A	England	COUNTRY B	Belgium
TERMINUS A	St. Margaret's Bay	TERMINUS B	Veurne
LANDING POINT A	St. Margaret's Bay	LANDING POINT B	St.Idesbald
COORDINATES A	$51^{0}09'N \ge 01^{0}24'E$	COORDINATES B	51 <sup>0</sup> 06'N x 02 <sup>9</sup> 36'E

and the te	lecommunication	is administrations of	of the Nether	ands and Belgium.
вро	DBP	Netherlands	Belgium	Denmark
3900h	2100h	900h	900h	300h

DATE IN 1977 SERVICE	NATURE OF SERVICE	commercial	CABLE MILES	5.6	SINGLE OR TWIN single	SYSTEM N TYPE	G (45 M)
CABLE DESCRIPTION		armored poly	ethylene coa	axial	CABLE SIZ	E 1.47" 37.	.3 mm
CABLE MANUFACTURER		Standard Tele	phones & C	ables I	Limited CABLESHII USED:	ALERT	(4)
REPEATER monoco DESCRIPTION	ntainer infl	exible bidirect	ional solid-	state	NUMBER OF 22 REPEATERS	REPEATER SPACING	2.75 nm
REPEATER MANUFACTUR	ER	Standard Tele	phones & C	ables I	imited		
NOMINAL TRANSMISSIO	BANDWIDT	н 17000+17000	HZTRANSMI	SSION F	REQUENCIES 1900-1900	0+27200-443	00 kHz
NUMBER OF EQUALIZER	s none	EQUALIZATI	ON METHOD	-			
NOMINAL VOICE CIRCUI	T CAPACITY,	NON-TASI, INITI	AL 3900 n	ow 39	00 CHANNEL SPACING, INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT M	ANUFACTURI	ER Standard To	elephones &	Cables	Limited CONSTRUCTION	STC	
POWER FEED MODE do	uble end	NOMINAL V	OLTAGE 240	/240	SYSTEM CURRENT	0.500 A	
TASI TYPE - CIRCUIT	IS USED	- GIRCUITS I	DERIVED	- T	OTAL CIRCUITS -	DATE	

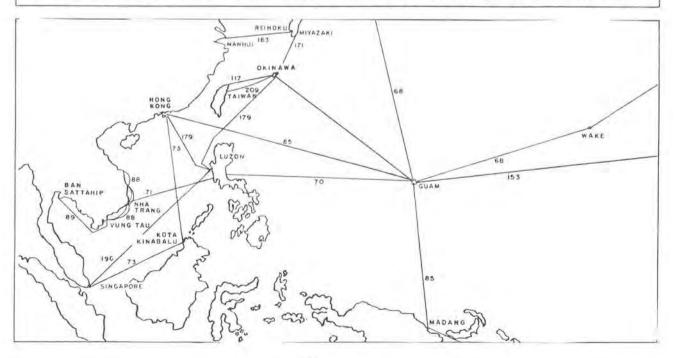


NAME	Okinawa - Luzon - Hong Kong	ACRONYM OLUHO
NAMES		
CUNTRY A	Japan	COUNTRY B Philippine Republic
ERMINUS A	Gushikami, Okinawa	TERMINUS B Currimao, Luzon
ANDING POINT A	Gushikami	LANDING POINT B Currimao
CORDINATES A	26 <sup>°</sup> 07'N x 127 <sup>°</sup> 45'E	COORDINATES B 18003'N x 120029'E
COUNTRY C	Hong Kong	COUNTRY D
FERMINUS C	Deep Water Bay	TERMINUS D
ANDING POINT C	Deep Water Bay	LANDING POINT D
COORDINATES C	22 <sup>°</sup> 28'N x 114 <sup>°</sup> 06'E	COORDINATES D
COUNTRY E		COUNTRY F
ERMINUS E		TERMINUS F
ANDING POINT E		LANDING POINT F
COORDINATES E		COORDINATES F

CABLE AB 748 BC 475 MILES SYSTEM CS12 Mand DATEIN SINGLE OR TWIN NATURE OF 1977 commercial single SERVICE SERVICE TYPE NE (14 M) 1.50" 38.1 mm CABLE SIZE CABLE DESCRIPTION unarmored polyethylene coaxial 1.47" 37.3 mm

CABLE MANUFACTURER AB: Ocean Cable Company Ltd.

BC: Standard Telephones and Cables Ltd.



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continued

OWNERS #	KD	D, ETPI, C&W,	and $\ensuremath{\operatorname{OTC}}(A)$				
CIRCUITS HELD	se	e accompanying	page				
IRU HOLDERS							
CIRCUITS HELD							_
LESSEES	WUI	GMCR	PLDT				
CIRCUITS LEASED	2	i	2				
REPEATER DESCRIPTIO		iner flexible bidi iner inflexible bi				REPEATER SPACING	AB:6.5 BC:6.6
NUMBER OF A B 12	1 вс 7	4 со	DE	E F			
REPEATER MANUFACTU	0.00	: Nippon Electri : Standard Telej	A				
NUMBER OF A B	7 в с	4 C D	DE	EF			
EQUALIZATION METHO	DO AB: Com	ixed and variable outed and assemi	iled on board	BC: Com	puted and	assembled o	n board
TERMINAL EQUIPMEN	MANUFACTUR		on Electric C dard Telepho				
POWER FEED MODE	A B end	BC end CD	C	Ε	EF		
NOMINAL VOLTAGE	1020/1020	980/980				SYSTEM A	B:0.100 C:0.470
NOMINAL TRANSMISSIO	AL DALLDUNINTH	AB: 4952+4952 BC: 5700+5700	TRANSM	SSION FREQUE		5516+7436-12 6012+8000-13	
NOMINAL VOICE CIRCUI	CAPACITY, NON-	AB:120 TASI, INITIAL BC:138		CHANNEL SPACING,	al 4 kHz	now 4	kHz
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DERIVI	D - T	DTAL CIRCUITS	-	DATE APPLIED	-
REMARKS CABL	FSHIPS USE	D: AB: KDD M	ARII	BC. MERC	URY RE	CORDER (3)	

CONSTRUCTION CONTRACTOR

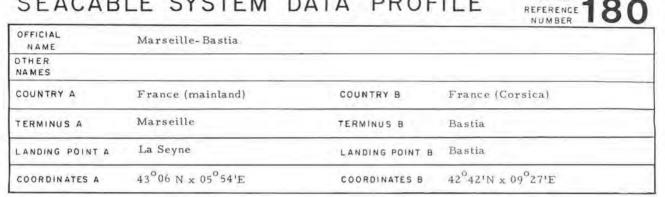
AB: Kokusai Denshin Denwa Company Limited BC: Standard Telephones and Cables Limited

COST	AB \$ MILLIO	N BC
CABLE	14.9	9.6
SUBMERGED ELECTR	6.9	4.9
TERMINAL AND POWER	1.4	1.1
TERMINAL STATIONS	14	14
INSTALL ATION	1.8	1.4
TOTAL	25.0	17.0
SYSTEM DESIGN LIFE	25 years	

\* KDD: Kokusai Denshin Denwa Company Limited
 ETPI: Eastern Telecommunications Philippines Incorporated
 C & W: Cable and Wireless Limited

#### ALLOCATIONS

	PLDT	ETPI	C & W	TELECOMS	KDD	
KDD		12	595	81		
C&W		58		48		
OTC(A)			38			
ATT	16		23			
Philcom			3		39	
JTM			11		18	
HTC	3					
ITA			21			

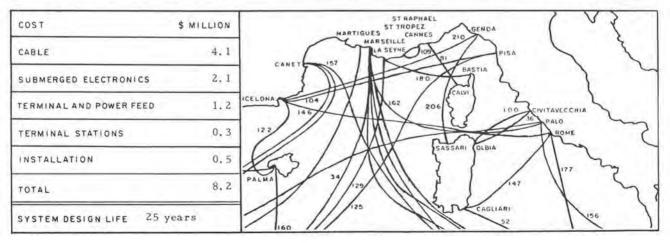


SYSTEM

REFERENCE

OWNER	Administration of Posts and Telecommunications	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD	1.8	
LESSEES	none	
CIRCUITS LEASED		

DATE IN 1977 NATURE OF SERVICE SERVICE		CABLE	181	SINGLE OR TWIN	single	SYSTEM TYPE	S 25
CABLE DESCRIPTION	unarmored poly	yethylene	coaxial	c	ABLE SI	ZE 1.50" 38	1 mm
CABLE MANUFACTURER	Les Câbles de	Lyon	CABLE	SHIP USED:	MAF	CEL BAYAR	D
REPEATER DESCRIPTION monocontainer fle	xible bidirection	al solid-s	tate	NUMBER OF	42	REPEATER	5 nm
REPEATER MANUFACTURER	Compagnie Ind	ustrielle o	le Téléo	communicatio	ns CIT	ALCATEL	
NOMINAL TRANSMISSION BANDWID	TH 10562+10562kI	HZTRANSM	ISSION P	FREQUENCIES 8	12-1146	4 + 14576-25	288 kHz
NUMBER OF EQUALIZERS 2	EQUALIZATIO	N METHOD	remot	e controlled			
NOMINAL VOICE CIRCUIT CAPACITY	, NON-TASI, INITIA	L 2340	now 23	340 CHANNEL SPACING,	INITIAL	4 kHz now	4 kHz
TERMINAL EQUIPMENT MANUFACTUR	ER CI	I ALCAT	EL	CON	STRUCTION	SUBMARCO	ом
POWER FEED MODE double end	NOMINAL VO	LTAGE 7	30/730	SYSTEM	CURRENT	0.365 A	
TASI TYPE _ CIRCUITS USED	_ CIRCUITS D	ERIVED	т	OTAL CIRCUIT	s _	DATE	_





NAME	ANTINEA		
OTHER NAMES	Morocco - Senegal		
COUNTRY A	Morocco	COUNTRY B	Senegal
TERMINUS A	Casablanca	TERMINUS B	Dakar
LANDING POINT A	Casablanca	LANDING POINT B	Dakar
COORDINATES A	33 <sup>°</sup> 51'N x 7 <sup>°</sup> 38'W	COORDINATES B	14 <sup>°</sup> 42'N x 17 <sup>°</sup> 28'W

OWNERA	Administration of Posts, Telegraphs, and Telephones	CIRCUITS HELD 640h
OWNER B	Societé de Télécommunications Internationales du Sénégal	CIRCUITS HELD 640h
IRU HOLDER	5	
CIRCUITS HELD		
LESSEES		
CIRCUITS LEAS	ED	

DATE IN 1977 SERVICE	NATURE OF SERVICE	commercial	CABLE MILES	1464	SINGLE OR TWIN Sin	ngle	SYSTEM TYPE	S 5
CABLE DESCRIPTION	unarmored	polyethylene co	axial		CA	BLE SIZ	E 1,50" 38	. 1 mm
CABLE MANUFACTURE	R I	Les Càbles de 1	yon	CABLE	SHIP USED:	VERC	ORS	
REPEATER monod	container flex	ible bidirection	al solid-s	state	NUMBER OF REPEATERS	125	REPEATER S PACING	12 nm
REPEATER MANUFACT	URER Cie. I	ndustrielle de 1	Célécomm	nunication	s CIT ALC.	ATEL		
NOMINAL TRANSMISS	ION BANDWIDTH	H 1980+1980 kHz	TRANSM	ISSION FR	EQUENCIES 312	- 2292+	2792-4772 1	Hz
NUMBER OF EQUALIZ	ERS 10	EQUALIZATION	N METHOD	adjuste	d on board			
NOMINAL VOICE CIRC	UIT CAPACITY,	NON-TASI, INITIA	L 640 no	ow 640	CHANNEL SPACING, IN	ITIAL 3	kHz now	3 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R CIT A	LCATEL		CONSTR	ACTOR	SUBMARC	ЭМ
The second s	hauple and	NOMINAL VO	TACE 25	00/3500	alighter at		0 100 4	
POWER FEED MODE	double end	NOM HAAL VO	LIAGE 33	00/5500	SYSTEM CU	RRENT	0.180 A	

COST	\$ MILLION
CABLE	30
SUBMERGED ELECTRONICS	9
TERMINAL AND POWER FEED	1
TERMINAL STATIONS	I
INSTALLATION	3
TOTAL	44
SYSTEM DESIGN LIFE 25	years



NAME	Spain - Venezuela		
OTHER NAMES	Venezuela - Canary Is	lands COLUME	3US
COUNTRY A	Spain (Canary Islands)	COUNTRY B	Venezuela
TERMINUS A	Agüimes, Gran Canaria	TERMINUS B	Camuri
LANDING POINT A	Arinaga Beach	LANDING POINT B	Camuri Chico
COOPDINATES A	$27^{\circ}51'N \times 15^{\circ}Z4'W$	COORDINATES B	10 <sup>0</sup> 37'N x 66 <sup>6</sup> 53'W

OWNER A	Companía Telefónica Nacional de España							CIRCUITS HELD 1104h		
OWNER B	Companía Anónima Nacional de Teléfonos de Venezuela						CIRCUITS HELD 2576h			
IRU HOLDERS	DBP	CPRM	PTT France	ITALCABLE	PTT Austria	Radio Austria	PTT Belgium	PTT Switzerland		
CIRCUITS HELD	32	12	16	80	8	1	4	36		
Netherlands	KDD	BTI		à	LESSEES	AAC8	RPR			
37	13	16		(	CCTS LSD	32				

DATE IN 1977 NATURE SERVICE		CABLE 3239 MILES	SINGLE OR TWIN single	SYSTEM TYPE NE (14M)
CABLE DESCRIPTION	unarmored poly	yethylene coaxial	CABLE SI	ZE 1.47" 37.3 mm
CABLE MANUFACTURER	Standard Telep	hones & Cables L	imited CABLESHIP USED:	CABLE VENTURE
REPEATER monocontainer i DESCRIPTION	nflexible bidirectio	onal solid-state	NUMBER OF 503 REPEATERS	REPEATER SPACING 6.5 nm
REPEATER MANUFACTURER	Standard Telep	hones & Cables L	imited	
NOMINAL TRANSMISSION BANDWI	DTH 5704+5704 кHz	TRANSMISSION F	REQUENCIES 312-6016	+ 7966-13700 kHz
NUMBER OF EQUALIZERS 33	EQUALIZATIO	N METHOD adju	sted on board	
NOMINAL VOICE CIRCUIT CAPACI	TY, NON-TASI, INITIA	L 1380 now 184	CHANNEL 40 SPACING, INITIAL	4 kHz now 3 kHz
TERMINAL EQUIPMENT MANUFACTI	RER Standard Tel	ephones & Cables	Limited CONSTRUCTION	4 STC
POWER FEED MODE double end	NOMINAL VO	LTAGE 5300/8000	SYSTEM CURRENT	0.470A
TASI TYPE - CIRCUITS USED	- CIRCUITS D	ERIVED - TO	OTAL CIRCUITS -	DATE APPLIED

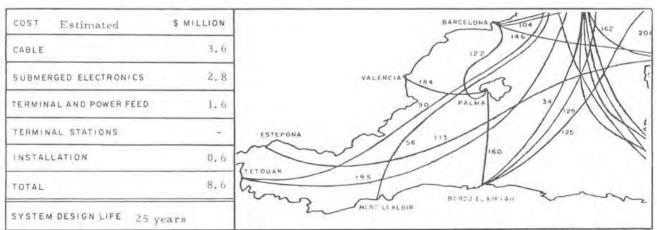
COST Estimated	\$ MILLION
CABLE	56.4
SUBMERGED ELECTRONICS	28.6
FERMINAL AND POWER FEED	1.1
ERMINAL STATIONS	0.3
INSTALLATION	5.6
TOTAL	92.0
SYSTEM DESIGN LIFE 25 y	ears

SEACAB	LE SYSTEM	DATA	PROF	TLE	REFERENCE 184
NAME	Peninsula - Balear	ic Islands No.2		ACRONYM	PENBAL 2
OTHER NAMES	Valencia - Palma	de Mallorca			
COUNTRY A	Spain (mainland)	cou	NTRY B	Spain (Balea	aric Islands)
TERMINUS A	Valencia	TERM	WINUS B	Palma de M	allorca
LANDING POINT A	Malvarrosa	LAN	DING POINT B	Cala Mayor	
COORDINATES A 3	9 <sup>0</sup> 29'N x 0 <sup>0</sup> 19'W	coo	RDINATES B	39 <sup>0</sup> 33'N x 2 <sup>0</sup>	36'E

SYSTEM

OWNER	Companía Teleiónica Nacional de España	CIRCUITS HELD A1
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED	-	

DATE IN 1977 SERVICE	SERVICE C	ommercial	CABLE	16.2	SINGLI OR TWI	E N single	SYSTEM TYPE NO	G (45 M)
CABLE DESCRIPTION	unarmore	d polyethylene	coaxial			CABLE SIZ	E 1.47" 37.	3 mm
CABLE MANUFACTURER	1	Standard Telep	ohones &	Cables L		ABLESHIP USED:	MERCURY	
REPEATER DESCRIPTION monocont	tainer inflex	tible bidirectio	onal solid	l-state	NUMBER	5.0	REPEATER SPACING	2.75 nm
REPEATER MANUFACTUR	ER S	Standard Telep	ohones &	Cables L	imited			
NOMINAL TRANSMISSION	BANDWIDTH	17000+17000k	HZTRANSM	ISSION FR	REQUENCIE	s 1916-1898	38+27212-44	800 kHz
A STREET AND A STREET AND A STREET		FOUNLIZATIO	N METHOR	assem	aled on be	ard		
NUMBER OF EQUALIZERS	5 2	EQUALIZATIO	a Mernor	abbetth	sied off be	ite i th		
NUMBER OF EQUALIZERS				1.11.11.11.11.11.	E H A AIAU	E1	kHz now	4 kHz
	CAPACITY, N	NON-TASI, INITIA	L 3900 r	iow 3900	CHANNI SPACIN	E1	kHz now STC	4 kHz
NOMINAL VOICE CIRCUIT	CAPACITY, M	ION-TASI, INITIA	L 3900 r	iow 3900	CHANNI SPACIN s Ltd. (	IG, INITIAL 4		4 kHz



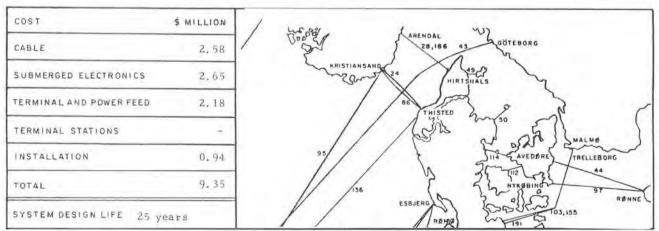
185 Unassigned



endsyssel
05'E

OWNER A	Administration of Telecommunications	CIRCUITS HELD 2700h
OWNER B	Administration of Posts and Telegraphs	CIRCUITS HELD 2700h
RU HOLDER	S.	
CIRCUITS HELI		
LESSEES		
CIRCUITS LEAS	SED	

SERVICE	1977	SERVICE	commercial	CABLE	77	SINGLE OR TWIN	single	SYSTEM TYPE F	S 2700
CABLE DES	CRIPTION		armored polye	thylene co	axial	c	ABLE SIZ	E 1.00" 25	.4 mm
CABLE MAN	JFACTURE	ł	Ocean Cable C	ompany Li	imited (	CABLESHIF	USED:	MERCURY	1
REPEATER DESCRIPTIO	N monoc	ontainer flex	tible bidirection	al solid-s	tate	NUMBER OF	39	REPEATER SPACING	2 nm
REPEATER	MANUFACT	URER	Fujitsu Limite	d					
NOMINAL TR	ANSMISSI	ON BANDWIDTH	+ 12672+12672 kI	HZTRANSMI	SSION FRE	EQUENCIES 4	332-1700	04 + 22796-3	5468 kH:
NUMBER OF	EQUALIZE	RS Z	EQUALIZATION	METHOD	assembl	ed on boar	ł		
	Part I.		10.000 0 000						
NOMINAL VO	DICE CIRC	UIT CAPACITY,	NON-TASI, INITIA	_ 2700 no	w 2700	CHANNEL SPACING,	INITIAL 4	kHz now	4 kHz
1.1. S		MANUFACTURE		L 2700 no	iw 2700	SPACING, CONS	TRUCTION		. Ltd.
TERMINAL E	DUIPMENT		R Fujitsu	Limited		SPACING, CONS	TRUCTION	C. Itoh&Co with Fujitsu	. Ltd.





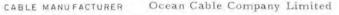
OFFICIAL Kyushu - Iki - Tsushima NAME OTHER NAMES

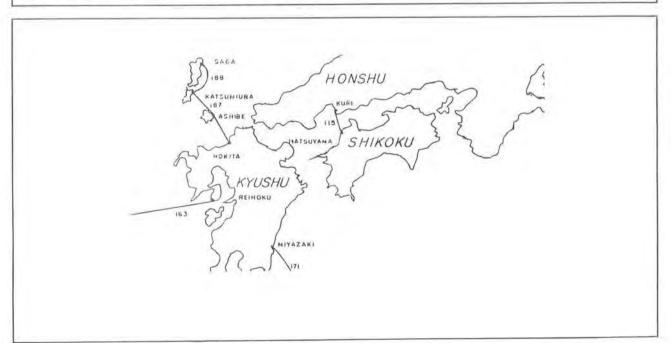
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Maehara, Fukuoka, Kyushu	TERMINUS B	Gohnoura, Iki
LANDING POINT A	Nokīta	LANDING POINT B	Ashibe
COORDINATES A	33 <sup>0</sup> 35'N x 130 <sup>0</sup> 24'E	COORDINATES B	$33^{\circ}48'N \ge 129^{\circ}47'E$
COUNTRY C	Japan	COUNTRY D	

COUNTRY C	Japan	COUNTRY D	
TERMINUS C	Izuhara, Tsushima	TERMINUS D	
LANDING POINT C	Katsumiura	LANDING POINT D	
COORDINATES C	34 <sup>°</sup> 16'N x 129 <sup>°</sup> 20'E	COORDINATES D	

COUNTRY E	COUNTRY F	COUNTRY F	
TERMINUS E	TERMINUS F		
LANDING POINT E	LANDING POINT F		
COORDINATES E	DINATES E COORDINATES F		

CABLE AB	28	вс 44						
DATE IN SERVICE	1978	NATURE OF SERVICE	commercial	SINGLE OR TWIN	single		SYSTEM TYPE	CS 36 M S
CABLE DES	RIPTION	armored poly	yethylene coaxial			CABLE SIZE	1.00"	24.4 mm





		18 continu
WNER Nippon Telegraph and Telephone Public Corporation		continu
All All		
RU HOLDERS DODE		
CIRCUITS HELD -		
LESSEES DORE		
CIRCUITS LEASED _		
REPEATER DESCRIPTION Monocontainer flexible bidirectional solid-state	REPEATER	2.0 nm
NUMBER OF A B 14 B C 22 REPEATERS A B 14 B C 22		
REPEATER MANUFACTURER Fujitsu Limited and Nippon Electric Company Limited	E	
NUMBER OF A B none B C none EQUALIZERS		
EQUALIZATION METHOD -		
TERMINAL EQUIPMENT MANUFACTURER Fujitsu and NEC		
POWER FEED MODE AB end BC end		
NOMINAL VOLTAGE 200/200 300/300	SYSTEM CURRENT ()	. 156 A
NOMINAL TRANSMISSION BANDWIDTH 12672+12672 KHz TRANSMISSION FREQUENCIES 4332-	17004+22796	- 35468kI
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 2700 now 2700 CHANNEL SPACING, INITIAL 4 kHz		
TASI TYPE- CIRCUITS USED - CIRCUITS DERIVED - LTOTAL CIRCUITS _ D	ATE APPLIED	÷
REMARKS CABLESHIP USED:	KUROSHIO	MARU

CONSTRUCTION CONTRACTOR Nippon Telegraph and Telephone Public Corporation

COST	\$ MILLION
CABLE	2,76
SUBMERGED ELECTRONICS	3.04
TERMINAL AND POWER FEED	0.28
TERMINAL STATIONS	0.38
INSTALLATION	2.91
TOTAL	9.37
SYSTEM DESIGN LIFE 20	years



NAME	Tsushima By-Pass		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	lzuhara, Tsushima	TERMINUS B	Saga, Tsushima
LANDING POINT A	Katsumiura	LANDING POINT B	Saga
COORDINATES A	$34^{\circ}16'N \ge 129^{\circ}20'E$	COORDINATES B	34 <sup>°</sup> 27'N x 129 <sup>°</sup> 28'E

OWNER	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE	1978	NATURE OF SERVICE	commercial	CABLE MILES	22	SINGLE OR TWIN	single	SYSTEM TYPE	510 M
CABLE DES	CRIPTION	armo	ored polyethyle:	ne coaxial	b. T		CABLE SIZ	E 1.00" 2	5.4 mm
CABLE MAN	UFACTURER	9	Ocean Cable C	ompany L	imited	Í			
REPEATER DESCRIPTIO	monoco	ntainer flexi	ble bidirection	al solid-s	tate	NUMBER OF	4	R E P E A T E R S P A C I N G	5.3 nm
REPEATER	MANUFACTU	IRER	Fujitsu Limite	d and Nip	pon El	ectric Compa	ny Limite	d	
NOMINAL T	RANSMISSI	ON BANDWIDT	н 3716+3716 kH	7 TRANSM	ISSION	FREQUENCIES	312-4028-	+5872-9588	kHz
NUMBER OF	EQUALIZE	RS none	EQUALIZATIO	N METHOD	-				
NOMINAL V	OICE CIRCI	JIT CAPACITY,	NON-TASI, INITIA	L 900 r	now 9	00 CHANNEL SPACING	INITIAL 4	kHz now	4 kHz
TERMINALE	QUIPMENT	MANUFACTURE	R Fujitsu and	I NEC			NSTRUCTION NTRACTOR	NTTPC	
POWER FEE	D MODE de	ouble end	NOMINAL VO	LTAGE	100/10	0 SYSTEM	CURRENT	0.090 A	
TASI TYPE	- CIRCU	ITS USED -	CIRCUITS D	ERIVED	÷.,	TOTAL CIRCUI	TS -	DATE	-

COST	\$ MILLION
CABLE	0.86
SUBMERGED ELECTRONICS	0.79
TERMINAL AND POWER FEED	0.08
TERMINAL STATIONS	0.08
INSTALLATION	0,70
TOTAL	2.51
SYSTEM DESIGN LIFE 25 y	ears



NAME	FRATERNITÉ		
OTHER NAMES	Senegal-Ivory Coast		
COUNTRY A	Senegal	COUNTRY B	Ivory Coast
TERMINUS A	Dakar	TERMINUS B	Abidjan
LANDING POINT A	Dakar	LANDING POINT B	Abidjan
COORDINATES A	$14^{9}42'N \times 17^{9}28'W$	COORDINATES B	05 <sup>°</sup> 24'N x 04 <sup>°</sup> 08'W

OWNER A Societé des Télécommunications Internationales du Sénégal CIRCUITS HELD

OWNER B Societé des Télécommunications Internationales de Côte d'Ivoire CIRCUITS HELD

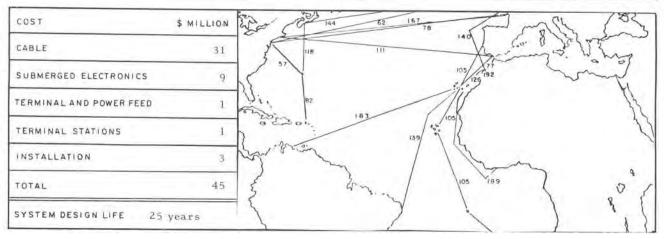
I R U HOLDERS

CIRCUITS HELD

LESSEES

CIRCUITS LEASED

DATE IN 1978 NATURE OF SERVICE SERVICE	commercial	CABLE	1415	SINGLE OR TWIN	single	SYSTEM TYPE	S 5
CABLE DESCRIPTION	unarmored pol	yethylene	coaxial		CABLE SIZ	E 1.50" 38	.1 mm
CABLE MANUFACTURER	Les Câbles de	Lyon	CABLES	HIP USEI	D: VERCO	ORS	
REPEATER DESCRIPTION Monocontainer [le	xible bidirection	al solid-	state	NUMBER OF	110	REPEATER	12 nm
REPEATER MANUFACTURER	Compagnie Ind	ustrielle	de Télécon	nmunicat	ions CIT	ALCATEL	
NOMINAL TRANSMISSION BANDWIDT	н1980+1980 kHz	TRANSM	ISSION FRE	QUENCIES	312-2292 -	+ 2792-4772	kHz
had a state of the second s	State of the St	2.5.1.5.2.2.1.1	100				
NUMBER OF EQUALIZERS 9	EQUALIZATION	METHOD	adjusted	on board			
				CHANNEL	INITIAL 4	kHz now	4 kHz
NOMINAL VOICE CIRCUIT CAPACITY,	NON-TASI, INITIAL	480		CHANNEL SPACING, CON	ETRUCTION	kHz now SUBMARCO	
NUMBER OF EQUALIZERS 9 NOMINAL VOICE CIRCUIT CAPACITY, TERMINAL EQUIPMENT MANUFACTURE POWER FEED MODE DOUBLE ENI	NON-TASI, INITIAL	480 ATEL	now 480	CHANNEL SPACING, COM	STRUCTION		





NAME	Grossenbrode-Burg By-Pass		
OTHER NAMES			
COUNTRY A	Federal Republic of Germany	COUNTRY B	Federal Republic of Germany
TERMINUS A	Grossenbrode	TERMINUS B	Burg, Fehmarn
LANDING POINT A	Grossenbrode	LANDING POINT B	Fehmarnsund
COORDINATES A	$54^{0}23'N \times 11^{0}08'E$	COORDINATES B	54 <sup>°</sup> 2 <sup>4</sup> 'N x 11 <sup>°</sup> 08'E

OWNER	Deutsche Bundespost	CIRCUITS HELD AT
IRU HOLDERS	noné	
CIRCUITS HELD	÷1	
LESSEES	none	
CIRCUITS LEASED	1	

DATE IN 1979 NATURE OF SERVICE SERVICE	commercial	CABLE	7	SINGLE OR TWIN single	SYSTEM TYPE KS	1200
CABLE DESCRIPTION	armored polye	thylene co	axial	CABLE	SIZE 1.00" 25,4 r	nm
CABLE MANUFACTURER	Ocean Cable C	ompany Li	mited			
REPEATER DESCRIPTION monocontainer fle	xible bidirection	al solid-s	tate	NUMBER OF REPEATERS	REPEATER. SPACING	
REPEATER MANUFACTURER	Fujitsu Limite	d				
NOMINAL TRANSMISSION BANDWIDT	H 5248+5248 kH	Z TRANSMI	SSION FR	EQUENCIES 316-55	64 + 7804-13052	kHz
NUMBER OF EQUALIZERS none	EQUALIZATIO	N METHOD	1			
NOMINAL VOICE CIRCUIT CAPACITY	NON-TASI, INITIA	L 1200 n	ow 120	O SPACING, INITIA	L4kHz now	4 kHz
TERMINAL EQUIPMENT MANUFACTUR	ER Fujîtsu Li	mited		CONSTRUCT	FUIITSU	
POWER FEED MODE single end	NOMINAL VO	LTAGE	40	SYSTEM CURRE	NT 0.150 A	
TASI TYPE - CIRCUITS USED	CIRCUITS D	ERIVED	- то	TAL CIRCUITS-	DATE -	

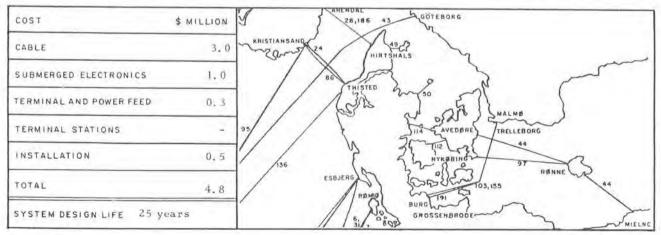
COST	\$ MILLION	1/"		mos	5 M	5
CABLE	0,20	1//	(STA	La DAVE	DORES TRELLEB	ORG
SUBMERGED ELECTRONICS	0.05	1//	N	ZC TIZ	13	~~~
TERMINAL AND POWER FEED	0.17	136 ESE	PL DRALE	3000	m	RØNNE
TERMINAL STATIONS	-	/	Home	BURG	3 ~	5
INSTALLATION	0.40	// 29	5. 000	OP GROSSENB	RODI	735
TOTAL	0,82	// 1		200		
SYSTEM DESIGN LIFE 25 3	vears	1/10	TOLEE	RAL		

### SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 191

			NUMBER	
NAME	Germany-Sweden 3			
OTHER NAMES	G - S 3			
COUNTRY A	Federal Republic of Germany	COUNTRY B	Sweden	
TERMINUS A	Grossenbrode	TERMINUS B	Malmö	
LANDING POINT A	Grossenbrode	LANDING POINT B	Trelleborg	
COORDINATES A	54 <sup>°</sup> 2 <sup>3</sup> 'N x 11 <sup>°</sup> 09'E	COORDINATES B	55 <sup>°</sup> 23'N x 13 <sup>°</sup> 07'E	-

OWNER A	Deutsche Bundespost	CIRCUITS HELD 1200h
OWNER B	Televerket	CIRCUITS HELD 1200h
I R U HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEASI	ED	

DATE IN 1978 NATURE OF SERVICE SERVICE	commercial	CABLE	100	IGLE TWIN single	SYSTEM TYPE KS 1200
CABLE DESCRIPTION	armored polyet	hylene coa:	tial	CABLE ST	ZE 1.00" 25.4 mm
CABLE MANUFACTURER	Ocean Cable Co	mpany Lin	ited CABL	ESHIP USED:	NORTHERN
REPEATER monocontainer fle DESCRIPTION with temperature	xible bidirection -actuated gain co	al solid-sta ntrol (TAG	C) REPE	ER OF ATERS 28	REPEATER SPACING 4.0 nm
REPEATER MANUFACTURER	Fujitsu Limited				2
NOMINAL TRANSMISSION BANDWIDT	H 5240+5240 kHz	TRANSMISS	ION FREQUEN	CIES 316-5564	+ 7804-13052 kHz
NUMBER OF EQUALIZERS 1	EQUALIZATION	METHOD	assembled o	n board	
NOMINAL VOICE CIRCUIT CAPACITY,	NON-TASI, INITIAL	1200 no	м 1200 СНА 5РА	NNEL CING, INITIAL	4 kHz now 4 kHz
TERMINAL EQUIPMENT MANUFACTURE	R Fujitsu Lte	1.		CONSTRUCTION CONTRACTOR	Fujitsu
OWER FEED MODE double end	NOMINAL VOL	TAGE 275/2	75 sy	STEM CURRENT	0.150 A
TASI TYPE - CIRCUITS USED -		Constant of the	TOTAL CI	an anna da bha	DATE





NAME	Peninsula - Canary Islands No	ACRONYM PENCAN 3		
OTHER NAMES	Chipiona (Cadiz) - Las Palr	mas de Gran Canaria		
COUNTRY A	Spain (Çanary Islands)	COUNTRY B	Spain (Mainland)	
TERMINUS A	Las Palmas	TERMINUS B	Chipiona, Cadiz	
LANDING POINT A	San Cristóbal	LANDING POINT B	Ballena Beach	
COORDINATES A	28 <sup>0</sup> 05'N x 15 <sup>0</sup> 25'W	COORDINATES B	$36^{0}40'N \ge 6^{0}25'W$	

OWNER	Companía Telefónica Nacional de España							CIRCUITS HELD		
IRU HOLDERS	DBP	CANTV	SACC	CPRM	PTT France	ITALCABLE	PTT Austria	Radio Austria		
Circuits	32	1740	3	12	16	80	8	1		
IRU HOLDERS	PTT Belgiu		PTT tzerland							
Circuits	4		12							

DATE IN 1978 SERVICE	NATURE OF SERVICE	commercial	CABLE MILES	743	SINGLE OR TWIN	single	SYSTEM TYPE	NG (45M)
CABLE DESCRIPTION	unarmo	ored polyethyle	ne coaxial			CABLE SIZE	1.47" 3	7.3 mm
CABLE MANUFACTURER	1)	Standard Tele	phones & C	Cables I	4	BLESHIP JSED:	CABLE	/ENTURE
REPEATER DESCRIPTION MONOC	container inf	lexible bidirect	ional solid	-state	NUMBER OF	270	REPEATER SPACING	2,75 nm
REPEATER MANUFACTO	JRER	Standard Tele	phones & C	Cables I	imited			
NOMINAL TRANSMISSI	ON BANDWIDT	н 17000+170001	HZTRANSMI	SSION FI	REQUENCIES	1862-1898	0+27220-4	4328 kHz
NUMBER OF EQUALIZE	<b>rs</b> 13	EQUALIZATIO	N METHOD	asse	mbled on bo	C 24 C 1	numbers o numbers	· · · · · · · · · · · · · · · · · · ·
NOMINAL VOICE CIRCI	UIT CAPACITY,	NON-TASI, INITIA	AL 3480 nc	w 3480	CHANNEL SPACING,	INITIAL 4	kHz no	w 4 kHz
TERMINAL EQUIPMENT	MANUFACTURE	R Standard Te	elephones &	& Cables	LEd	STRUCTION TRACTOR	STC	
POWER FEED MODE d	louble end	NOMINAL VO	DLTAGE 24	50/2450	SYSTEM	CURRENT	0.500 A	
TASI TYPE - CIRCU	ITS USED .	CIRCUITS D	ERIVED -	TC	TAL CIRCUIT	s –	DATE	-

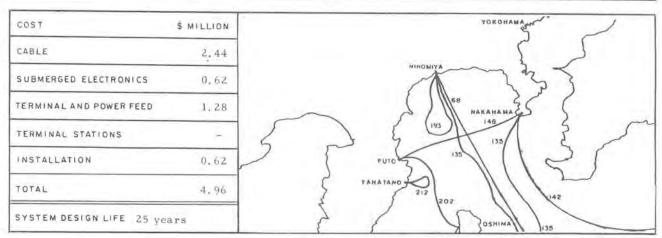
COST Estimated	\$ MILLION	20		CHIPIGHA CHIPIGHA
CABLE	24		131	1 stran
SUBMERGED ELECTRONICS	20		MADELINA IS D	CASABLANCA
TERMINAL AND POWER FEED	3		02500	/181
TERMINAL STATIONS	-		CANARY ISLANOS	
INSTALLATION	3	183	139	
TOTAL	50		105 DAKAR	
SYSTEM DESIGN LIFE 25	years		VERDL 4	

SYSTEM 193

				NUMBER	100
NAME	Sagami Bay 3				
OTHER NAMES					
COUNTRY A	Japan	COUNTRY B	Japan		
TERMINUS A	Ninomiya	TERMINUS B	Ninomiya		
LANDING POINT A	Ninomiya	LANDING POINT B	Ninomiya		
COORDINATES A	35 <sup>0</sup> 17'N x 139 <sup>0</sup> 16'E	COORDINATES B	35 <sup>0</sup> 17'N x 13	39 <sup>°</sup> 16'E	

OWNER	Ministry of Posts and Telecommunications	CIRCUITS HELD A11
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED	~	

DATE IN 1978 NATURE O SERVICE SERVICE		CABLE	53	SINGLE OR TWIN	single	SYSTE TYPE	CS 12M
CABLE DESCRIPTION	unarmored poly	ethylene c	oaxial		CABLE S	IZE 1.50"	38.1 mm
CABLE MANUFACTURER	Ocean Cable Co	mpany Lin	nited	CABLESH	HIP USEI	: KUROSH	IO MARU
REPEATER DESCRIPTION monocontainer fl	exible bidirection	al solid-st	ate	NUMBER OF	O	REPEATE	1
REPEATER MANUFACTURER	Nippon Electric	Company	Limite	ed and Fujit	su Limit	ed	
	STOLEN STOLEN						
NOMINAL TRANSMISSION BANDWID	TH 5032+5032 kHz	TRANSMIS	SION F	REQUENCIES	564-559	6 + 7356-1	2388  kHz
Contraction of the second second	EQUALIZATION		SION F	REQUENCIES	564-559	6 + 7356-1.	2388 kHz
NUMBER OF EQUALIZERS none	EQUALIZATION	METHOD	-	CHANNEL			
NUMBER OF EQUALIZERS none	EQUALIZATION Y, NON-TASI, INITIAL	METHOD	-	CHANNEL SPACING COI		4 kHz no	
	EQUALIZATION Y, NON-TASI, INITIAL	1 METHOD . 1200 nov nd Fujîtsu	-	CHANNEL SPACING CO	INITIAL	4 kHz no V NT	ow 4 kHz FPC



Administration of PTT

NAME	AMITIÉ		
OTHER NAMES	France-Morocco	Marseille-Tetouan	
COUNTRY A	France	COUNTRY B	Morocco
TERMINUS A	Marseille	TERMINUS B	Tetouan
LANDING POINT A	Martigues	LANDING POINT B	Martil
COORDINATES A	$43^{\circ}24'N \ge 05^{\circ}03'E$	COORDINATES B	35 <sup>°</sup> 38'N x 05 <sup>°</sup> 17'W

OWNER A

5°03'E COORDINATES B 35

OWNER A

Administration of Posts and Tellecommunications

CIRCUITS HELD 2340h

CIRCUITS HELD 2340h

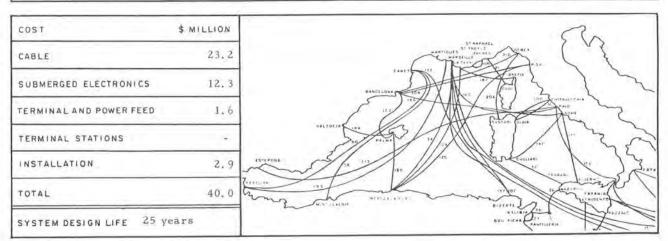
I R U HOLDERS

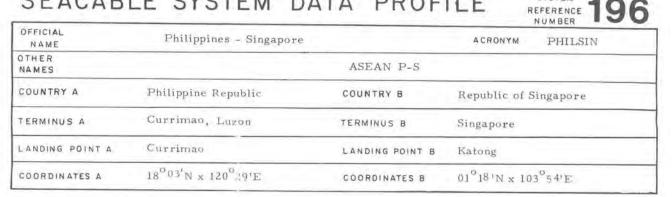
CIRCUITS HELD

LESSEES

CIRCUITS LEASED

DATE IN 1978 NATURE OF SERVICE SERVICE C	ommercial	CABLE	825	SINGLE OR TWIN	single	SYSTEM TYPE	S 25
CABLE DESCRIPTION	unarmored poly	yethylene	coaxial		CABLE SIZI	E 1.50"	38.1 mm
CABLE MANUFACTURER	Les Câbles de	Lyon C	ABLESH	IP USED:	VERCORS	5	-
REPEATER monocontainer flexi DESCRIPTION	ble bidirection	al solid-s	tate	NUMBER OF	168	REPEATER	5 nm
REPEATER MANUFACTURER	Compagnie Ind	ustrielle d	e Téléco	mmunicat	ions CIT	ALCATE	L
NOMINAL TRANSMISSION BANDWIDTH	10652+10652k	HZRANSMIS	SION FR	EQUENCIES	812-11464	+ 14576-2	5228 kH2
NUMBER OF EQUALIZERS 9	EQUALIZATION	METHOD	remote	e controlle	Ь		
NOMINAL VOICE CIRCUIT CAPACITY, I	NON-TASI, INITIAL	.2340 n	ow 2340	CHANNEL SPACING	INITIAL 4	kHz now	4 kHz
TERMINAL EQUIPMENT MANUFACTURER	CIT AI	CATEL			STRUCTION	SUBMAR	сом
OWER FEED MODE double end	NOMINAL VOI	LTAGE 2000	/2000	SYSTEM	CURRENT	0.365 A	
ASI TYPE - CIRCUITS USED -	CIRCUITS DE	RIVED -	то	TAL CIRCUIT	rs -	DATE	14





SYSTEM

Owners	Eastern Telecommunications Philippines Incorporated ETPI	138h
	Telecommunications Authority of Singapore TELECOMS	414h
	Communications Authority of Thailand CAT	69h
	Jabatan Telecom Malaysia JTM	138h
	P. T. Indonesian Satellite Corporation INDOSAT	138h
	Kokusai Denshin Denwa Co. Ltd. KDD	138h
	Overseas Telecommunications Commission (Australia) OTC	69h
	Cable & Wireless Ltd. C&W	276h

DATE IN SERVICE	1978	NATURE OF SERVICE	commercial	CABLE	1534	SINGLE OR TWIN	single	SYSTEM TYPE	NE (14M
CABLE DESC	CRIPTION	unarr	mored polyethyl	ene coax	ial		CABLE SIZ	E 1.47" 3	7.3 mm
CABLE MANU	JFACTURER		Standard Telep	ohones &	Cables	C. Limited	ABLESHIP USED:	CABLE V	ENTURE
REPEATER DESCRIPTIO	N monoc	container infl	exible bidirecti	onal soli	d-state	NUMBER OF	224	REPEATER	6.5 nm
REPEATER N	ANUFACTI	JRER	Standard Telep	phones &	Cables	Limited			
NOMINAL TR	ANSMISSI	ON BANDWIDTH	5700÷5700 kHz	TRANSM	ISSION F	REQUENCIES	312-6012	+ 8000-13	700 kHz
NUMBER OF	EQUALIZE	RS 15	EQUALIZATION	METHOD	as	sembled on	board		
NOMINAL VO	ICE CIRCU	JIT CAPACITY,	NON-TASI, INITIAL	1380	now 13	80 SPACING	INITIAL 4	kHz now	4 kHz
TERMINAL EQ	UIPMENT	MANUFACTURE	R Standard Tel	ephones	& Cable	e I to	NSTRUCTION NTRACTOR	STC	
POWER FEED	MODE	double end	NOMINAL VOL	TAGE 32	00/3200	SYSTEM	CURRENT	0,470	А
TASI TYPE	- CIRCU	ITS USED	- CIRCUITS DE	RIVED -	т	OTAL CIRCUI	T5 _	DATE APPLIED	+

COST	\$ MILLION
CABLE	34
SUBMERGED ELECTRONICS	17
TERMINAL AND POWER FEED	1
TERMINAL STATIONS	
INSTALLATION	4
TOTAL	56
SYSTEM DESIGN LIFE 25 y	vears

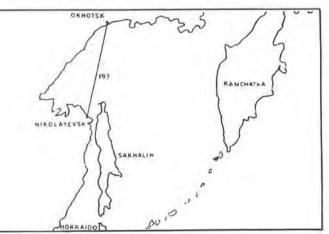


NAME	Okhotsk-Nikolayevsk		
OTHER NAMES			
COUNTRY A	U.S.S.R.	COUNTRY B	U.S.S.R.
TERMINUS A	Okhotsk	TERMINUS B	Nikolayevsk
LANDING POINT A	Okhotsk	LANDING POINT B	Nikolayevsk
COORDINATES A	$59^{\circ}16N \ge 143^{\circ}20'E$	COORDINATES B	53 <sup>°</sup> 11'N x 140 <sup>°</sup> 42'E

OWNER	Ministry of Posts and Telecommunications	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD	*	
LESSEES	none	
CIRCUITS LEASED	¥	

DATE IN 1979 NATURE OF administrative SERVICE SERVICE	CABLE 512 MILES	SINGLE OR TWIN single	SYSTEM CS 5M
CABLE DESCRIPTION unarmored polyethylene	coaxial	CABLE S	IZE 1.00" 25.4 mm
CABLE MANUFACTURER Ocean Cable Co	mpany Limited	CABLESHIP USED	: INGUL
REPEATER monocontainer flexible bidirection	al solid-state	NUMBER OF 63	REPEATER SPACING 8 nm
REPEATER MANUFACTURER Nippon Electric C	ompany Limited	1	
NOMINAL TRANSMISSION BANDWIDTH $1920  \mathrm{kHz}$	TRANSMISSION	FREQUENCIES 280-232	9 + 3060-5113 kHz
NUMBER OF EQUALIZERS 4 EQUALIZATION	METHOD ad	usted on board	
	merciae and		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI	480	CHANNEL SPACING	4 kHz
		CHANNEL SPACING CONSTRUCTIO	N NEC supplied;
TERMINAL EQUIPMENT MANUFACTURER Nippon	480	CHANNEL SPACING any CONSTRUCTIO CONTRACTOR	N NEC supplied; USSR installed

COST	\$ MILLION
CABLE	5.9
SUBMERGED ELECTRONICS	3.9
TERMINAL AND POWER FEED	0,9
TERMINAL STATIONS	0.6
INSTALLATION	0.8
TOTAL	12.1
SYSTEM DESIGN LIFE 25 ye	ears



#### 198

199

#### 200

SEACABLE SYSTEM DATA PROFILE

201 Unassigned

SEAC	CABLE	SYSTEM	DATA	PROFILE	SYSTEM REFERENCE NUMBER
NAME	Itoh - M	îyake			
OTHER NAMES					

COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Futo, Shizuoke	TERMINUS B	Oshima
LANDING POINT A	Futo	LANDING POINT B	Oshima
COORDINATES A	34 <sup>°</sup> 55'N x 139 <sup>°</sup> 08'E	COORDINATES B	33 <sup>°</sup> 44'N x 139 <sup>°</sup> 22'E

202

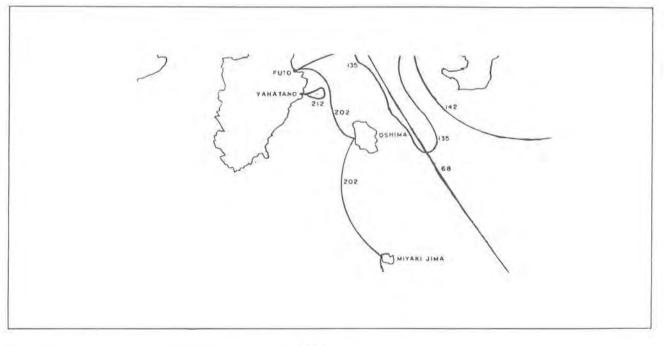
COUNTRY C Japan Miyake Jima TERMINUS C Miyake Jima LANDING POINT C

34<sup>°</sup>04'N x 139<sup>°</sup>29'E COORDINATES C

COUNTRY E	COUNTRY F	
TERMINUS E	TERMINUS F	
LANDING POINT E	LANDING POINT F	
COORDINATES E	COORDINATES F	

CABLE AB	18	ВC	44	C D	DE		E F		
DATE IN SERVICE	1979	N ATUR SERV	E OF	commercial	SINGLE OR TWIN	single		SYSTEM TYPE	CS 36M
CABLE DE	SCRIPTION	unari	more	d polyethylene			CABLE SIZE	1.50"	38.1 mm

Ocean Cable Company Limited (Japan) CABLE MANUFACTURER



				COL	202
OWNER Nippon Telegraph and Telephone Public (	Corporation	0			
CIRCUITS HELD A11					
I R U HOLDERS					
CIRCUITS HELD					
LESSEES					
CIRCUITS LEASED					
REPEATER DESCRIPTION monocontainer flexible bidire	ectional sol	id-state		REPEATER SPACING	2.0 nm
NUMBER OF A B 9 B C 23 C D REPEATERS	DE	E F			
REPEATER MANUFACTURER Fujitsu Ltd. and Nippon I	Electric Co	mpany L	td.		
NUMBER OF A B none B C none C D EQUALIZERS	DE	E F			
EQUALIZATION METHOD _					
TERMINAL EQUIPMENT MANUFACTURER Fujitsu Ltd. and	d Nippon El	ectric C	o. Ltd.		
POWER FEED MODE AB end BC end CD	DE	E .	EF		
NOMINAL VOLTAGE 200/200 400/400				SYSTEM CURRENT (	.156 A
NOMINAL TRANSMISSION BANDWIDTH 12672+12672 kHz	TRANSMIS	SION FREQ	UENCIES43	32-17004+22790	6-354681
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI 2700		HANNEL	$4\mathrm{kHz}$		
TASI TYPE _ CIRCUITS USED _ CIRCUITS DERIVED	- 101	AL CIRCUIT		DATE APPLIED	-
DEMADYS	CAT	BIESHIE	USED.	KUROSHIO MA	BII

REMARKS

CABLESHIP USED: KUROSHIO MARU

000

CONSTRUCTION CONTRACTOR Nippon Telegraph and Telephone Public Corporation

COST	\$ MILLION
CABLE	0.94
SUBMERGED ELECTRONICS	1.34
TERMINAL AND POWER FEED	0,28
TERMINAL STATIONS	0.38
INSTALLATION	0.60
TOTAL	3.54
SYSTEM DESIGN LIFE 20	years



NAME	U.K France 2		
OTHER NAMES	Eastbourne-St	. Valery en Caux	
COUNTRY A	England	COUNTRY B	France
TERMINUS A	Eastbourne	TERMINUS B	St. Valery en Caux
LANDING POINT A	Cuckmere	LANDING POINT B	St. Valery en Caux
COORDINATES A	$50^{\circ}45'N \ge 00^{\circ}16'E$ .	COORDINATES B	49 <sup>0</sup> 52'N x 00 <sup>0</sup> 43'E

OWNER A	British Post Office	CIRCUITS HELD
OWNER B	Administration of Posts and Telecommunications	CIRCUITS HELD
IRU HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEASE	D	

DATE IN SERVICE	1979	NATURE OF SERVICE	commercial	CABLE MILES	60	SINGLE OR TWIN	single	SYSTEM TYPE	NG (45M)
CABLE DESC	CRIPTION		armored polye	thylene co	baxial		CABLE SI	ZE 1.47" 3	7.3 mm
CABLE MANU	FACTURER		Standard Telep	ohones & C	Cables	Ltd. CABL	ESHIP US	ED: ALERT	(4)
REPEATER DESCRIPTIO	N monoc	ontainer infl	exible bidirecti	onal solid	-state	NUMBER OF	21	REPEATER	2.75 nm
REPEATER N	ANUFACTU	JRER	Standard Telep	ohones & C	Cables	Limited			
NOMINAL TR	ANSMISSIC	ON BANDWIDT	H 17000+17000k	HZTRANSM	SSION	FREQUENCIES	1900-190	00 + 27200-4	4300kHz
NUMBER OF	EQUALIZE	RS none	EQUALIZATIO	N METHOD	-				
NOMINAL VO	ICE CIRCU	JIT CAPACITY,	NON-TASI, INITIA	L 3000 + 1	200	CHANNEL SPACING	INITIAL	4 kHz and	3 kHz
TERMINAL EQ	UIPMENT	MANUFACTURE	R Standard Te	lephones	& Cabl	pg l.td	ISTRUCTION NTRACTOR	STC	
OWER FEED	MODE d	louble end	NOMINAL VO	LTAGE 30	0/300	SYSTEM	CURRENT	0.500 A	
TASI TYPE	- CIRCUI	TS USED -	CIRCUITS DI	ERIVED	-	TOTAL CIRCUIT	S -	DATE	-

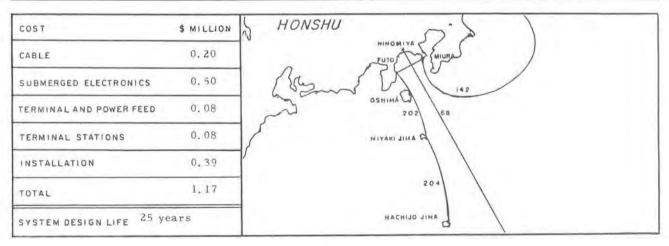
COST	\$ MILLION
CABLE	1.59
SUBMERGED ELECTRONICS	1.27
TERMINAL AND POWER FEED	1.91
TERMINAL STATIONS	0.41
INSTALLATION	0,63
TOTAL	5.81
SYSTEM DESIGN LIFE 25 y	ears



NAME	Miyake - Hachijo		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Miyake Jima	TERMINUS B	Hachijo Jima
LANDING POINT A	Miyake Jima	LANDING POINT B	Hachijo Jima
COORDINATES A	34 <sup>0</sup> 04'N x 139 <sup>0</sup> 29'E	COORDINATES B	33 <sup>°</sup> 0 <sup>8</sup> 'N x 139 <sup>°</sup> 48'E

OWNER		Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD	A11
IRU H L	LDERS	none		
CIRCUIT	HELD	а.		
LESSEE5		none		
CIRCUIT	LEASED			

DATE IN SERVICE	1979	NATURE OF SERVICE	commercial	CABLE	79	SINGLE OR TWIN	single	SYSTEM TYPE	CS 10M
CABLE DES	CRIPTION		unarmored pol	lyethylene	coaxial		CABLE SIZE	1,50"	38.1mm
CABLE MAN	UFACTURER		Ocean Cable C	Company L	imited				
REPEATER DESCRIPTIO	nonoc	ontainer fle:	(ible bidirectio)	nal solid-s	tate	NUMBER OF	12	REPEATER	5.4 nm
REPEATER	MANUFACTU	JRER Fu	jitsu Limited a	nd Nippon	Electric	Company I	imited		
NOMINAL T	RANSMISSI	ON BANDWIDT	н 3716+3716 kH	Z TRANSMI	ISSION F	REQUENCIES	312-4028+	5872-9588	kHz
NUMBER OF	EQUALIZE	RS non	e EQUALIZATIO	N METHOD	-				
NOMINAL V	OICE CIRCI	JIT CAPACITY	NON-TASI, INITIA	AL 900		C HANNEL S PA C I N G	INITIAL 4	kHz	
TERMINAL E	QUIPMENT	MANUFACTUR	R Fujitsu and	NEC			STRUCTION NTRACTOR	NTT	PC
POWER FEE	D MODE	louble end	NOMINAL VO	DLTAGE 2	00/200	SYSTEM	CURRENT	0.090 A	
TASI TYPE	CIRCU	ITS USED	- CIRCUITS D	ERIVED	- то	TAL CIRCUI	rs _	DATE	-



SEACAB	LE SYSTEM	DATA PROF	ILE SYSTEM REFERENCE 205
OFFICIAL	Tripoli-Benghazi		
OTHER NAMES			
COUNTRY A	Libya	COUNTRY B	Libya
TERMINUS A	Tripoli	TERMINUS B	Benghazi
LANDING POINT A	Tripoli	LANDING POINT B	Brnghazi
COORDINATES A	32 <sup>0</sup> 58'N x 13 <sup>0</sup> 13'E	COORDINATES B	32 <sup>0</sup> 08'N x 20 <sup>0</sup> 01'E

OWNER	Libya Post and Telecommunication Corporation	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD	E A CONTRACTOR OF	
LESSEES	none	
CIRCUITS LEASED		

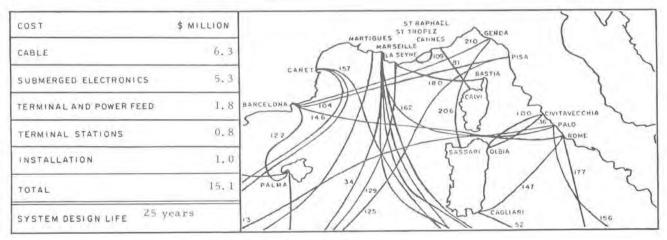
DATE IN SERVICE	1979	NATURE OF SERVICE	commercial	CABLE	382	SINGLE OR TWIN	single	SYSTEM CS 36M
CABLE DES	CRIPTION	unarmore	ed polyethylene	coaxial			CABLE SI	ZE 1.50' 38.1 mm
CABLE MAN	UFACTURER		Ocean Cable Co	mpany L	imited	CABLESH	P USED:	CABLE VENTURE
REPEATER DESCRIPTIO	monoco	ontainer flexi	ble bidirectiona	al solid-s	tate	NUMBER OF	130	REPEATER SPACING 2.75 nm
REPEATER N	MANUFACTU	RER	Nippon Electric	Compan	y Limit	ed and Fujits	su Limite	bed
NOMINAL TR	RANSMISSIC	N BANDWIDTH	12672+12672kH	ZTRANSMI	SSION P	FREQUENCIES	332-1700	04 + 22796-35468kHz
NUMBER OF	EQUALIZE	RS 5	EQUALIZATION	METHOD	mag	netic externa	l steppin	g
NOMINAL VO	DICE CIRCU	IIT CAPACITY,	NON-TASI, INITIAL	900 + 2-	way co	CHANNEL lor SPACING,	INITIAL	4 kHz
TERMINALEC	UIPMENT	MANUFACTUREF	Nippon Elec	tric Co.I	Ltd. & F	ujitsu Ltd CON	STRUCTION	NEC
OWER FEEL	D MODE d	ouble end	NOMINAL VOL	TAGE 1300	/1300	SYSTEM	CURRENT	0.156 A
ASI TYPE	- CIRCUI	TS USED -	CIRCUITS DE	RIVED	- т	OTAL CIRCUIT	s -	DATE -

COST	\$ MILLION
CABLE	23.0
SUBMERGED ELECTRONICS	16.2
TERMINAL AND POWER FEED	3.8
TERMINAL STATIONS	2.0
INSTALLATION	2.7
TOTAL	47.7
SYSTEM DESIGN LIFE 25 y	ears

NAME	Genoa-Sassari		
OTHER NAMES	Italy - Sardinia 4		
COUNTRY A	Italy (mainland)	COUNTRY B	Italy (Sardinia)
TERMINUS A	Genoa	TERMINUS B	Sassari
LANDING POINT A	Punta Vagno	LANDING POINT B	Porto Torres
COORDINATES A	$44^{\circ}25'N \times 08^{\circ}57'E$	COORDINATES B	40 <sup>°</sup> 52'N x 08 <sup>°</sup> 25'E

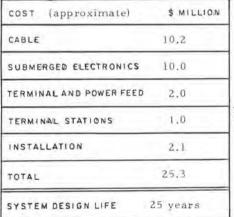
OWNER	Azienda di Stato per i Servizi Telefonici	CIRCUITS HELD A11
e offen	r r	Andre me dere
IRU HOLDERS	nône	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

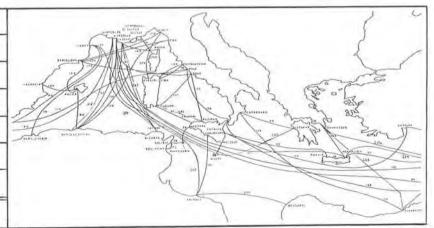
DATE IN SERVICE	1979	NATURE OF SERVICE	commercial	CABLE MILES	272	SINGLE OR TWI	single	SYSTEM TYPE N	G (45M)
CABLE DE	SCRIPTION		unarmored pol	yethylene	coaxia	ı.	CABLE SIZ	ε 1.47"	37,3 mm
CABLE MAN	NUFACTURER	ð í	Standard Telej	ohones &	Cables	Limited C	ABLESHIP USED:	CABLE VE	INTURE
REPEATER	on monoc	ontainer infle	exible bidirecti	onal soli	d-state	NUMBER O	99	REPEATER	2.75 nm
REPEATER	MANUFACT	JRER	Standard Telej	ohones &	Cables	Limited			
NOMINAL T	TRANSMISSI	ON BANDWIDTH	17000+17000kI	IZTRANSM	ISSION	FREQUENCIE	s 1900-1900	00 + 27200	14300 kH:
NUMBER O	FEQUALIZE	RS 4	EQUALIZATIO	N METHOD	assem	bled on boa	ard		
		<u> </u>	EQUALIZATIO		asserr			kHz	
NOMINAL	VOICE CIRC	<u> </u>	NON-TASI, INITIA	L 3600		CHANNE SPACIN OS Ltd		kHz STC	
NOMINAL N	VOICE CIRC	UIT CAPACITY, MANUFACTUREF	NON-TASI, INITIA	L 3600 elephones	& Cabl	CHANNE SPACIN es Ltd. C	L G, INITIAL 4 ONSTRUCTION ONTRACTOR		





NAME	La Seyne - Tripoli		and the second second
OTHER NAMES	France - Libya	EL FATAH	
COUNTRY A	France	COUNTRY B	Libya
TERMINUS A	La Seyne Sur Mer	TERMINUS B	Tripoli
LANDING POINT A	Les Sablettes	LANDING POINT B	Tarabulus
COORDINATES A	43 <sup>0</sup> 04'N x 05 <sup>0</sup> 53'E	COORDINATES B	32 <sup>°</sup> 53'N x 13 <sup>°</sup> 08'E
OWNER A	Ministry of Posts and Te	lecommunications	CIRCUITS HELD 320 h
OWNER B	Libya Post and Telecomm	nunication Corporation	CIRCUITS HELD 320 h
IRU HOLDERS			
CIRCUITS HELD			
LESSEES			
CIRCUITS LEASED			
DATE IN 1979 SERVICE	NATURE OF SERVICE commercial		IGLE SYSTEM TWIN single TYPE S 5
CABLE DESCRIPTIO	unarmored polyeth	ylene coaxial	CABLE SIZE 1.5" 38.1 mm
CABLE MANUFACTU	RER Les Câbles de l	Lyon CABLESHIF	DUSED: VERCORS
REPEATER DESCRIPTION mon	ocontainer flexible bidirec		ER OF REPEATER ATERS 90 SPACING 12 mm
REPEATER MANUFA	CTURER Compagnie Industri	ielle des Télécommunication	ns CIT ALCATEL
			ns CIT ALCATEL CIES 312-2292+2792-4772 kHz
NOMINAL TRANSMIS	SSION BANDWIDTH 1980 +1980		CIES 312-2292+2792-4772 kHz
NOMINAL TRANSMIS	SSION BANDWIDTH 1980 +1980	KHz TRANSMISSION FREQUEN	CIES 312-2292+2792-4772 kHz
NOMINAL TRANSMIS	SSION BANDWIDTH 1980 +1980 IZERS 7 EQUALIZA RCUIT CAPACITY, NON-TASI, IN	KHz TRANSMISSION FREQUEN	CIES 312-2292+2792-4772 kHz d assembled on board
NOMINAL TRANSMIS NUMBER OF EQUAL NOMINAL VOICE CI	SSION BANDWIDTH 1980 +1980 IZERS 7 EQUALIZA RCUIT CAPACITY, NON-TASI, IN NT MANUFACTURER CIT 4	KHz TRANSMISSION FREQUEN TION METHOD computed and ITIAL 640 CHA SPA	d assembled on board NNEL CING, INITIAL 3 kHz CONSTRUCTION SUBMARCOM





## 208 Unassigned SEACABLE SYSTEM DATA PROFILE

OWNER A

SEACAE	BLE	SYSTEM	DATA	PROF	ILE	SYSTEM REFERENCE NUMBER	209
OFFICIAL	Jap	oan-Republic of Chin	a		ACRONYM	and the second	
OTHER NAMES		Okinawa-Taiwan					
COUNTRY A	Repub	lic of China	COL	INTRY B	Japan		
TERMINUS A	Touch	eng, Taiwan	TER	MINUS B	Gushikami, (	Okinawa	
LANDING POINT A	Touch	eng	LAN	DING POINT B	Gushikami		
COORDINATES A	24 <sup>0</sup> 51	'N x 121 <sup>0</sup> 49'E	cod	ORDINATES B	26 <sup>0</sup> 07'N x 12	27 <sup>°</sup> 45'E	

Owner B	International Telecommunications Development Corporation	CIRCUITS HELD	480 h

CIRCUITS HELD 480h

Nippon Asia Submarine Cable Company Limited

DATE IN 1979 SERVICE	NATURE OF SERVICE	commercial	CABLE	367	SINGLE OR TWIN	single	SYSTEM TYPE	5 5M
CABLE DESCRIPTION	unarmored	polyethylene co	axial		С	ABLE SI	ZE 1.00" 25.	4 mm
CABLE MANUFACTURER	(	Ocean Cable Co	mpany Li	mited C.	ABLESHI	USED:	KDD MARU	Į.
REPEATER DESCRIPTION MONOCO	ontainer flexi	ble bidirectiona	l solid-si	ata	UMBER OF	44	R EPEATER S PACING	8.3 nm
REPEATER MANUFACTUR	RER	Nippon Electric	Company	Limited a	and Fujits	u Limite	ed	
NOMINAL TRANSMISSIO	N BANDWIDTH	1980+1980 kHz	TRANSMIS	SION FREQ	UENCIES 3	12-2292	+3068-5048	сHz
NUMBER OF EQUALIZER	s 1	EQUALIZATION	METHOD	fixed	ł			
NOMINAL VOICE CIRCUI	IT CAPACITY, N	ION-TASI, INITIAL	480		CHANNEL SPACING,	NITIAL	4 kHz	
TERMINAL EQUIPMENT M	IANUFACTURER	NEC a	nd Fujitsu			TRUCTION	KDD	
POWER FEED MODE do	uble end	NOMINAL VOL	TAGE 410	/410	SYSTEM	URRENT	0.100 A	

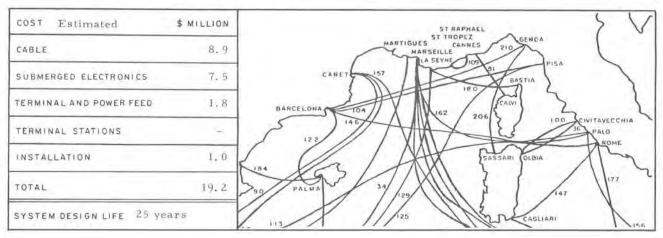
NINOMIYA COST \$ MILLION REIHORU MIYAZAKI CABLE 5.9 NANHUI 163 171 SUBMERGED ELECTRONICS 4.2 OKINAWA 117 TERMINAL AND POWER FEED 3,2 TAIWAR 68 HONG 3.2 TERMINAL STATIONS 179 INSTALLATION 7.5 LUZON 24.0 TOTAL 153 70 GUAM 7 25 years SYSTEM DESIGN LIFE 620 TRANG

## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 210

NAME	Barcelona - Genoa		ACRONYM BARGEN
OTHER NAMES Spa	in-Italy 4		
COUNTRY A	Italy	COUNTRY B	Spain
TERMINUS A	Genoa	TERMINUS B	Cabrera de Mar
LANDING POINT A	Punta Vagno	LANDING POINT B	Cabrera Beach
COORDINATES A	$44^{\circ}23'N \ge 8^{\circ}57'E$	COORDINATES B	41°31'N x 2°24'E

OWNER B	Compania Telefónica Nacional de España	CIRCUITS HELD 4140h
OWNER A	Azienda di Stato per i Servizi Telefonici	CIRCUITS HELD 4140h
I R U HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEASE	D	

DATE IN SERVICE	1979	NATURE OF SERVICE	commercial	CABLE MILES	389	SINGLE OR TWIN	single	SYSTEM TYPE	IG 1-45M
CABLE DES	CRIPTION	unari	mored polyeth	nylene coa	xial		CABLE SIZ	E 1.47" 3	7.3 mm
CABLE MAN	UFACTURER	S	tandard Telep	phones & C	Cables 1	C. C.	BLESHIP USED:	CABLE V	ENTURI
REPEATER DESCRIPTIO	n monoco	ntainer inflex	ible bidirecti	onal solid	- state	NUMBER OF	142	REPEATER	2.75 nm
REPEATER	MANUFACTU	RER S	tandard Telep	ohones & C	Cables I	Limited			
NOMINAL TE		A SHARE SHOW	a state of the second	10.000					
	TANSMISSIO	N BANDWIDTH	17000+17000k	HZTRANSM	ISSION	FREQUENCIES	900-19004	+ + 27196-4	4300 kH2
NUMBER OF			EQUALIZATIC			mbled on boa		+ + 27196-4	4300 kH:
NUMBER OF	EQUALIZER		EQUALIZATIO				rd	4 + 27196-4 kHz	4300 kH2
NUMBER OF	EQUALIZER	rs é	EQUALIZATIO	ОN МЕТНОВ 4140	asse	mbled on boa CHANNEL SPACING	rd		4300 kH2
NUMBER OF NOMINAL V( TERMINAL E)	EQUALIZER DICE CIRCU QUIPMENT N	IT CAPACITY, N	EQUALIZATIC	Al40	asse & Cable	mbled on bos CHANNEL SPACING s Ltd, COM	rd 4 STRUCTION	kHz	

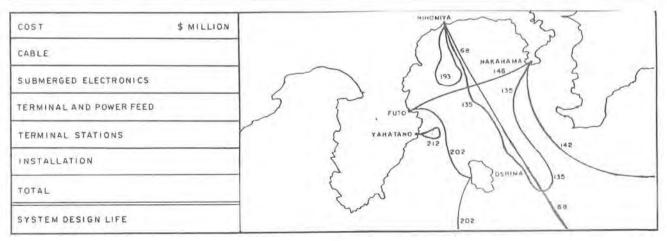




NAME	Sagami Bay No.4	
OTHER NAMES		
COUNTRY A	Japan	COUNTRY B Japan
TERMINUS A	Yahatano,Shizuoka	TERMINUS B Yahatano, Shizuoka
LANDING POINT	A Yahatano	LANDING POINT B Yahatano
COORDINATES A	34 <sup>9</sup> 53'N x 139 <sup>0</sup> 07'E	COORDINATES B same

OWNER	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD All
IRU HOLDERS	none	
CIRCUITS HELD		
LESSEES	none	
CIRCUITS LEASED		

DATE IN SERVICE	1979	NATURE OF SERVICE	experimental	CABLE 8	SINGLE OR TWIN	single	SYSTEM C TYPE	:S 140₩
CABLE DES	CRIPTION	armo	red polyethylene	coaxial		CABLE SIZ	E 1.7" 43.2	mm
CABLE MAN	UFACTURER		Ocean Cable C	ompany Lim	ited CABLESH	IP USED:	KUROSHIO	MARU
REPEATER	n monoc	ontainer flex	tible bidirection	al solid-stat	e NUMBER OF REPEATERS	4	REPEATER	1.8nm
REPEATER	MANUFACT	JRER	Fujitsu Limite	d and Nippor	Electric Compa	ny Limite	ed.	
NOMINAL TI	RANSMISSI	ON BANDWIDT	43,2+43,2 MHz	TRANSMISSI	ON FREQUENCIES			
NUMBER OF	EQUALIZE	RS none	EQUALIZATION	METHOD	-			
NOMINAL V	OICE CIRCI	UIT CAPACITY,	NON-TASI, INITIAL	. 10,800	CHANNEL SPACING,	INITIAL 4	kHz	
TERMINAL E	QUIPMENT	MANUFACTURE	R Fujitsu	and NEC		STRUCTION	NTTPC	
POWER FEE	D MODE		NOMINAL VOI	TAGE	SYSTEM	CURRENT	0.350A	
TASI TYPE	CIRCU	ITS USED	CIRCUITS DE	RIVED	TOTAL CIRCUIT	s	DATE	

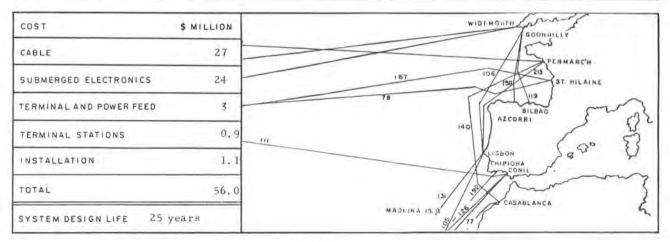




NAME	Portugal-France		
OTHER NAMES	Sesimbra - Penmarc'h	TAGIDE	
COUNTRY A	Portugal	COUNTRY B	France
TERMINUS A	Sesimbra	TERMINUS B	Penmarc <sup>i</sup> h
LANDING POINT A	Praia Nova do Moinho de Baixo	LANDING POINT B	Penmarc'h
COORDINATES A	38 <sup>°</sup> 29'N x 09 <sup>°</sup> 11'W	COORDINATES B	47 <sup>0</sup> 50'N x 04 <sup>0</sup> 21'W

ITS HELD 2580b	Companhia Portuguesa Rádio Marconi	OWNER A
UITS HELD 2580h	Direction Generale des Télécommunications	OWNER B
	s FTCC	IRU HOLDERS
	2 4	CIRCUITS HELD
		LESSEES
	SED.	LESSEES

DATE IN SERVICE	1979	NATURE OF SERVICE	commercial	CABLE MILES	802	SINGLE OR TWIN	single	SYSTEM TYPE	S 25
CABLE DESC	RIPTION		unarmored pol	lyethylene	coaxial		CABLE SIZ	E 1.70" 43	.2 mm
CABLE MANU	FACTURER		Les Cables d	e Lyon	CABLE	SHIP USED	: VERC	ORS	
REPEATER DESCRIPTION	monoco	ntainer flexi	ble bidirection	al solid-st	ate	NUMBER OF	105	R E P E A T E R S P A C I N G	5 nm
REPEATER M	ANUFACTU	JRER	Compagnie In	dustrielle	de Télé	communica	tions Cl	IT ALCATE	L
NOMINAL TR	ANSMISSI	ON BANDWIDT	н10652+10652k1	Iz TRANSM	ISSION FI	REQUENCIES	812-11464	+ 14576-25	228 kH:
NUMBER OF	EQUALIZE	rs 9	EQUALIZATIO	N METHOD	rem	ote control	led		
NOMINAL VO	ICE CIRCU	JIT CAPACITY,	NON-TASI, INITIA	L 2580		CHANNEL SPACING	INITIAL 4	kHz	
TERMINALEQ	UIPMENT	MANUFACTURE	R CIT ALCA	TEL			STRUCTION	SUBMARC	ОМ
POWER FEED	MODE	double end	NOMINAL VO	LTAGE 140	00/1400	SYSTEM	CURRENT	0.365 A	
TASI TYPE	- CIRCU	ITS USED	- CIRCUITS D	ERIVED	- то	TAL CIRCUIT	rs -	DATE	-





NAME	U.K Netherlands 10		
OTHER NAMES	Lowestoft-Alkmaar	Lowestoft -	Egmond
COUNTRY A	England	COUNTRY B	Netherlands
TERMINUS A	Lowestoft, Suffolk	TERMINUS B	Alkmaar
LANDING POINT A	Lowestoft	LANDING POINT B	Egmond aan Zee
COORDINATES A	$52^{\circ}29'N \times 01^{\circ}45'E$	COORDINATES B	$52^{\circ}38'N \ge 04^{\circ}37'E$

OWNER A	British Post Office	CIRCUITS HELD 3900h
Other Owners	Administration of PTT, Netherlands	900h
	Régie des T et des T, Belgium	1200h
	Deutsche Bundespost	1800h

DATE IN SERVICE	1979	NATURE OF SERVICE	commercial	CABLE	119	SINGLE OR TWIN	single	SYSTEM TYPE NG 1 45M
CABLE DESC	CRIPTION	armore	d polyethylene	coaxial			CABLE SIZ	E 1.47" 37.3 mm
CABLE MANU	JFACTURER	9	Standard Telej	phones &	Cables		ABLESHI USED:	P ALERT(4)
REPEATER DESCRIPTIO	N monoc	ontainer infl	exible bidirect	ional soli	l-state	NUMBER OF	12	REPEATER SPACING 2.75 nm
REPEATER N	ANUFACT	JRER	Standard Telep	phones &	Cables	Limited		
NOMINAL TR	ANSMISSI	ON BANDWIDTH	17000+17000k	HZTRANSM	ISSION I	FREQUENCIES	1900-1900	00 + 27200-44300 kH:
NUMBER OF	EQUALIZE	RS 1	EQUALIZATIO	N METHOD	a	ssembled or	board	
NOMINAL VO	ICE CIRCU	ЛТ САРАСІТУ,	NON-TASI, INITIA	L 3900		CHANNEL	INITIAL 4	kHz
TERMINAL EQ	UIPMENT	MANUFACTURE	R Standard Te	lephones	& Cable	C	STRUCTION	STC
POWER FEED	MODE	double end	NOMINAL VO	LTAGE 51	0/510	SYSTEM	CURRENT	0.500 A
TASI TYPE	- CIRCU	ITS USED -	CIRCUITS D	ERIVED	- т	OTAL CIRCUI	rs	DATE -

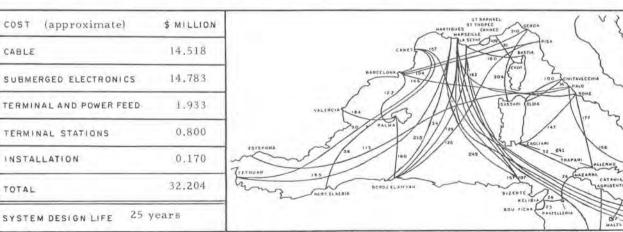
COST	\$ MILLION
CABLE	3.2
SUBMERGED ELECTRONICS	2,0
TERMINAL AND POWER FEED	1.5
TERMINAL STATIONS	0,3
INSTALLATION	0.5
TOTAL	7.7
SYSTEM DESIGN LIFE 25	years



NAME	France - Algeria 4		ACRONYM
OTHER NAMES			
COUNTRY A	France	COUNTRY B	Algeria
TERMINUS A	Martigues	TERMINUS B	El Djemila
LANDING POINT A	Martigues	LANDING POINT B	El Djemila
COORDINATES A	43 <sup>0</sup> 24'N x 05 <sup>0</sup> 03'E	COORDINATES B	36 <sup>°</sup> 46'N x 2 <sup>°</sup> 53'E

OWNER A	Administration of Posts and Telecommunications	CIRCUITS HELD 2580 h
OWNER B	Administration of Posts and Telecommunications	CIRCUITS HELD 2580 h
RU HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEAS	ED	

DATE IN 1980 NA SERVICE S	TURE OF ERVICE Commercial	CABLE	442	SINGLE OR TWIN	single	SYSTEM TYPE	S 25
CABLE DESCRIPTION u	narmored polyethylene	coaxial		Ē	CABLE SIZ	E 1.7"	
CABLE MANUFACTURER	Les Cables de Lyon		CA	BLESHIP U	SED: VI	ERCORS	
REPEATER monocontai DESCRIPTION	ner flexible bi-direction	al		NUMBER OF	90	REPEATER	5 nm
REPEATER MANUFACTURER	Cie. Industrielle de T	élélecomr	nunicatio	ns CIT AL	CATEL		
NOMINAL TRANSMISSION B	ANDWIDTH 10652+10652kF	IZ TRANSM	SSION FR	EQUENCIES	12-11464	+14575-2522	28 kHz
NUMBER OF EQUALIZERS	5 EQUALIZATIO	N METHOD	Ren	ote control	led		
	5 EQUALIZATIO		Ren	CHANNEL SPACING,		4 kHz	
		L 2580	Ren	CHANNEL SPACING, CON		4 kHz SUBMARCO	ЭМ
NOMINAL VOICE CIRCUIT C	CAPACITY, NON-TASI, INITIA UFACTURER CIT - ALC.	L 2580 ATEL		CHANNEL SPACING, CON	INITIAL STRUCTION		



# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 216

NAME	Brazil - United States		ACRONYM BRUS
OTHER NAMES	Fortaleza - St. Thomas		
COUNTRY A	Brazil	COUNTRY B	United States (Virgin Is.)
TERMINUS A	Fortaleza, Ceará	TERMINUS B	Magens Bay, St. Thomas
LANDING POINT	A Futuro Beach	LANDING POINT B	Magens Bay
COORDINATES A	4 03 <sup>0</sup> 44'S x 38 <sup>9</sup> 27'W	COORDINATES B	18 <sup>°</sup> 22' N x 64 <sup>°</sup> 56' W

OWNER A	Empresa Brasileira de Telecomunicações	CIRCUITS HELD 640 h
OWNER B	American Telephone and Telegraph Company	CIRCUITS HELD 640 h
RU HOLDE	ERS	
CIRCUITS HE	LD	
LESSEES		

CIRCUITS LEASED

DATE IN 1980 NATURE OF commercial CABLE SERVICE SERVICE MILES 2256	SINGLE OR TWIN single	SYSTEM TYPE SF
CABLE DESCRIPTION unarmored polyethylene coaxial	CABLE SIZ	E 1.50" 38.1 mm
CABLE MANUFACTURER ITT Cable/Hydrospace Division	CABLE SHIP(S)	LONG LINES
REPEATER monocontainer bidirectional flexible DESCRIPTION	NUMBER OF REPEATERS 235	REPEATER SPACING 10 nm
REPEATER MANUFACTURER Western Electric Company		
NOMINAL TRANSMISSION BANDWIDTH $2160\pm2160\mathrm{kH}_Z$ . Transmission $\mu$	FREQUENCIES 554-2920	3575-5984 kHz
NUMBER OF EQUALIZERS 7 EQUALIZATION METHOD switch	ned networks	
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 640	CHANNEL SPACING, INITIAL 2	kHz
TERMINAL EQUIPMENT MANUFACTURER Western Electric Company	CONSTRUCTION CONTRACTOR	ATT
POWER FEED MODE double end NOMINAL VOLTAGE 2250/2250	SYSTEM CURRENT	0.136 A
TASI TYPE - CIRCUITS USED - CIRCUITS DERIVED - T	OTAL CIRCUITS _	DATE APPLIED -

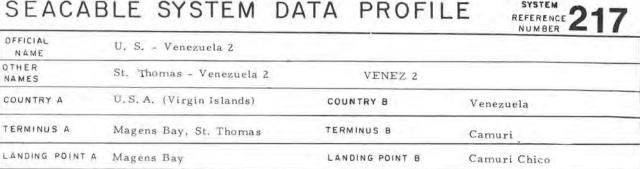
COST \$ MILLION 16 27.7 CABLE 255 21.2 SUBMERGED ELECTRONICS 1.0 TERMINAL AND POWER FEED TERMINAL STATIONS 0.3 183 139 INSTALLATION 3.3 216 53.5 TOTAL 245 89 05 SYSTEM DESIGN LIFE 25 years

18°22' N x 64°56' W

NAME OTHER

COORDINATES A

NAMES



COORDINATES B

SYSTEM

10<sup>°</sup>37' N x 66<sup>°</sup>53' W

OWNER A	American Telephone and Telegraph Company	CIRCUITS HELD	640 h
OWNER B	Companía Anónima Nacional de Teléfonos de Venezuela	CIRCUITS HELD	640 h
IRU HOLDER	25		
CIRCUITS HEL	D		
LESSEES			
CIRCUITS LEA	SED		

DATE IN 1980 NATURE OF SERVICE SERVICE	commercial	CABLE MILES	560	SINGLE OR TWIN	single	SYSTEM TYPE	SF
CABLE DESCRIPTION unarmor	ed polyethylene	coaxial		(	CABLE SI	ZE 1.50" 38	.1 mm
CABLE MANUFACTURER ITT Cab	le/Hydrospace	Division	CA	BLESHIP(S) USED	LOI	NG LINES	
REPEATER monocontainer flex: DESCRIPTION	ible bidirection	al		NUMBER OF REPEATERS	60	REPEATER SPACING	10 nm
REPEATER MANUFACTURER West	tern Electric C	ompany					
and the second se		-					
	EQUALIZATION			ed networks		+3575-5894	кНz
NUMBER OF EQUALIZERS 1	EQUALIZATION	N METHOD		ed networks	0		кНz
NOMINAL TRANSMISSION BANDWIDTH NUMBER OF EQUALIZERS Ì NOMINAL VOICE CIRCUIT CAPACITY, TERMINAL EQUIPMENT MANUFACTUREI	EQUALIZATION NON-TASI, INITIAL	N METHOD L 640	switch	ed networks Channel Spacing, Con	0	4 kHz	кНz
NUMBER OF EQUALIZERS 1	EQUALIZATION NON-TASI, INITIAL	N METHOD L 640 Pectric Con	switch mpany	ed networks Channel Spacing, Con Con	INITIAL	4 kHz ATT	kHz

TORTOLA 63 SAN COST \$ MILLION 63 ANTIGUA UNAN 38 ST. MAARTEN RAME CABLE 7.2 SANTO SUBMERGED ELECTRONICS 98 5.4 216 TERMINAL AND POWER FEED 0.9 217 UNGSTON TERMINAL STATIONS 4 138 IR3 INSTALLATION 1.2 BEURAÇÃO 14.7 TOTAL C CAMURI CHICO 25 years SYSTEM DESIGN LIFE MAIQUETÍA



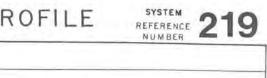
OFFICIAL Imabari - Hakata		
OTHER NAMES		
COUNTRY A Japan	COUNTRY B	Japan
TERMINUS A Sakurai	TERMINUS B	Hakata
LANDING POINT A Sakurai, Imabari, Ehime	LANDING POINT B	Kinoura, HakataJima, Ehime
COORDINATES A 34°02'N x 133°02'E	COORDINATES B	34 <sup>°</sup> 12'N x 133 <sup>°</sup> 06' E

OWNER	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD AIL

DATE IN SERVICE	1981	NATURE OF SERVICE	commercial	CABLE	16	SINGLE OR TWIN	single	SYSTEM TYPE C	S - 36 M-S
CABLE DES	SCRIPTION	unarmore	ed polyethylene	coaxial			CABLE SIZ	E 1.00" 25	.4mm
CABLE MAN	NUFACTURE	R Oc	ean Cable Com	pany Lt	d. CA	BLESHIP US	ED: TSU	GARU MAR	U
REPEATER DESCRIPTI	on monoc	ontainer flexible	e bidirectional			NUMBER OF	0	REPEATER SPACING	2 nm
REPEATER	MANUFACT	URERS Nippon ]	Electric Compa	ny Limi	ited ar	nd Fujitsu Lir	nited		
NOMINAL T	RANSMISS	ON BANDWIDTH $1$	2672+12672 kHz	TRANSMI	SSION	FREQUENCIES	4332-1700	4+22796-35	468 kHz
NUMBER O	FEQUALIZI	ERS none	EQUALIZATION I	METHOD					
NOMINAL V	OICE CIRC	UIT CAPACITY, NO	ON-TASI, INITIAL 2	2700		CHANNEL	INITIAL 4	kHz	
TERMINAL	EQUIPMENT	MANUFACTURER	Fujitsu Lte	ł.			NSTRUCTION	NTTPC	
POWER FEI	ED MODE	double end	NOMINAL VOLT	AGE 20	0/200	SYSTEM	CURRENT	0.156 A	
TASI TYPE	- CIRCU	IITS USED -	CIRCUITS DER	IVED .	-	TOTAL CIRCUI	TS -	DATE	-

COST \$ MILLION	
CABLE	KATSUNIURA HAMADA
SUBMERGED ELECTRONICS	Aashiar Aure
TERMINAL AND POWER FEED	HATSUYAMA SHIKOKU
TERMINAL STATIONS	Lackyushuzy L
INSTALLATION	REIHONU S 20
TOTAL	
SYSTEM DESIGN LIFE 25 years	So (MIYAZAK)

OFFICIAL

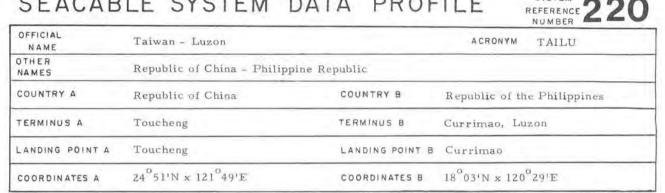


NAME	Kushikino - Nakakoshiki		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Kushikino	TERMINUS B	Nakakoshiki
LANDING POINT A	Kushikino, Kagoshima	LANDING POINT B	Kamikoshiki Jima, Kagoshima
COORDINATES A	31 <sup>°</sup> 43'N x 130 <sup>°</sup> 16'E	COORDINATES B	31 <sup>0</sup> 50'N x 139 <sup>0</sup> 51'E

All All

DATE IN SERVICE 1980	NATURE OF SERVICE	commercial	CABLE	29	SINGLE OR TWIN SI	ngle	SYSTEM TYPE	S-10M
CABLE DESCRIPTION	unarmon	red polyethylen	e coaxia	al	CA	BLE SIZ	E 1.0" 25.	4 mm
CABLE MANUFACTURER	Oc	ean Cable Com	pany Li	mited	CABLESHIPS USED:		ROSHIO MA	
REPEATER monoco DESCRIPTION	ntainer flexibl	le bidirectional	)		NUMBER OF REPEATERS	5	REPEATER	5.4 nm
REPEATER MANUFACTU	RERs Fujits	u Limited and 1	Nippon I	Electri	c Company Limi	ted		
		EQUALIZATION			FREQUENCIES 312	2-40284	-5872-95881	сНz
NUMBER OF EQUALIZER	RS none	EQUALIZATION	METHOD		FREQUENCIES 312 - CHANNEL SPACING, IN			кНz
NUMBER OF EQUALIZEF NOMINAL VOICE CIRCU	RS none	EQUALIZATION	метнор 900		CHANNEL SPACING, IN	ITIAL 4		кНz
NOMINAL TRANSMISSIO NUMBER OF EQUALIZER NOMINAL VOICE CIRCU TERMINAL EQUIPMENT M POWER FEED MODE	RS none	EQUALIZATION ON-TASI, INITIAL	мЕТНОД 900 <sup>7</sup> ujitsu		CHANNEL SPACING, IN CONSTR	ITIAL 4 RUCTION ACTOR	kHz	KH z

COST	\$ MILLION	AN NOKITA	MATSUYANA SH	пкоки 3	21
CABLE		20	USHU S L		$\smile$
SUBMERGED ELECTRONICS	2	D REI			
TERMINAL AND POWER FEED		en en	1		
TERMINAL STATIONS		a 219	MIYAZANI 171		
INSTALLATION		FURIAGE	2. /		
TOTAL		253 235			
SYSTEM DESIGN LIFE 25 ye	ars	VARUSKIMA			JAPAN



SYSTEM

International Telecommunications Admiristration	CIRCUITS HELD 624 h
Eastern Telecommunications Philippines Inc.	CIRCUITS HELD 336 h

DATE IN SERVICE 1980 SERVICE commercial	CABLE MILES	557	SINGLE OR TWIN	single	SYSTEM TYPE	NC
CABLE DESCRIPTION unarmored polyethyl	ene coaxial		(	CABLE SIZE	0.990	25,1 mm
CABLE MANUFACTURER Standard Telephone	es and Cables	Limited	CAB USEI	LESHIP(S) D CABI	RECOR LE VENTU	
REPEATER monocontainer inflexible bidired DESCRIPTION	ctional		NUMBER OF REPEATERS	71	REPEATER	7.8 nm
REPEATER MANUFACTURER Standard Telephon	es and Cables	Limited				
NOMINAL TRANSMISSION BANDWIDTH 1980+1980	kHz TRANSMI	SSION FR	EQUENCIES 3	12-2292+2	2792-4772	kHz
NUMBER OF EQUALIZERS 4 EQUALIZA	TION METHOD	adjust	ted on boar	d		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, IN	ITIAL 480		CHANNEL SPACING,	INITIAL 4 k	Hz	
TERMINAL EQUIPMENT MANUFACTURER Standard	relephones &	Cables L	tel	STRUCTION TRACTOR	STC	
POWER FEED MODE double end NOMINAL	VOLTAGE 95	5/955	SYSTEM	CURRENT	0.150 A	
-OWER FEED MODE GOUDLE ENd NOMINAL						

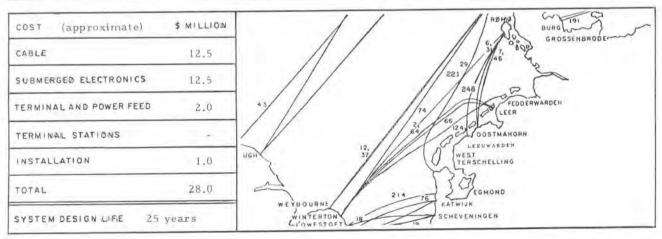
COST	\$ MILLION
CABLE	10.1
SUBMERGED ELECTRONICS	6.7
TERMINAL AND POWER FEED	1.9
TERMINAL STATIONS	0.7
INSTALLATION	9.6
TOTAL	29.0
SYSTEM DESIGN LIFE 25	years



NAME	U.K Denmark 3		
OTHER NAMES			
COUNTRY A	Great Britain	COUNTRY B	Denmark
TERMINUS A	Winterton	TERMINUS B	Rømø
LANDING POINT A	Winterton	LANDING POINT B	Rømø
COORDINATES A	52 <sup>°</sup> 43'N x 01 <sup>°</sup> 41'E	COORDINATES B	55 <sup>0</sup> 10'N x 8 <sup>0</sup> 30'E

OWNER A	British Telecom International	3900 h			
Other Owners	rs The Telecommunications Administrations of				
	Denmark, Norway, Sweden, and Finland				
	1320 h 1380 h 1020 h 180 h				

DATE IN 1980 SERVICE	NATURE OF SERVICE	commercial	CABLE	301	SINGLE single	SYSTEM TYPE	NG
CABLE DESCRIPTION	armored	polyethylene coa	axial		CABLE :	SIZE 1.47" 3	7.3 mm
CABLE MANUFACTURER	Standard	Telephones and	Cables 1	imited	CABLESHIP(S) USED	ALERT(4)	
REPEATER DESCRIPTION	ontainer infle	exible bidirectio	nal		NUMBER OF 105	REPEATER	2.9 nm
REPEATER MANUFACT	JRER Standar	rd Telephones &	Cables	Ltd.			
							1000
		117000+17000 kH			REQUENCIES 1916-18 justed on board	988+27212-44	284 kH;
NUMBER OF EQUALIZE	rs 3	EQUALIZATION	N METHOD		and the second second		284 kH;
NOMINAL TRANSMISSI NUMBER OF EQUALIZE NOMINAL VOICE CIRCI TERMINAL EQUIPMENT	RS <sup>3</sup> uit capacity,	EQUALIZATION	N МЕТНОВ L 3900	ad	justed on board CHANNEL SPACING, INITIAL	4 kHz	284 kH2
NUMBER OF EQUALIZE NOMINAL VOICE CIRCI TERMINAL EQUIPMENT	RS <sup>3</sup> uit capacity,	EQUALIZATION	N METHOD L 3900 phones &	ad Cables	CHANNEL CHANNEL SPACING, INITIAL CONSTRUCTIO	-4 kHz 2N STC	284 kH2

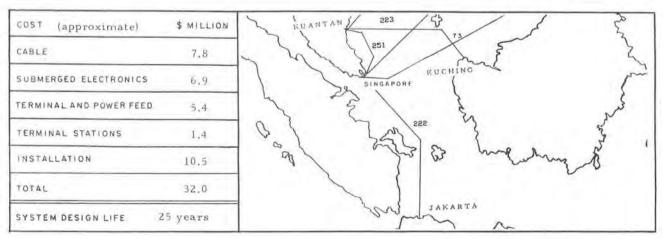




NAME	Indonesia - Singapore		
NAMES	ASEAN I-S		
COUNTRY B	Republic of Indonesia	COUNTRY A	Republic of Singapore
TERMINUS B	Jakarta	TERMINUS A	Katong (Singapore)
LANDING POINT B	Ancol	LANDING POINT A	A Katong
COORDINATES B	06 <sup>0</sup> 07'S x 106 <sup>0</sup> 49'E	COORDINATES A	01 <sup>°</sup> 18'n x 103 <sup>°</sup> 54'E

OWNER	PT Indonesian Satellite Corporation Telecommunications Authority of Singapore TELECOMS						CIRCUITS HELD	480h
OWNER							CIRCUITS HELD	210h
OTHER OWNERS	CAT	JTM	ETPI	KDD	OTC	C&W(HK)		
CIRCUITS HELD	19h	28h	19h	96h	48h	60h		

DATE IN 1980 NATURE OF Commercial SERVICE	CABLE	569	SINGLE OR TWIN	single	SYSTEM TYPE	S-5M
CABLE DESCRIPTION unarmored polyethylene coax	ial			CABLE SIZ	E 1.0" 25,	4mm
CABLE MANUFACTURER Ocean Cable Company Li	mited	CABI USEI	LESHIP(S)		I MARU SHIO MARU	
REPEATER DESCRIPTION monocontainer flexible bidirectional			NUMBER OF	71	REPEATER	8.1nm
REPEATER MANUFACTURERS NEC Corporation ar	nd Fujit	su Ltd.				
NOMINAL TRANSMISSION BANDWIDTH $1980 \pm 1980  \mathrm{kH_Z}$	TRANCH	100101			120.00	12
	TRANSM	155104	REQUENCIES	312-22924	3068-5048	kHz
					3068-5048	кНz
NUMBER OF EQUALIZERS 3 EQUALIZATION	метнор		bled on boar			кНz
NUMBER OF EQUALIZERS <sup>3</sup> EQUALIZATION NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL TERMINAL EQUIPMENT MANUFACTURER Fujitsu and N.	<b>метно</b> р 480	assem	bled on boar CHANNEL SPACING, CON	đ		кHz
NUMBER OF EQUALIZERS 3 EQUALIZATION	метнор 480 ЕС Сог	assem p.	bled on boar CHANNEL SPACING, CON CON	INITIAL 4	kHz NEC	кНz

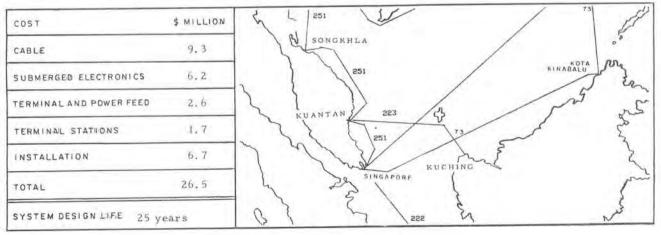




NAME	Kuantan - Kuching		
OTHER NAMES			
COUNTRY A	Malaysia	COUNTRY B	Malaysia
TERMINUS A	Kuantan	TERMINUS B	Kuching
LANDING POINT A	Cherating	LANDING POINT B	Sematan
COORDINATES A	04 <sup>°</sup> 06'N x 103 <sup>°</sup> 23'E	COORDINATES B	$01^{0}49'N \ge 109^{0}46'E$

OWNER Jabatan Telekom Malaysia CIRCUITS HELD all

DATE IN SERVICE 1980	NATURE OF SERVICE	commercial	CABLE	405	SINGLE OR TWIN	single	SYSTEM TYPE	CS-12M
CABLE DESCRIPTION	unarmon	red polyethylene	e coaxial			CABLE SI	ZE 1.5" 38.	1 mm
CABLE MANUFACTURER	Ocea	an Cable Compa	ny Limited	d C.	ABLESHIP	USED: M	DD MARU	
REPEATER DESCRIPTION MONOCO	ntainer flex	ible bidirection	al		NUMBER OF	70	R E P E A T E R S P A C I N G	6.8 nm
REPEATER MANUFACTU	RERS NEC	C Corporation a	and Fujitsu	Ltd.				
		AND DE L'AND DE LA COMPANY			0.01.01.01.010	2018 - 2010 GA		
NOMINAL TRANSMISSIO	N BANDWIDTH	4952+4952 kHz	TRANSMIS	SSION FR	EQUENCIES	564-5516	+7436-12388	kHz
		14952+4952 kHz			nbled on bo		+7436-12388	kHz
NUMBER OF EQUALIZER	RS 3	EQUALIZATIO	N METHOD		nbled on bo	ard		kHz
NOMINAL TRANSMISSIO NUMBER OF EQUALIZER NOMINAL VOICE CIRCU TERMINAL EQUIPMENT N	RS 3	EQUALIZATIONNON-TASI, INITIA	N METHOD L 900	asser	nbled on bo CHANNEL SPACING CO	ard	4 kHz	kHz
NUMBER OF EQUALIZEF NOMINAL VOICE CIRCU TERMINAL EQUIPMENT M	RS 3	EQUALIZATIONNON-TASI, INITIA	N METHOD L 900 and NEC C	asser	nbled on bo Channel Spacing Co Co	initial .	4 kHz NEC	kHz





NAME	Nagasakî - Fukue		(New DEA)
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Kakidomari	TERMINUS B	Fukue
LANDING POINT A	Kakidomari, Nagasaki	LANDING POINT B	Roppo, Fukue, Nagasaki
COORDINATES A	32 <sup>°</sup> 44'N x 129 <sup>°</sup> 53'E	COORDINATES B	32 <sup>0</sup> 42'N x 128 <sup>0</sup> 51 E

D All
<u> </u>
-

SERVICE 1981	NATURE OF SERVICE	commercial	CABLE	52	SINGLE OR TWIN	single	SYSTEM TYPE	CS - 36M-5
CABLE DESCRIPTION	unar	mored polyeth	ylene co	axial	C	ABLE SIZ	E 1.00"	25.4mm
CABLE MANUFACTURER	Oce	an Cable Com	pany Ltd		CABLESHIP U	SED: KU	ROSHIO N	IARU
REPEATER DESCRIPTION MONOC	ontainer flexib	ole bidirection	al		NUMBER OF REPEATERS	26	REPEATER	2 nm
REPEATER MANUFACT	JRERS Nippo	on Electric Co	mpany L	td. and	d Fujitsu Ltd.			
NOMINAL TRANSMISSI	ON BANDWIDTH 1	12672+12672 kF	ZTRANSM	ISSION	FREQUENCIES 4	332-17004	1+22796-3	5468 kHz
NUMBER OF EQUALIZE	RS none	EQUALIZATION	METHOD					
NOMINAL VOICE CIRC	UIT CAPACITY, N	ON-TASI, INITIAL	2700		CHANNEL SPACING,	INITIAL 4	kHz	
TERMINAL EQUIPMENT	MANUFACTURERS	Fujitsu and	NEC			TRUCTION TRACTOR	NTTPC	
POWER FEED MODE	double end	NOMINAL VOL	TAGE 50	00/500	SYSTEM	CURRENT	0.156 A	
POWER FEED MODE								

COST \$ MILLIO	
CABLE	224 Stryushurs 2
SUBMERGED ELECTRONICS	REIHORU S 2
TERMINAL AND POWER FEED	163
TERMINAL STATIONS	Q 219 MIYAZANI
INSTALLATION	FURIAGE SS T
TOTAL	253 235
SYSTEM DESIGN LIFE 25 years	JAPAN

#### SPECIAL FORMAT FOR FIBER-OPTIC SYSTEMS

SEACAE	BLE SYSTEM	M DATA	PROFILE	REFERENCE 225
NAME	Loch Fyne Sea Tria	1	R. 4	
OTHER NAMES				
COUNTRY	Scotland, U.K.			
TERMINUS	Loch Fyne			
LANDING POINT	Loch Fyne			

OWNER	British Telecom International	CIRCUITS HELD
		CIRCUITS HELD

DATE IN 1980 SERVICE	NATURE ( SERVIC	And a set of a labor	CABLE	5	SYSTEM DESIGNA	
CABLE DESCRIPTION	Four mul	ti-mode and 2 si	ngle-mode	pairs		
						CABLE O. D.
CABLE MANUFACTURER	Standard	Telephones & Ca	bles PLC		SHIP(S) IZED	IRIS(3)
NUMBER OF REGENERATORS	1	REGENERATOR DESIGNATIO				NERATOR ACING -
REGENERATOR				ENERATOR St	andard Telep	hones & Cables PLC
TERMINAL EQUIP MANUFACTUR		dard Telephones	& Cables	PLC		
NOMINAL VOICE CI NON-TASI		ΙΤΥ,		NON	INAL CHANNE INITIAI	
TRANSMISSION WAVELENGTH		NSMISSION T-RATE 140 M		CONSTRUCTION	Jointly; BTI	and STC
POWER FEED MODE		NOMINAL V	OLTAGE	S	YSTEM CURRE	NT

COST EXPERIMENTAL \$ MILLIO	N JADEKOLEN
CABLE	Jibo /
SUBMERGED ELECTRONICS	
TERMINAL AND POWER FEED	2 Go LOCH FYNE Z
TERMINAL STATIONS	
INSTALLATION	MIDDLESBROUGH
TOTAL	257 SCARBOROUGIN
SYSTEM DESIGN LIFE	LARNE DOUBLE CLANCASTER

#### SPECIAL FORMAT FOR FIBER OPTIC SYSTEMS

## SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 226

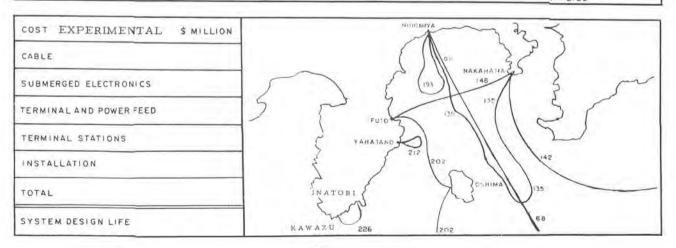
Calendary (N.			NOM DER
NAME	Inatori - Kawazu		ACRONYM
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Inatori	TERMINUS B	Kawazu
LANDING POINT A	Inatori	LANDING POINT B	Kawazu
COORDINATES A	$34^{9}46'$ N x $139^{9}04'$ E	COORDINATES B	34 <sup>°</sup> 45' N x 139 <sup>°</sup> 00' E

OWNER Nippon Telegraph and Telephone Public Corporation

50 km tests obtained by looping back at the terminals; tests conducted at

6.3, 32, and 100 Mb/s

DATE IN 1980 SERVICE	NATURE OF SERVICE	experimental	CABLE	5.5	SYSTEM		FS - 6.3M
CABLE DESCRIPTION		5 graded-i	ndex multin	node fibers e			al tube
						CABL O.D.	E
CABLE MANUFACTURER	Ocean Cabl	le Company Ltd.		CABLESE UTILIZ		UGARU	MARU
NUMBER OF REGENERATORS	none	REGENERATOR TY DESIGNATION	PE .			ENERAT	0 R -
REGENERATOR DESCRIPTION	34		REGENE MANUFAC		- (e)		
TERMINAL EQUIP MANUFACTUR		Fujitsu Ltd. and	NEC Corp				
NOMINAL VOICE CI NON-TASI	RCUIT CAPACIT	гч. 1440		NOMIN	AL CHANNI INITIA		ING.
TRANSMISSION 1 WAVELENGTH		SMISSION 6.3 Mb/		STRUCTION TRACTOR	NTTPC		
POWER FEED MODE		NOMINAL VOLT	TAGE	SYS	TEM CURRE	NT	
TASI TYPE CIR	CUITS USED	CIRCUITS DEF	RIVED	TOTAL CIR	CUITS		ATE



REMOVED 1983



NAME	Takehara - Kinoe		A REAL PROPERTY OF
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Nagahama	TERMINUS B	Higashino
LANDING POINT A	Tadanoumi, Takehara, Hiroshima	LANDING POINT B	Higashino, Osakikamishima
COORDINATES A	34 <sup>°</sup> 20' N x 132 <sup>°</sup> 59' E	COORDINATES B	34 <sup>°</sup> 16'N x 132 <sup>°</sup> 57'E

Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD All
	Nippon Telegraph and Telephone Public Corporation

DATE IN 1981 SERVICE	NATURE OF SERVICE	commercial	CABLE	5	SINGLE OR TWIN	single	SYSTEM TYPE CS - 36M-S
CABLE DESCRIPTION	unarm	nored polyethy	ylene coaxi	al		CABLE SI	ZE 1.00 <sup>11</sup> 25.4 mm
CABLE MANUFACTURER	Oc	ean Cable Con	mpany Lim	ited	CABLESHIF	USED:	TSUGARU MARU
REPEATER DESCRIPTION	tainer flexible	e bidirectiona	1		NUMBER OF REPEATERS	2	REPEATER SPACING 2.01 mm
REPEATER MANUFACTU	RER Nippo	on Electric Co	ompany Ltd	l. and	l Fujitsu Ltd.		
NOMINAL TRANSMISSIO	N BANDWIDTH I	2672+12672 kH	Iztransmis	SION	FREQUENCIES 4	332-170	04+22796-35469 kHz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD				
NOMINAL VOICE CIRCU	IT CAPACITY, NO	ON-TASI, INITIAL	2700		CHANNEL SPACING,	INITIAL	4kHz
TERMINAL EQUIPMENT N	IANU FACTURER	Nippon Ele	ctric Co. L	td.		STRUCTION	NTTPC
POWER FEED MODE do	ouble end	NOMINAL VOI	LTAGE 100/	100	SYSTEM	CURRENT	0.156 A
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED -		TOTAL CIRCUIT	s -	DATE -

COST \$ MILLI	
CABLE	SAGA SACA
SUBMERGED ELECTRONICS	HAMADA Sch
TERMINAL AND POWER FEED	HATSUMUKA HOT HOT HOT HOT HOT HOT HOT HOT HOT HOT
TERMINAL STATIONS	MATSUVANA SHIKOKU
INSTALLATION	NOKITA S S
TOTAL	2224 KYUSHU IS S
SYSTEM DESIGN LIFE 25 years	163 [3]

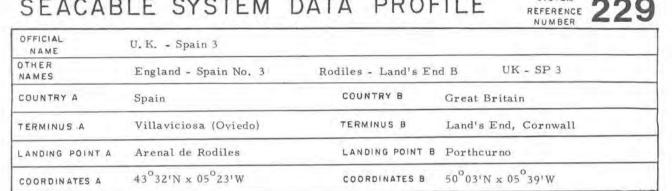
# SEACABLE SYSTEM DATA PROFILE SYSTEM 228

ALC: NY DECISION			NUMBER MAN
NAME	Nase - Tokunoshima		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Nase	TERMINUS B	Tokunoshima
LANDING POINT A	Nase, Amamioshima	LANDING POINT B	Tokunoshima
COORDINATES A	28 <sup>°</sup> 22'N x 129 <sup>°</sup> 18'E	COORDINATES B	27 <sup>°</sup> 44' N x 128 <sup>°</sup> 55' E

OWNER	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD	A11
	-5		
			1

DATE IN SERVICE 1981	NATURE OF SERVICE	commercial	CABLE MILES	65	SINGLE OR TWIN single	SYSTEM TYPE CS-36M-S
CABLE DESCRIPTION	unarm	ored polyethyl	ene coaxia	.1	CABLE SIZ	25.4 mm 1.50" 38.1 mm
CABLE MANUFACTURE	a (	Ocean Cable Co	ompany Li	mited	CABLESHIP USED:	the second second second second
DESCRIPTION MODOC	ontainer flexil	ole bidirection	al		NUMBER OF 27	REPEATER SPACING 2.92 nm
REPEATER MANUFACT	URERS Fu	jitsu Limited a	and Nippor	i Electri	c Company Limited	
NOMINAL TRANSMISSI	ON BANDWIDTH	12672+12672 kł	IZTRANSMI	SSION FR	EQUENCIES 4332-1700	04+22796-35468 kHz
NUMBER OF EQUALIZE	RS none	EQUALIZATIO	N METHOD		2	
NOMINAL VOICE CIRC	UIT CAPACITY, I	NON-TASI, INITIA	L 2700		CHANNEL SPACING, INITIAL	kHz
TERMINAL EQUIPMENT	MANUFACTURER	NEC ar	nd Fujitsu		CONSTRUCTION CONTRACTOR	NTTPC
		and the second	120.203.0000	1100	2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
POWER FEED MODE	louble end	NOMINAL VO	LTAGE 400	0/400	SYSTEM CURRENT	0.156 A

COST	\$ MILLION	AM AMIOSHIMA
CABLE		228
SUBMERGED ELECTRONIC	5	токимознима
TERMINAL AND POWER FEED		
TERMINAL STATIONS		171
INSTALLATION		OKINAWA
TOTAL		RUMEJIMA Star
SYSTEM DESIGN LIFE 2	5 years	ZAMAMI ZAMAMI



SYSTEM

229

OWNER A	Companía Telefónica	n Nacional de España	CIRCUITS HELD 4140 h
OWNER B	British Telecom inte	ernational	CIRCUITS HELD 4140 h
IRU HOLDERS	PTT Morocco	CANTV	
CIRCUITS HELD	36	16	

CIRCUITS LEASED

DATE IN 1980 NATURE OF SERVICE 1980 SERVICE commercial	CABLE	429	SINGLE OR TWIN single	SYSTEM TYPE NG 1-45M
CABLE DESCRIPTION unarmored polyethylene	coaxial (app	orox. 50% ar	mored) CABLE	SIZE 1.47" 37.3 mm
CABLE MANUFACTURER Standard Telephones a	and Cables		ABLESHIP(S) SED	ALERT (4)
REPEATER DESCRIPTION monocontainer inflexible bidirec	tional		UMBER OF EPEATERS 155	REPEATER Spacing 2.8
REPEATER MANUFACTURER Standard Telephor	nes and Cab	les Limited	1	
NOMINAL TRANSMISSION BANDWIDTH 17000+17000	kHztransm		on board	004+27196-44300 kHz
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INIT	1AL 4140		CHANNEL SPACING, INITIA	L 4 kHz
TERMINAL EQUIPMENT MANUFACTURER Standard Te	elephones &	Cables Ltd	CONSTRUCTI CONTRACTO	CTC.
		85/1385	SYSTEM CURRE	
POWER FEED MODE double end NOMINAL V	VOLTAGE 13	03/1303	515 (Col. 55 (200)	NT 0.500 A

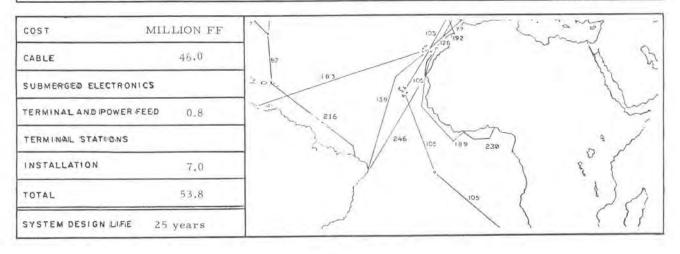
COST (approximately)	\$ MILLION	335	YSCAPSOROUGH
CABLE	11.3	30 WIDEHOUTH	300
SUBMERGED ELECTRONICS	19.0	41 229 GOOMIN	
TERMINAL AND POWER FEED	2,1	100 203	NMARC'N ST. HILAIRE
TERMINAL STATIONS	2	255 78 (Rodulas Billead	m
INSTALLATION	5.6	140 AZCORRI	1
TOTAL	38.0	LISBON CHIPTOINA	Sa Qo
SYSTEM DESIGN LIFE	25 yrs.	CONTLANT CONTRACTANT	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~



NAME	Ivory Coast - Nigeria	
OTHER NAMES	Abidjan - Lagos	Union Cable
COUNTRY A	Ivory Coast	COUNTRY B Nigeria
TERMINUS A	Abidjan	TERMINUS B Lagos
LANDING POINT A	Abidjan	LANDING POINT B Lagos
COORDINATES A	05 <sup>°</sup> 21'N x 04 <sup>°</sup> 08'W	COORDINATES B 03015' N x 06015' E

		munications Internationa	tes ue e	sole a riorre		
OWNER B	Nigerian Extern	nal Telecommunications			CIRCUITS	SHELD 480 h
IRU HOLDERS	INTELFRA	Deutsche Bundespost	STICI	TELESENEGAL	Benin	CITA
CIRCUITS HELD	14	13	6	3	4	1
LESSEES						

NATURE OF SERVICE commercial SINGLE CABLE SYSTEM DATE IN 1980 604 OR TWIN single S 5 SERVICE MILES TYPE CABLE DESCRIPTION CABLE SIZE 1.50" 38.1 mm unarmored polyethylene coaxial Les Câbles de Lyon CABLESHIP USED: VERCORS CABLE MANUFACTURER NUMBER OF REPEATER REPEATER monocontainer flexible bidirectional 12 nm 53 SPACING REPEATERS DESCRIPTION REPEATER MANUFACTURER Compagnie Industrielle des Télécommunications CIT ALCATEL NOMINAL TRANSMISSION BANDWIDTH 1980+1980 kHz TRANSMISSION FREQUENCIES 312-2292+2792-4772 kHz 3 adjusted on board NUMBER OF EQUALIZERS EQUALIZATION METHOD CHANNEL SPACING, INITIAL 4 kHz NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 480 CONSTRUCTION CIT ALCATEL SUBMARCOM TERMINAL EQUIPMENT MANUFACTURER CONTRACTOR POWER FEED MODE double end 0.1.80 A NOMINAL VOLTAGE 1325/1325 SYSTEM CURRENT DATE TOTAL CIRCUITS TASI TYPE - CIRCUITS USED -CIRCUITS DERIVED APPLIED



SEACAB	LE SYSTEM	DATA PROF	ILE SYSTEM REFERENCE 231
OFFICIAL NAME OTHER NAMES	Miyako - Yaeyama		
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Ueno	TERMINUS B	Touri
LANDING POINT A	Miyako, Okinawa	LANDING POINT B	Ishigaki, Okinawa
COORDINATES A	24 <sup>0</sup> 47'N x 129 <sup>0</sup> 13'E	COORDINATES B	24 <sup>0</sup> 23' N x 124 <sup>0</sup> 11' E

Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD	A11

DATE IN SERVICE 1981	NATURE OF SERVICE	commercial	CABLE	63	SINGLE OR TWIN	single	SYSTEM TYPE CS	5 - 10M
CABLE DESCRIPTION	unarm	nored polyethy	lene coax	ial		CABLE SIZ	E 1.00" 25.4	4 mm
CABLE MANUFACTURER	Ocean	Cable Compan	y Ltd.	CABLE	SHIP USED:	TSUGAL	the strategy and	
REPEATER monoco DESCRIPTION	ntainer flexib	le bidirection	al		NUMBER OF	12	REPEATER SPACING 5.	.36 nm
REPEATER MANUFACTU	RER Nippor	n Electric Con	npany Ltd	. and F	ujitsu Ltd.			
NOMINAL TRANSMISSIO	N BANDWIDTH	3600+3600 kHz	TRANSMI	SSION F	REQUENCIES	312-4028-	+5872-9588 kI	Ηz
NUMBER OF EQUALIZER	s none	EQUALIZATION	METHOD					
NOMINAL VOICE CIRCU	IT CAPACITY, N	ON-TASI, INITIAL	- 900		CHANNEL SPACING,	INITIAL	4 kHz	
TERMINAL EQUIPMENT N	IANUFACTURER	NEC and	Fujitsu			STRUCTION	NTTP	с
POWER FEED MODE d	ouble end	NOMINAL VOI	LTAGE 30	0/300	SYSTEM	CURRENT	0.09 A	
TASI TYPE - CIRCUI	TS USED -	CIRCUITS DE	RIVED	- T	OTAL CIRCUIT	s _	DATE	+

COST	\$ MILLION	OKINAWA
CABLE		KUMEJIMA
SUBMERGED ELECTRONICS		ZAMAMI
TERMINAL AND POWER FEED		
TERMINAL STATIONS		209 164
INSTALLATION	мітако	240 JIMA 177
TOTAL	ISHIGAKI	3
SYSTEM DESIGN LIFE 25 ye	ars	231

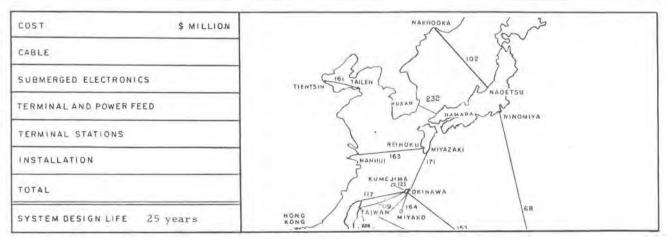
320

## SEACABLE SYSTEM DATA PROFILE SYSTEM 232

		NUM	BER	
NAME	Japan - Korea			
OTHER NAMES	Hamada - Pusan			-
COUNTRY A	Japan	COUNTRY B Korea		
TERMINUS A	Hamada	TERMINUS B Pusan		
LANDING POINT	A Hamada	LANDING POINT B Pusan		
COORDINATES A	A.	COORDINATES B		

OWNER A	Kokusai Denshin Denwa Company Limited	CIRCUITS HELD 2700 h
OWNER B	Korean Telecommunications Authority	CIRCUITS HELD 2700 h
IRU HOLDE	RS	
CIRCUITS HEL	-0	
LESSEES		
CIRCUITS LEA	SED	

SERVICE	SERVICE	commercial	CABLE	154	SINGLE OR TWIN	single	SYSTEM TYPE	CS-36M DR
CABLE DESCRIPTION	unarm	ored polyethyle	ne coaxi	ial		CABLE SIZ	ZE 1.50" 3	3.1 mm
CABLE MANUFACTURE	a Oc	ean Cable Com	pany Lir	mited C	ABLESHI	P USED:	KDD MAR	U
REPEATER monoco	ontainer flexibl	le bidirectional			NUMBER OF	50	R E P E A T E R S P A C I N G	3.1 nm
REPEATER MANUFACT	URER Nippon	Electric Comp	any Ltd.	and Fujit	su Ltd.			
NOMINAL TRANSMISSI	ON RANDWIDTH 1	2672112622111		NAME TO A	manuth	Section 1.		
		100 TT 21 TO 1				1332-1700	)4+22796-35	468 kHz
NUMBER OF EQUALIZE	RS 1	EQUALIZATION	METHOD	SSION FRE	CHANNEL	1332-1700		468°kHz
NUMBER OF EQUALIZE NOMINAL VOICE CIRC TERMINAL EQUIPMENT	UIT CAPACITY, N	EQUALIZATION	метнор 2700		CHANNEL SPACING, COM		4 kHz	468°kHz
NUMBER OF EQUALIZE	ERS <u>1</u> UIT CAPACITY, N MANUFACTURER	EQUALIZATION ON-TASI, INITIAL	метнор 2700 NEC	fix ed	CHANNEL SPACING CON	INITIAL 4	↓kHz	468°kHz

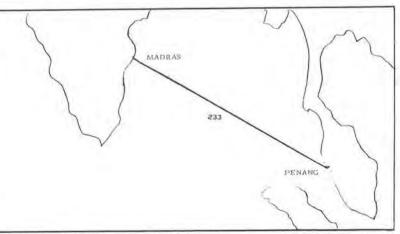


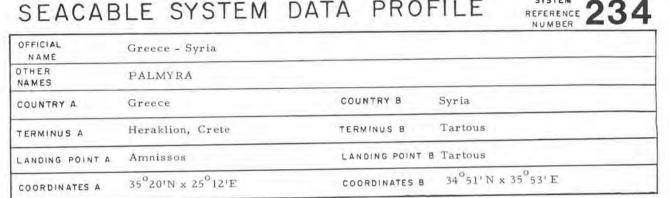
NAME	Malaysia - India		
OTHER NAMES	Indian Ocean Commonwealth Cable	e, Phase I	IOCOM
COUNTRY A	Malaysia	COUNTRY B	India
TERMINUS A	Penang	TERMINUS B	Madras
LANDING POINT A	Kuala Muda	LANDING POINT B	Marina Beach
COORDINATES A	05 <sup>°</sup> 34'N x 100 <sup>°</sup> 22'E	COORDINATES B	13 <sup>°</sup> 04' N x 80 <sup>°</sup> 17' E

OWNERS	Jabatan Telekom Malaysia, Overseas Communications Service (India),						
	Cable and Wireless	, Overseas Telec	ommunic	ations S	Service,		
	(Sri Lank <b>a</b> ), Overse	as Telecommunic	ations Co	mmiss	ion (Aus	tralia),	
	The Telecommunica	ations Authority o	f Singapo	re(Tele	ecoms),	and	
	Teleglobe Canada.	IRU HOLDERS:	AT&T	WUI	RCA	ITT	
		Circuits held:	120	4	4	4	

DATE IN 1981 NATURE OF commercial SERVICE SERVICE	CABLE 1 MILES	353 s	INGLE single	SYSTEM TYPE	NC
CABLE DESCRIPTION unarmored polyeth	ylene coaxial	L .	CABLE	SIZE 0.99"	
CABLE MANUFACTURER Standard Telephones a	and Cables L	imitad	ABLESHIP(S) ISED	CABLE VEN	TURE
REPEATER monocontainer inflexible bidirecti DESCRIPTION	onal		MBER OF 173	R EP EATER S PACING	7.5 nm
REPEATER MANUFACTURER Standard Tel		Cables Lin	nited		
NOMINAL TRANSMISSION BANDWIDTH 1980 + 1980 kF	Iz TRANSMIS	SION FREQU	EN CIES 312-229	92+2792-47721	Hz
NUMBER OF EQUALIZERS 11 EQUALIZATI	ON METHOD	assemble	d on board		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITI	IAL 480	S	HANNEL PACING, INITIA	L 4 kHz	
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITI TERMINAL EQUIPMENT MANUFACTURER Standard Te			CONSTRUCTI	ON STC	
TERMINAL EQUIPMENT MANUFACTURER Standard Te		ables Ltd.	CONSTRUCT	ON STC	

COST (approximate)	\$ MILLION
CABLE	22.3
SUBMERGED ELECTRONICS	17.9
TERMINAL AND POWER FEED	3,0
TERMINAL STATIONS	1.8
INSTALLATION	10.4
TOTAL	55,4
SYSTEM DESIGN LIFE 25	years





SYSTEM

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OWNER A	Helleni	Hellenic Telecommunications Organization (OTE)						CIRCUITS	HELD 4	80 h
OWNER B	WNER B Telecommunications Establ				lishment of Syria				CIRCUITS HELD 48	
IRU HOLDERS	France	Austria	Radio Aus	Libya	Switzerland	Italcable	BTI	CYTA	Jordan	
CIRCUITS HELD	60	12	1	12	12	12	12	12	60	

CIRCUITS LEASED

DATE IN SERVICE	1981	NATURE OF SERVICE	commercial	CABLE	647	SINGLE OR TWIN	single	SYSTEM TYPE	S 5
CABLE DE	SCRIPTION	unari	mored polyethyl	lene coaxia	al		CABLE SI	ze 1.5" 38.	1 mm
CABLE MA	NUFACTURER	Les	Câbles de Lyon	r	CA	ABLESHIP	USED: V	ERCORS	
REPEATER	monoco	ntainer flex	ible bidirection	al		NUMBER OF	53	REPEATER	12 nm
		JRER Compa	gnie Industriell	e des Télé	commun	ications C	IT ALCA	TEL	
NOMINAL	TRANSMISSI	ON BANDWIDT	н 1980+1980 kH	Z TRANSM	SSION F	REQUENCIES	312-2292	+2792-47721	Hz
NUMBER C	FEQUALIZE	RS 3	EQUALIZATIO	N METHOD	adjus	ted on boar	Б		
NOMINAL	VOICE CIRC	JIT CAPACITY	NON-TASI, INITIA	AL 480		CHANNEL	INITIAL	4 kHz	
TERMINAL	EQUIPMENT	MANUFACTUR	ER CIT ALCA	TEL			NSTRUCTION	SUBMARC	COM
	15.0 22.50		NOMINAL VO	DLTAGE 8	50/850	SYSTEM	CURRENT	0.180 A	
POWER FE	ED MODE d	ouble end							

COST	\$ MILLION
CABLE	5.0
SUBMERGED ELECTRONICS	3,0
TERMINAL AND POWER FEED	4
TERMINAL STATIONS	0,7
INSTALLATION	1.3
TOTAL	10.0
SYSTEM DESIGN LIFE 25	years

SEACAE	BLE SYSTEM	DATA PROF	ILE SYSTEM REFERENCE 235
OFFICIAL	Kagoshima - Yakushima		NOMBER
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Nagayoshi	TERMINUS B	Nagata
LANDING POINT A	Fukiagehama, Kagoshima	LANDING POINT B	Nagata, Yakushima
COORDINATES A	31 <sup>0</sup> 36'N x 130 <sup>0</sup> 24'E	COORDINATES B	30 <sup>°</sup> 17'N x 130 <sup>°</sup> 24'E

Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD	A11
	2010-21-1-0-1-1-1	mu
	Nippon Telegraph and Telephone Public Corporation	Nippon Telegraph and Telephone Public Corporation CIRCUITS HELD

SERVICE 1981	NATURE OF SERVICE	commercial	CABLE	110	SINGLE OR TWIN	single	SYSTEM TYPE C	S-36M-D
CABLE DESCRIPTION	unarmore	d polyethylene	coaxial			CABLE SIZE		25.4 mm 38.1 mm
CABLE MANUFACTURER	Ocean	Cable Company	y Ltd. (	CABLES	HIP USED;	KUROSHI	O MARU	
REPEATER monoco DESCRIPTION	ntainer flexi	ble bidirection	al		NUMBER OF	48	REPEATER	
REPEATER MANUFACTU	RERS Fuji	tsu Limited and	d Nippon E	lectric (	Company L	td.		
NOMINAL TRANSMISSIC		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1					+22796-35	i468 kHz
NUMBER OF EQUALIZE	RS 2	EQUALIZATIO	N METHOD	magne	tic externa	l stepping		
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L2700		CHANNEL SPACING,	INITIAL 4 k	Hz	
TERMINAL EQUIPMENT	MANUFACTURE	R NEC and Fu	ıjitsu			ISTRUCTION NTRACTOR	NTTP	S
OWER FEED MODE	louble end	NOMINAL VO	LTAGE 600	/600	SYSTEM	CURRENT	0,156 A	
ASI TYPE - CIRCUI	TS USED -	CIRCUITS DI	ERIVED	- TO1	TAL CIRCUIT	s -	DATE	

COST \$ MILL	ION MORITA STATSUYAHA SHIKOKU S
CABLE	L L KYUSHUZ L
SUBMERGED ELECTRONICS	163 53 REINOKU
TERMINAL AND POWER FEED	
TERMINAL STATIONS	
INSTALLATION	FURIAGE
TOTAL	253 235
SYSTEM DESIGN LIFE 25 years	JAPAN JAPAN



NAME	Greece - Cyprus 2		
NAMES	APOLLO		
COUNTRY A	Greece	COUNTRY B	Cyprus
TERMINUS A	Lagonissi (Athens)	TERMINUS B	Larnaka
LANDING POINT A	Anavissös	LANDING POINT B	Larnaka
COORDINATES A	37 <sup>0</sup> 45'N x 23 <sup>0</sup> 55'E	COORDINATES B	34 <sup>°</sup> 59'N x 33 <sup>°</sup> 38'E

OWNER A	Hellenic Telecor	CIRCUITS HELD	1380 h				
OWNER B	Cyprus Telecom	CIRCUITS HELD	1380 h				
IRU HOLDERS	Austria	Radio Aus	France	Switzerland	Syria	BTI	
CIRCUITS HELD	12	1	б	12	12	60	
LESSEES							

CIRCUITS LEASED

DATE IN 1981 NATURE OF commercial SERVICE SERVICE	CABLE	639	SINGLE OR TWIN	SYSTEM NE Type
CABLE DESCRIPTION unarmored polyethy	lene coaxia	.1	CABLE SIZ	E 1.47" 37.3 mm
CABLE MANUFACTURER Standard Telephones :	and Cables	Limited	CABLESHIP(S USED	CABLE VENTURE
REPEATER monocontainer inflexible bidirectic	onal		NUMBER OF 99 REPEATERS	REPEATER 6.5 mm SPACING
REPEATER MANUFACTURER Standard Telephones	s and Cable	s Limite	d	
NOMINAL TRANSMISSION BANDWIDTH $5700+5700 \text{ kH}$	Z TRANSMI	SSION FR	EQUENCIES 312-6016-	+7996 - 13700 kHz
NUMBER OF EQUALIZERS 6 EQUALIZATIO	N METHOD	assem	bled on board	
	1 1380		CHANNEL	
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITI	AL 1300		SPACING, INITIAL 4	kHz
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA		Cables Lt	CHANNEL SPACING, INITIAL 4 d. CONSTRUCTION CONTRACTOR	kHz STC
	ephones & (		CONSTRUCTION	STC

COST	\$ MILLION
CABLE	17.5
SUBMERGED ELECTRONICS	15,5
TERMINAL AND POWER FEED	3.5
TERMINAL STATIONS	-
INSTALLATION	5,5
TOTAL	42.0
SYSTEM DESIGN LINE 25	years

# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 237

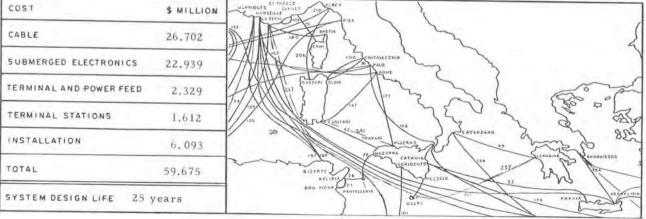
Marinta			NUMBER
NAME	France - Greece 2		
OTHER NAMES		ARTEMIS	
COUNTRY A	France	COUNTRY B	Greece
TERMINUS A	La Seyne Sur Mer	TERMINUS B	Lekhainá
LANDING POINT A	Les Sablettes	LANDING POINT B	Lekhainá
COORDINATES A	43 <sup>°</sup> 04'N x 05 <sup>°</sup> 53'E	COORDINATES B	37 <sup>°</sup> 56' N x 21 <sup>°</sup> 10' E

OWNER	HELL	TELCA	4						CIRCUI	S HELD	2580
IRU HOLDERS	OTE	FCR	Syria	Suisse	W.Ge	rmany	Belgiu	m	Luxemburg	Austria	
CIRCUITS HELD	1080	900	60	132	30	0	60		24	60	
IRU HOLDERS	Algeria	Mor	occo	Tunisia	AT&T	Nethe	rlands	вт	Ι СΥΤΑ	Portugal	France
CIRCUITS HELD	24	1	2	12	57	6	0	300	) 84	12	36

DATE IN 1981 NATURE OF SERVICE SERVICE commercial	MILES	1048	SINGLE OR TWIN	single	SYSTEM S 25/3
CABLE DESCRIPTION unarmored polyethylene	coaxial		c	ABLE SI	ZE1.7" 43.2 mm
CABLE MANUFACTURER Les Cables de Lyon	n		CABLESHIP(S USED	v	ERCORS
REPEATER monocontainer flexible bidiractions	x1		NUMBER OF	210	REPEATER 5.1 nm
REPEATER MANUFACTURER CIT - ALCATEL					
NOMINAL TRANSMISSION BANDWIDTH 10652+10652 kl	HZTRANSMI	SSION F	REQUENCIES 8	12-1146	4+14576-25228 kHz
NUMBER OF EQUALIZERS 12 EQUALIZATION	N METHOD	autom	natic		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	L 2580		CHANNEL SPACING,	NITIAL	$4  \mathrm{kHz}$
TERMINAL EQUIPMENT MANUFACTURER CIT - ALCA	ATEL			TRUCTION	SUBMARCOM

 POWER FEED MODE double end
 NOMINAL VOLTAGE 4786/4786
 SYSTEM CURRENT
 0,545 A

 TASI TYPE \_ CIRCUITS USED \_
 CIRCUITS DERIVED \_ TOTAL CIRCUITS \_
 DATE APPLIED



NAME	Taiwan - Guam		ACRONYM TAIGU
OTHER NAMES	Republic of China - U.S.		
COUNTRY A	Republic of China	COUNTRY B	U. S. A. (Guam)
TERMINUS A	Toucheng	TERMINUS B	Agana
LANDING POINT A	Toucheng	LANDING POINT B	Tanguisson Point
COORDINATES A	24 <sup>0</sup> 51'N x 121 <sup>0</sup> 49'E	COORDINATES B	13 <sup>°</sup> 33'N x 144 <sup>°</sup> 49'E

SYSTEM REFERENCE 2

OWNER International Telecommunications Administration, R. O. C. CIRCUITS HELD 630
I R U HOLDERS
CIRCUITS HELD
LESSEES
CIRCUITS LEASED

SYSTEM SINGLE NATURE OF SERVICE commercial CABLE DATE IN 1664 SF 1981 single OR TWIN TYPE MILES SERVICE CABLE SIZE 1.5" 38.1 mm unarmored polyethylene coaxial CABLE DESCRIPTION CABLESHIP(S) LONG LINES Simplex Wire & Cable Company CABLE MANUFACTURER USED REPEATER 10 nm MEPLATER monocontainer flexible bidirectional DESCRIPTION NUMBER OF 171 SPACING REPEATERS Western Electric Company REPEATER MANUFACTURER NOMINAL TRANSMISSION BANDWIDTH 2160+2160 kHz TRANSMISSION FREQUENCIES 554-2920+3575-5894 kHz EQUALIZATION METHOD NUMBER OF EQUALIZERS 5 switched networks SPACING, INITIAL 4 kHz CHANNEL NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 630 CONSTRUCTION ATT Long Lines TERMINAL EQUIPMENT MANUFACTURER Western Electric Company SYSTEM CURRENT 0.136 A POWER FEED MODE double end NOMINAL VOLTAGE 1500/1500 DATE Feb. TASI TYPE E CIRCUITS USED 42 CIRCUITS DERIVED 120 TOTAL CIRCUITS 240 APPLIED 1984

COST	\$ MILLION
CABLE	33.8
SUBMERGED ELECTRONICS	15.1
TERMINAL AND POWER FEED	4.2
TERMINAL STATIONS	4
INSTALLATION	11.3
TOTAL	64,4
SYSTEM DESIGN LIFE 25	years

327

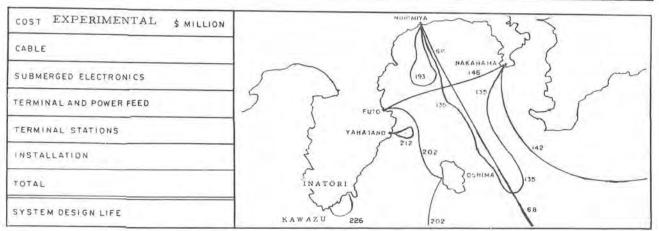
SPECIAL FORMAT FOR FIBER-OPTIC SYSTEMS

# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 239

La binnete		NUMBER 🚣 💟	
NAME	NTTPC First Sea T		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	-
TERMINUS A		TERMINUS B	
LANDING POINT A		LANDING POINT B	
COORDINATES A		COORDINATES B	-

Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD
	CIRCUITS HELD
	Nippon Telegraph and Telephone Public Corporation

SERVICE 1981	SERVI	evnerimonta	1 CABLE MILES	0.9		M TYPE
DESCRIPTION	six fiber	s			DESIC	INATION .
						C A B L E O, D.
CABLE MANUFACTURER	Ocean Ca	ble Company L	td.	CAB UT	LESHIP(S)	TSUGARU MARU
NUMBER OF REGENERATORS	1	REGENERATO DESIGNAT				EGENERATOR
REGENERATOR DESCRIPTION				FACTURER	NEC Corpo	oration and Fujitsu Ltd.
TERMINAL EQUIP MANUFACTUR	MENT NE	C Corporation	and Fujitsu	Ltd.		
NOMINAL VOICE CI NON-TASI	RCUIT CAPA INITIAL	СІТУ,		N		NNEL SPACING.
TRANSMISSION WAVELENGTH		ANSMISSION 400		ONSTRUCTION	N NI	TPC
OWER FEED MODE		NOMINAL	VOLTAGE		SYSTEM CUR	RENT
POWER FEED MODE		NOMINAL	VOLTAGE		SYSTEM CUR	RENT



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# SEACABLE SYSTEM DATA PROFILE SYSTEM REFERENCE 240

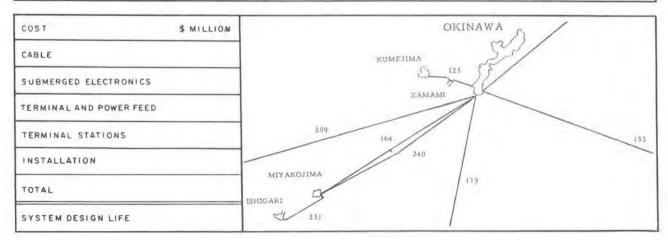
			NOW BER
NAME	Naha - Miyako Jima		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Gushichan	TERMINUS B	Ueno
LANDING POINT A	Naha, Okinawa	LANDING POINT B	Miyako Jima
COORDINATES A	26 <sup>0</sup> 07'N x 127 <sup>0</sup> 45'E	COORDINATES B	24 <sup>0</sup> 43'N x 125 <sup>0</sup> 18'E

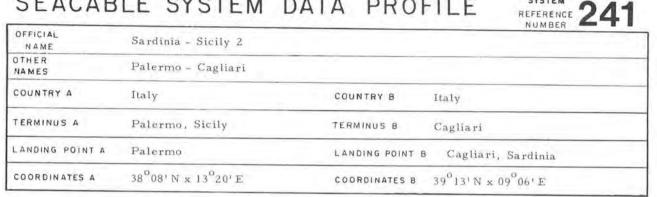
OWNER

Nippon Telegraph and Telephone Public Corporation

CIRCUITS HELD all

DATE IN 1982 SERVICE	NATURE OF SERVICE	commercial	CABLE	179	SINGLE OR TWIN S	ingle	SYSTEM TYPE	S-36MD
CABLE DESCRIPTION	Unarmor	ed polyethylene	e coaxial			ABLE SIZE	1.00" 25 1.50" 38	
CABLE MANUFACTURER	Ocean Ca	ble Company I	utd.		CABLESHIP(S) USED	KUROSH	IIO MARU	
REPEATER monocol DESCRIPTION	ntainer bidir	rectional flexib	le		NUMBER OF REPEATERS	54	REPEATER	
REPEATER MANUFACTU	RER Fujit	su Limited and	NEC Con	rporatio	n			
NOMINAL TRANSMISSIO	N BANDWIDTH	12672+12672 ki	Hztransm	ISSION I	FREQUENCIES4	332-17004	+22796-35	469 kHz
NUMBER OF EQUALIZER	is 2	EQUALIZATIO	N METHOD	ma	gnetic externa	al steppin;	g	
NOMINAL VOICE CIRCU	IT CAPACITY,	NON-TASI, INITIA	L 2700		CHANNEL SPACING,	INITIAL	4 kHz	
TERMINAL EQUIPMENT N	AANU FACTURE	Rs Fujitsu and	I NEC			TRUCTION	NTTPC	
POWER FEED MODE	louble end	NOMINAL VO	DLTAGE 7	00/700	SYSTEM	CURRENT	0,156 A	
TASI TYPE CIRCUI	TS USED	CIRCUITS D	ERIVED	0	TOTAL CIRCUITS	S	DATE	





SYSTEM

OWNER

Aziendo di Stato per i Servizi Telefonici

DATE IN 1982 NATURE OF commercial SERVICE SERVICE	CABLE 247 MILES	SINGLE sing	Le SYSTEM NG 1 TYPE
CABLE DESCRIPTION unarmored polyethylene	coaxial	CABLE	SIZE 1.47" 37.3mm
CABLE MANUFACTURER Standard Telephones &	Cables PLC	CABLESHIP(S) CA	BLE VENTURE
REPEATER monocontainer inflexible bidire	ectional	NUMBER OF REPEATERS 83	REPEATER SPACING 3 nm
REPEATER MANUFACTURER Standard Telephone.	s & Cables PLC		
NOMINAL TRANSMISSION BANDWIDTH 17000+1700	0 kHztransmission	FREQUENCIES 1916-1	8988+27212-44284kH
NUMBER OF EQUALIZERS 3 EQUALIZAT	ION METHOD asse	embled on board	
NOMINAL VOICE CIRCUIT CAPACITY 3900		CHANNEL SPACING	4 kHz
TERMINAL EQUIPMENT MANUFACTURER Standard 3	Felephones & · Cabl	les PLC CONSTRUCTIO	STC
POWER FEED MODE double end NOMINAL	VOLTAGE 2000/2000	SYSTEM CURREN	
active visit in the second c	ALL ALL AVE	are ten eenner	T 0.500 A

COST	\$ MILLION
CABLE	5.4
SUBMERGED ELECTRONICS	10,2
TERMINAL AND POWER FEED	2.4
TERMINAL STATIONS	-
INSTALLATION	2.0
TOTAL	20.0
SYSTEM DESIGN LIFE 25	years

SYSTEM REFERENCE

NUMBER

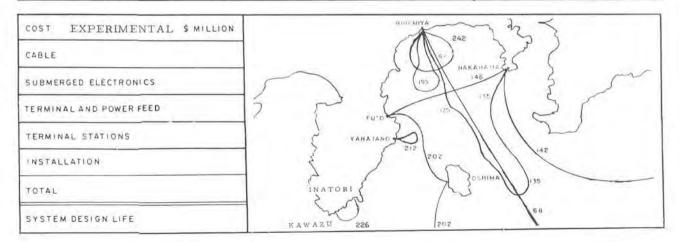
#### SEACABLE SYSTEM DATA PROFILE

OFFICIAL NAME	KDD First Sea Trial		
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Ninomiya	TERMINUS B	Ninomiya
LANDING POINT A	Ninomiya	LANDING POINT B	Ninomiya
COORDINATES A	35 <sup>°</sup> 17'N x 139 <sup>°</sup> 16'E	COORDINATES B	35 <sup>°</sup> 17' N x 139 <sup>°</sup> 16' E

OWNER

Kokusai Denshin Denwa Company Ltd. KDD

DATE IN NATURE OF CABLE SYSTEM TYPE 1982 experimental 30 300 Mb/s SERVICE SERVICE MILES DESIGNATION CABLE 6 single-mode fibers enclosed in a metal tube DESCRIPTION CABLE O. D. CABLE MANUFACTURER CABLESHIP(S) UTILIZED Ocean Cable Company Ltd. KDD MARU NUMBER OF REGENERATORS REGENERATOR TYPE DESIGNATION REGENERATOR 2 18 nm SPACING RECENERATOR MANUFACTURER Fujitsu Ltd. and NEC Corporation REGENERATOR LD duplicate DESCRIPTION TERMINAL EQUIPMENT MANUFACTURER Fujitsu Ltd. and NEC Corporation NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL NOMINAL CHANNEL SPACING. 4000 INITIAL 1.3 µm TRANSMISSION 300 Mb/s TRANSMISSION CONSTRUCTION KDD WAVELENGTH CONTRACTOR POWER FEED MODE double end NOMINAL VOLTAGE SYSTEM CURRENT 1.0 A



SPECIAL FORMAT FOR FIBER-OPTIC SYSTEMS REMOVED 1984

SYSTEM

REFERENCE 243

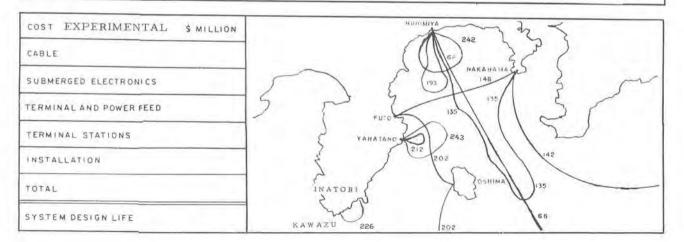
## SEACABLE SYSTEM DATA PROFILE

California a construction of the second			NUMBER
NAME	NTTPC Field Research -	Fiber Optic	
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Yahatano	TERMINUS B	Yahatano
LANDING POINT A	Yahatano	LANDING POINT B	Yahatano
COORDINATES A	34 <sup>°</sup> 53'N x 139 <sup>°</sup> 07'E	COORDINATES B	same

OWNER

Nippon Telegraph and Telephone Public Corporation NTTPC

SERVICE 1982	NATURE OF SERVICE	experimental	CABLE	27	SYSTEM TYPE FS-400M	1
CABLE DESCRIPTION	6 single-mo	de fibers enclosed	l in a meta	al tube	CTORE ANTION	
					CABLE O, D,	
CABLE MANUFACTURER	Ocean Cable	Company Ltd.		CAE	TILIZED KUROSHIO MARU	-
NUMBER OF REGENERATORS	2	RECENERATOR TYP DESIGNATION	E		REGENERATOR SPACING 18 r	m
REGENERATOR DESCRIPTION	LD single		REGENE MANUFAC		Fujitsu Ltd. and NEC Corp.	
TERMINAL EQUIP MANUFACTUR	MENT ER F	ujitsu Ltd. and NE	C Corpor	ation		
NOMINAL VOICE C NON-TASI	RCUIT CAPACIT, INITIAL	Υ. 5760 x Z		N	NOMINAL CHANNEL SPACING. INITIAL	-
TRANSMISSION WAVELENGTH		MISSION 400 Mb/s		STRUCTIC		
POWER FEED MODE	double end	NOMINAL VOLTA	GE 240/2	40	SYSTEM CURRENT 1.0 A	-



#### SPECIAL FORMAT FOR FIBER-OPTIC SYSTEMS

SYSTEM REFERENCE 244

#### SEACABLE SYSTEM DATA PROFILE

OFFICIAL	AT&T First Sea Trial	
OTHER NAMES		
COUNTRY	U.S.A.	
TERMINUS	Ship loop	

OWNER

AT&T Communications, Inc.

SERVICE 1982	NATURE OF SERVICE	experimental	MILES	12	SYSTEM T DESIGNAT		SL
CABLE DESCRIPTION	Twelve sing	gle-mode fibers					
						CABLE O.D.	
CABLE MANUFACTURER	Simplex Wi	re and Cable Con	mpany	CABLES UTILI		NG LIN	ES
NUMBER OF REGENERATORS	2	REGENERATOR TY DESIGNATION	PE	SL	REGEN	ERATOR	0.0
REGENERATOR DESCRIPTION	monocontai	ner flexible		NERATOR ACTURER	Western El	ectric (	Company
TERMINAL EQUIP MANUFACTUR		Western Electr	ic Compan	ny			
NOMINAL VOICE CI NON-TASI		Υ,		NOM	INAL CHANNEL INITIAL	SPACIN	G,
TRANSMISSION WAVELENGTH	1.3 TRANS BIT	MISSION 274 & 42	0 Mb/s c	ONSTRUCTION ONTRACTOR	AT&T		
POWER FEED MODE	e	NOMINAL VOI	TAGE	CY.	STEM CURREN	T	

COST	EXPERIMENTAL	S MILLION
CABLE	6	
SUBME	RGED ELECTRONICS	
TERMIN	NAL AND POWER FEED	
TERMI	NAL STATIONS	
INSTA	LLATION	
TOTAL		
SYSTE	M DESIGN LIFE	

British Telecom



NAME	U.K Channel Isles 6		
OTHER NAMES			
COUNTRY A	England	COUNTRY B	Jersey, Channel Isls.
TERMINUS A	Dartmouth	TERMINUS B	St. Helier
LANDING POINT A	Stoke Fleming	LANDING POINT B	St. Helier
COORDINATES A	50 <sup>°</sup> 19'N x 03 <sup>°</sup> 36'W	COORDINATES B	49 <sup>°</sup> 08' x 02 <sup>°</sup> 05' W

	A	ER	N	ow
--	---	----	---	----

CIRCUITS HELD 1380 h

OWNER B Telecommunications Boards of Jersey and Guernsey CIRCUITS HELD 1380 h

DATE IN SERVICE 1982	NATURE OF SERVICE C	ommercial	CABLE	109	SINGLE OR TWIN	single	SYSTEM TYPE	NE 14M
CABLE DESCRIPTION	armored p	olyethylend co	oaxial			CABLE SIZ	E 1.47" 3	7.3 mm
CABLE MANUFACTURER	Standard 7	Felephones & C	Cables PLC		CABLESHIP(	s) A	LERT (4)	
REPEATER Monod	container bio	lirectional wit	h auto. gai	n control	NUMBER OF	18	REPEATER	6 nm
REPEATER MANUFACTU	RER S	Standard Telep	phones and	Cables P	LC			
NOMINAL TRANSMISSIO	N BANDWIDTH	5704+5704 bH				and the second	Carlor March	
		510115104 KI	Z TRANSMI	SSION FR	EQUENCIES	312-6016+	7996-1370	0 kHz
		EQUALIZATIO		SSION FR	EQUENCIES	312-6016+	7996-1370	0 kHz
NUMBER OF EQUALIZER	RS none	EQUALIZATIO	ON METHOD	SSION FR		312-60164		0 kHz
NUMBER OF EQUALIZEF Nominal voice circu	RS none	EQUALIZATIO NON-TASI, INITIA	on method al 1380	-	CHANNEL SPACING,			0 kHz
NUMBER OF EQUALIZEF NOMINAL VOICE CIRCU TERMINAL EQUIPMENT N	RS none	EQUALIZATIO NON-TASI, INITI	ON METHOD AL 1380 elephones a	-	CHANNEL SPACING, es PLC CON COI	INITIAL	4 kHz	

COST	\$ MILLION	TO COLWYN DAY COVENITHE 94 8.5.
CABLE		127 DOMBURG
SUBMERGED ELECTRONICS		BHOADSTAIRS TIZE LAPANNE BHOADSTAIRS TIZE
TERMINAL AND POWER FEED		ST. NARGARETS (67 EASTBOURNE EASTBOURNE
TERMINAL STATIONS		BOURNEMOUTH 203
INSTALLATION		SAT MOUVIL 245 38 93 ST VALERYEN CAUX
TOTAL	16.5	5. 13.174 (Sale)
SYSTEM DESIGN LIFE 25	years	GUTHNSEY DU COURSEULLES

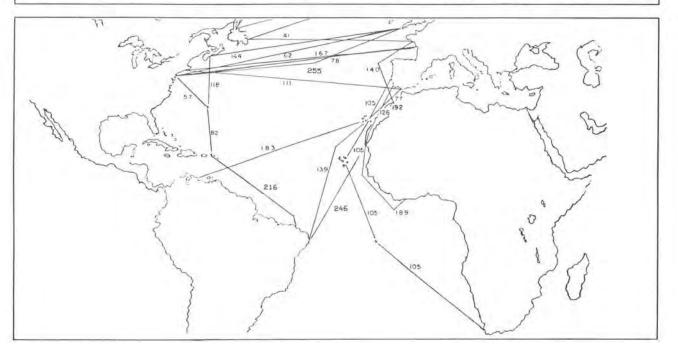


NAME	Portugal - Senegal - Brazil	
OTHER NAMES		ATLANTIS
COUNTRY A	Portugal	COUNTRY B Senegal
TERMINUS A	Burgau, Lagos	TERMINUS B Dakar
LANDING POIN	T 4 Burgau	LANDING POINT B Anse Bernard
COORDINATES	4 37 <sup>0</sup> 04'N x 08 <sup>0</sup> 46'W	COORDINATES B 14°42' N x 17°28' W
COUNTRY C	Brazil	
TERMINUS C	Recife, Pernambuco	
LANDING POIN	т с Boa Viagem Beach	
COORDINATES	c $08^{\circ}08'S \times 34^{\circ}53'W$	

CABLE AB	1577	вс 1847						
DATE IN SERVICE	1982	NATURE OF SERVICE	commercial	SINGLE OR TWIN	single		SYSTEM AB: TYPE BC:	S 25 NE(14M)
CABLE DES	CRIPTION	unarmored	polyethylene coaxial			CABLE SIZE	AB: 1.70" BC; 1.47"	

CABLE MANUFACTURERS AB: Les Cables de Lyon

BC: Standard Telephones & Cables PLC



#### 246 continued

OWNERS Percentages	A - B	B - C		A - B	B - C		A - B	B - C
ENTEL (Argentina)	4.76	9.94	ITALCABL	5,81	8.84	INTELCI	12.77	0.36
EMBRATEL	19.00	37.51	Senegal	10.9	0.43	CPRM	3.16	5.10
France	23.31	3.33	BTI	4.65	5.28	Austria	0.17	0.28
FCR	7.54	16.69	Suisse	2,38	2.75	Guinea	0.23	-
DBP	4.4	7.75	KDD	0.96	1.81			

and the second of the lands of the land	AB: monocontainer flexible bidirectional BC: monocontainer inflexible bidirectional	REPEATER AB:5.62 SPACING BC:7.5
NUMBER OF A B 294	B C 258	
REPEATER MANUFACTURER	AB: CIT - ALCATEL BC: Standard	Telephones & Cables PLC
NUMBER OF A B 17 EQUALIZERS	B C 16 CABLESHIP(S) VERCORS	5 CABLE VENTURE
EQUALIZATION METHOD	AB: remote controlled BC: adjusted on boa	rd
TERMINAL EQUIPMENT MA	NUFACTURER AB; CIT BC; STC	
POWER FEED MODE AB	ouble BC double end end	
NOMINAL VOLTAGE 3300/3	3300 4250/4250	SYSTEM AB:0.545A CURRENT BC:0.470A
NOMINAL TRANSMISSION BA	AB: 10652+10652 kHz NDWIDTH BC: 5700 + 5700 kHz TRANSMISSION FREQUEN	CIES 812-11464+14576-25228kH 312-6016 +7996 -13700 kH
NOMINAL VOICE CIRCUIT CAP	AB: 2340 CHANNEL BC: 1380 SPACING, INITIAL	4kHz 4kHz
TASI TYPE - CIRCUITS US	ED - CIRCUITS DERIVED - TOTAL CIRCUITS	- DATE APPLIED -
REMARKS A Stat	ions: AB: Dakar BC: Dakar USED	

AB; SUBMARCOM BC: Standard Telephones and Cables PLC CONSTRUCTION CONTRACTORS

\$ MILLION 60.092 53.867
53.867
4.615
2.247
16.522
137,343
years

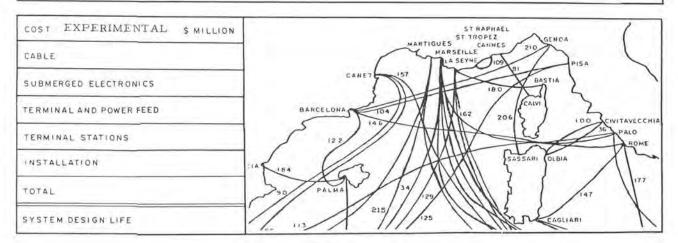
SPECIAL FORMAT FOR FIBER-OPTIC SYSTEMS

## SEACABLE SYSTEM DATA PROFILE SYSTEM PATA PROFILE

		the second se	NUMBER
NAME	Juan-les-Pins - Cagne	s-sur-Mer	
OTHER NAMES			
COUNTRY A	France	COUNTRY B	France
TERMINUS A	Juan-les-Pins	TERMINUS B	Cagnes-sur-Mer
LANDING POINT A	Juan-les-Pins	LANDING POINT B	Cagnes-sur-Mer
COORDINATES A		COORDINATES B	

Centre National d'Etudes des Télécommunications	

SERVICE 1982	SERVICE experimental	CABLE 11 MILES 11	SYSTEM TYPE Designation
CABLE DESCRIPTION	Two single-mode and 4 mu	lti-mode fibers	
			C A B I, E O, D.
CABLE MANUFACTURER	Les Cables de Lyon		UTILIZED VERCORS
NUMBER OF REGENERATORS	none REGENERATOR T DESIGNATION	PE -	REGENERATOR
REGENERATOR DESCRIPTION	-	R EGENERATOR MANUFACTURE	
TERMINAL EQUIPM MANUFACTURE			
NOMINAL VOICE CIR Non. TASI,	CUIT CAPACITY, INITIAL		NOMINAL CHANNEL SPACING, INITIAL
TRANSMISSION WAVELENGTH 1.	3 TRANSMISSION 340 Mb/	S CONSTRUC	
POWER FEED MODE	NOMINAL VO	LTAGE	SYSTEM CURRENT

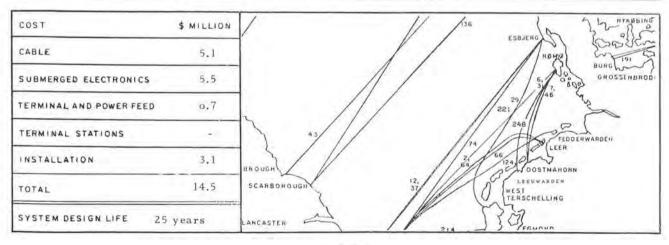




NAME	Netherlands - Denmark 4		
OTHER NAMES	Leeurwarden - Rømø		
COUNTRY A	Netherlands	COUNTRY B	Denmark
TERMINUS A	Leeurwarden	TERMINUS B	Rømø
LANDING POINT A	Anjum	LANDING POINT B	Rømø
COORDINATES A	53 <sup>°</sup> 24'N x 06 <sup>°</sup> 07'E	COORDINATES B	55 <sup>0</sup> 04'N x 08 <sup>0</sup> 29'E

OWNERS A	dministrations of Denmark, Norway, Sweden, and Finland;
P	letherlands PTT and British Telecom International
I	RUs are held by CTNE with the Nordic Group
DISTRIBUTIO	DN: Netherlands 0.333 and Britain 0.166; Denmark 0.18, Sweden 0.17, Norway 0.13,
1.00	Finland 0.02

DATE IN 1983 NATURE OF SERVICE 1983 SERVICE COMP	nercial	CABLE	175	SINGLE DR TWIN	single	SYSTEM TYPE CS-36M
CABLE DESCRIPTION armored polyethy	lene coaxi	al			CABLE SIZ	E 1.50" 38.1 mm
CABLE MANUFACTURER Ocean Cabl	e Company	Ltd.		BLESHIP	and the second sec	ORS & GENERAL BAST
REPEATER DESCRIPTION monocontainer flexible	bidirection	al auto.g;	N ain contr. <sub>R</sub>	INGER OF	59	REPEATER SPACING 3.25 mm
REPEATER MANUFACTURER Fujits	su Ltd.					
NOMINAL TRANSMISSION BANDWIDTH 1267	2+12672 kH	ZTRANSMI	SSION FREQ	UENCIES	4332-1700-	4+22798-35468 kHz
						1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
NUMBER OF EQUALIZERS 2 EQ	UALIZATION	METHOD	magnet	ic exter	nal steppir	
NUMBER OF EQUALIZERS 2 EQ			magnet	ic exter Channel SPACING		
NOMINAL VOICE CIRCUIT CAPACITY, NON-T		0	magnet	CHANNEL SPACING CO		ng
NOMINAL VOICE CIRCUIT CAPACITY, NON-T	ASI 270	0 utd.		CHANNEL SPACING CO CO	NSTRUCTION	ng 4 kHz



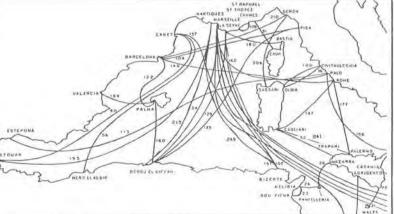


NAME	France - Tunisia 3		
OTHER NAMES	DIDC	)N	
COUNTRY A	France	COUNTRY B	Tunisia
TERMINUS A	Martigues	TERMINUS B	Bizerte
LANDING POINT A	Martigues	LANDING POINT B	Bizerte
COORDINATES A	43 <sup>°</sup> 16' N x 05 <sup>°</sup> 03' E	COORDINATES B	$37^{0}17' N \ge 09^{0}52' E$

OWNER A	Direction Generale des Télécommunications	CIRCUITS HELD
OWNER B	Administration of PTT	CIRCUITS HELD
IRU HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEASE	D	

SERVICE 1983	NATURE OF SERVICE	commercial	CABLE	484	SINGLE OR TWIN SI	ngle	SYSTEM TYPE	S25/3
CABLE DESCRIPTION	unarmored p	polyethylene co	oaxial		C	ABLE SIZE	E 1.7" 43	.18 mm
CABLE MANUFACTURER	Les Cables	de Lyon			CABLESHIP(S) USED	VERCO	ORS	
REPEATER monocon DESCRIPTION	ntainer flexib	le bidirectiona	1		NUMBER OF	97	REPEATER SPACING	5.6 nm
REPEATER MANUFACTUR	RER CIT	- ALCATEL						
NOMINAL TRANSMISSIO	N BANDWIDTH	10652+10652 kl	HZTRANSMI	SSION FRE	QUENCIES 8	2-1164+1	14576-2522	o Ltra
<ol> <li>A.P. N. M. AND STREET TWO IS</li> </ol>				C. S. C. M.			11010-2020	OKITZ
NUMBER OF EQUALIZER	rs 5	EQUALIZATIO			ontrolled		14310-2321	O KEIZ
NUMBER OF EQUALIZER NOMINAL VOICE CIRCUI						4 kHz	1310-2320	20 KHZ
	IT CAPACITY, N	ION-TASI 2	N METHOD		CHANNEL SPACING CONS		SUBMAR	
NOMINAL VOICE CIRCUI	IT CAPACITY, N MANUFACTURER	ION-TASI 2	N METHOD 580 LCATEL	remote o	CHANNEL SPACING CONS	4 kHz truction ractor		

COST	\$ MILLION
CABLE	11.414
SUBMERGED ELECTRONICS	9.956
FERMINAL AND POWER FEED	1.536
TERMINAL STATIONS	
NSTALLATION	2.603
TOTAL	25.509
SYSTEM DESIGN LIFE 25	years



SEACAE	BLE SYSTEM	DATA PROF	FILE	REFERENCE 250
NAME	Florida - St. Thomas 3		ACRONYM	
OTHER NAMES				
COUNTRY A	U, S. A.	COUNTRY B	U. S. A. (Vir)	gin Islands)
TERMINUS A	Vero Beach	TERMINUS B	Magens Bay	
LANDING POINT A	Vero Beach	LANDING POINT B	Magens Ba	ý
COORDINATES A	27 <sup>0</sup> 38'N x 80 <sup>0</sup> 21'W	COORDINATES B	18 <sup>0</sup> 22' N x 64	4 <sup>0</sup> 56'W

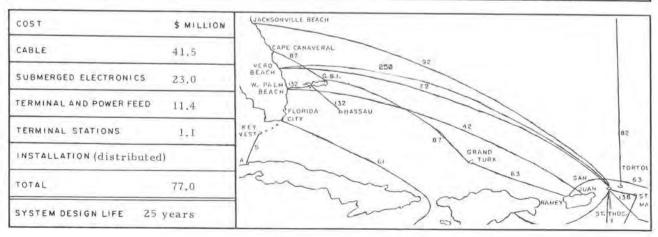
SYSTEM

OWNERS

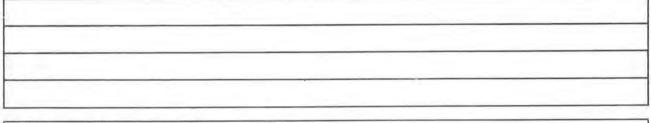
American Telephone & Telegraph Company and

CANTV, ITTCVI, ITTWC, RCAGC, TRT, WUI

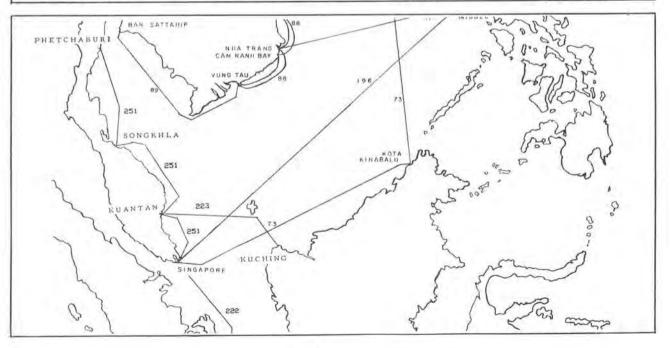
DATE IN 1983 NATURE OF SERVICE SERVICE commercial	CABLE MILES	1120	SINGLE OR TWIN	single	SYSTEM TYPE	SG
CABLE DESCRIPTION unarmored polyethylene co	axial			CABLE SIZ	E 1.7" 43	2 mm
CABLE MANUFACTURER Simplex Wire and Cabl	e Compar	ny	CABLESHIP(	5) LONG	LINES	
REPEATER monocontainer bidirectional flexib	le		NUMBER OF	237	REPEATER	5.1 nm
REPEATER MANUFACTURER Western Electric C	Company					
NOMINAL TRANSMISSION BANDWIDTH 12000+12000 kl	HZTRANSM	1001001	DEQUENCIES			El
	and the sources	1221UN I	REQUENCIES	1000-1350	0+16700-29	300 kH2
a construction of the second sec			mote control		0+16700-29	9300 kH:
NUMBER OF EQUALIZERS 10 EQUALIZATIO	N МЕТНОВ			led	4 kHz	9300 kH:
NUMBER OF EQUALIZERS 10 EQUALIZATION NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	N METHOD L 3000	re	MOTE CONTROL CHANNEL SPACING, CON	led		)300 kH;
	N METHOD L 3000 ctric Com	re	MOTE CONTROL CHANNEL SPACING, CON CON	INITIAL STRUCTION	4 kHz	9300 kH:



OFFICIAL	ASEAN Malaysia - Singapo	ore - Thailand		ACRONY	м
OTHER NAMES	ASEAN M - S - T				
COUNTRY A	Republic of Singapore	cou	INTRY B	Malaysia	
TERMINUS A	Singapore	TER	MINUS B	Kuantan	
LANDING POINT	4 Katong	LAN	DING POINT B	Cherating	
COORDINATES A	01 <sup>°</sup> 18'N x 103 <sup>°</sup> 54'E	coc	RDINATES B	04 <sup>0</sup> 06'N×	103 <sup>0</sup> 23'E
COUNTRY C	Thailand	cou	NTRY D	Thailand	
TERMINUS C	Songkhla	TER	MINUS D	Phetchabur	i
LANDING POINT	c Ban Kaoseng	LAN	DING POINT D	Ban Hadcha	iosamran
COORDINATES C	07 <sup>°</sup> 11'N x 100 <sup>°</sup> 37'E	coo	RDINATES D	13 <sup>0</sup> 00'N x	100 <sup>0</sup> 04' E



CABLE AB	224	вс	330	C D	369				
DATE IN SERVICE	1983	NATURE		commercial		SINGLE OR TWIN	single	1.00	SYSTEM AC:CS 5M TYPE CD:CS 12M
CABLE DES	CRIPTION	armored	and	unarmored p	olyethylene o	coaxial		CABLE SIZE	AC: 1.0" 25.4 mm CD: 1.5" 38.1 mm
CABLE MAN	UFACTURE	R 0	cean	Cable Compa	any Ltd.		BLESHIF FD	P(S) KU	JROSHIO MARU KDD MARU



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OWNERS

CAT (Thailand), ETPI (Philippines), INDOSAT (Indonesia), JTM (Malaysia),

TELECOMS (Singapore), OTC (Australia), C&W (Hong Kong), KDD (Japan)

REPEATER DESCRIPTION monocontainer flexible bidirectional; temperature-controlled AGC SPACING CD: 6.8nm NUMBER OF AB 28 CD 55 BC 41 REPEATERS REPEATER MANUFACTURERS NEC Corporation and Fujitsu, Ltd. NUMBER OF AB 1 B C 1 CD 2 EQUALIZERS EQUALIZATION METHOD fixed TERMINAL EQUIPMENT MANUFACTURERS NEC Corporation and Fujitsu Ltd. c D double double double BC end POWER FEED MODE AB end end SYSTEM CURRENT 0.1 A 260/260 490/490 NOMINAL VOLTAGE 370/370 TRANSMISSION FREQUENCIES 312-2292+3000-301 564-5516+7436-12388 Khz NOMINAL TRANSMISSION BANDWIDTH AC: 1980+1980 kHz CD: 4952+4952 kHz AC: 480 CHANNEL INITIAL 4 kHz SPACING, NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL CD: 1200 DATE APPLIED -TASI TYPE - CIRCUITS USED - CIRCUITS DERIVED TOTAL CIRCUITS -REMARKS A-stations: Songkhla and Katong

CONSTRUCTION CONTRACTOR Fujitsu, Ltd.

COST	\$ MILLION
CABLE	28,5
SUBMERGED ELECTRONICS	15.1
TERMINAL AND POWER FEED	8.3
TERMINAL STATIONS	7
INSTALLATION	16.8
FOTAL	68.7
SYSTEM DESIGN LIFE 2	5 years

SEACAB	LE	SYSTEM	DATA	PRO	FILE	SYSTEM REFERENCE NUMBER 252
NAME	Portu	gal - Morocco				
OTHER NAMES			ATLAS			
COUNTRY A	Moroe	zco	co	UNTRY B	Portugal	
TERMINUS A	Asilal	n	TE	RMINUS B	Burgau, La	igos
LANDING POINT A	Asilal	2	LA	NDING POINT E	Burgau	
COORDINATES A	35 <sup>°</sup> 28	'N x 06 <sup>0</sup> 01' W	co	ORDINATES B	37 <sup>0</sup> 04' N x (	08 <sup>°°</sup> 47' W

Companhia Portuguesa Rádio Marconi, Société Marocaine de Télécommunications par OWNERS

Cable Sous-Marin, Compagnie Francaise de Cables Sous-Marins et de Radio,

ITALCABLE Servizi Cablografici, Radiotelegrafici et Radioelettrici

DATE IN SERVICE 1982 NATURE OF SERVICE commercial	CABLE	192	SINGLE OR TWIN	single	SYSTEM TYPE	S 12
CABLE DESCRIPTION unarmored polyethyle	ne coaxial			CABLE SI	zε 1.5" 38	.1 mm
CABLE MANUFACTURER Les Cables de Lyon	ì		CABLESHIP	s) VEI	RCORS	
REPEATER monocontainer flexible bidirecti DESCRIPTION	onal		NUMBER OF	28	REPEATER	8 nm
REPEATER MANUFACTURER CIT-ALCATEL						
NOMINAL TRANSMISSION BANDWIDTH 5196+5196 1	Hz TRANSM	155101	FREQUENCIES	812-600	8+7192-123	88 kHz
NUMBER OF EQUALIZERS I EQUALIZAT	ION METHOD	r	emote controll	ed		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INI	TIAL 1260		CHANNEL	INITIAL	4 kHz	
TERMINAL EQUIPMENT MANUFACTURER CIT AI	CATEL		CON	STRUCTION	SUBMARC	ОМ
POWER FEED MODE double end NOMINAL	VOLTAGE 330	/330	SYSTEM	CURRENT	0.545 A	
					DATE	-

COST	\$ MILLION
CABLE	4.137
SUBMERGED ELECTRONICS	2,840
TERMINAL AND POWER FEED	1.442
TERMINAL STATIONS	1.390
INSTALLATION	1,880
TOTAL	11,689
SYSTEM DESIGN LIFE 25	years

SEACAB	LE SYSTEM D	ATA PROFI	LE SYSTEM REFERENCE 253
NAME	Kagoshima - Naze		ACRONYM
OTHER NAMES			
COUNTRY A	Japan	COUNTRY B	Japan
TERMINUS A	Nagayoshi	TERMINUS B	Asani
LANDING POINT A	Fukiagehama, Kagoshima	LANDING POINT B	Naze, Amamioshima
COORDINATES A	31 <sup>0</sup> 33' N x 130 <sup>0</sup> 20' E	COORDINATES B	28 <sup>°</sup> 33' N x 129 <sup>°</sup> 21' E

OWNER A	Nippon Telegraph and Telephone Public Corporation	CIRCUITS HELD all
OWNER B		CIRCUITS HELD
I R U HOLDERS		
CIRCUITS HELD		
LESSEES		
CIRCUITS LEASED		

DATE IN 1983 NATURE OF SERVICE Commercial	CABLE	246	SINGLE OR TWIN	single	SYSTEM TYPE	CS36MD1
CABLE DESCRIPTION unarmored polyethylene	e coaxial			CABLE SIZE		25.4 mm 38.1 mm
CABLE MANUFACTURER Ocean Cable Co	mpany Ltd.		CABLESHIP(S USED		SHIO MAI ARU MAR	
REPEATER monocontainer flexible bidirect	ional		NUMBER OF	83	REPEATER	
REPEATER MANUFACTURER Eujitsu Lt	d, and NEC	Corpora	tion			
NOMINAL TRANSMISSION BANDWIDTH 12672+1267	2 kH2TRANSM	SSION F	REQUENCIES	332-17004	+22796-3	5469 kHz
NUMBER OF EQUALIZERS 3 EQUALIZAT	TION METHOD	magn	etic external	stepping		
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INI	TIAL 2700		CHANNEL SPACING,	INITIAL	4 kHz	
TERMINAL EQUIPMENT MANUFACTURER Fujitsu Li	td, and NEC	Corp.		STRUCTION	NTTPC	
POWER FEED MODE double end NOMINAL	VOLTAGE 100	0/1000	SYSTEM	CURRENT	0.156 A	
TASI TYPE CIRCUITS USED CIRCUITS	DERIVED	т	TAL CIRCUIT	s	DATE	

COST \$	ILLION 2 STRYUSHUS &	,
CABLE	163 53 REIHANU 5 26	
SUBMERGED ELECTRONICS	- 67 /	
TERMINAL AND POWER FEED	SR MIYAZAK	
TERMINAL STATIONS	NAGAYOSHI D25	
INSTALLATION	253 235 1	
TOTAL	VARUSHIMA	
SYSTEM DESIGN LIFE 25 ye	rs	

345



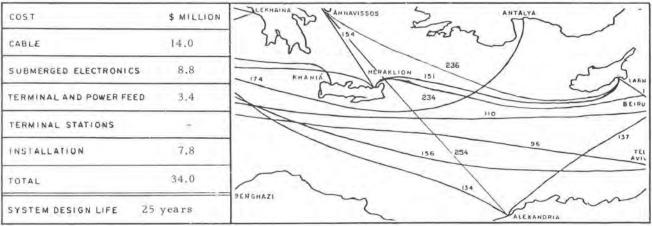
NAME	Greece - Egypt	ALEXANDROS	
OTHER NAMES			
COUNTRY A	Greece	COUNTRY B	Egypt
TERMINUS A	Athens (Lagonissi)	TERMINUS B	Alexandría
LANDING POINT A	Anavissos	LANDING POINT B	Alexandria
COORDINATES A	37 <sup>°</sup> 4 'N x 23 <sup>°</sup> 5 'E	COORDINATES B	$31^{\circ}1$ "N x $29^{\circ}5$ 'E

OWNER A Hellenic Telecommunications Organization OTE

CIRCUITS HELD 624 h

OWNER B Arab Republic of Egypt National Telecommunications Organization CIRCUITS HELD 624 h

DATE IN 1983 NATURE OF commercial CABLE 5 SERVICE SERVICE MILES	SINGLE OR TWIN single	SYSTEM TYPE SF
CABLE DESCRIPTION unarmored polyethylene coaxial	CABLE SIZ	E 1.50" 38.1 mm
CABLE MANUFACTURER Simplex Wire and Cable Company	CABLESHIP(S) LON	G LINES
REPEATER monocontainer bidirectional flexible DESCRIPTION	NUMBER OF 62 REPEATERS	REPEATER 10 nm SPACING
REPEATER MANUFACTURER Western Electric Company		
NOMINAL TRANSMISSION BANDWIDTH 2160+2160 kHz TRANSMISSION	FREQUENCIES 554-2920+	3578 5804 Kha
	THE STREET COMES SALE FOR THE STREET	5516-5674 MIZ
	witched networks	5576-5674 Aliz
NUMBER OF EQUALIZERS 1 EQUALIZATION METHOD S	witched networks	ł kHz
NUMBER OF EQUALIZERS I EQUALIZATION METHOD S NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIAL 624	witched networks CHANNEL SPACING, INITIAL CONSTRUCTION	



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# SEACABLE SYSTEM DATA PROFILE SUSTEM REFERENCE 255

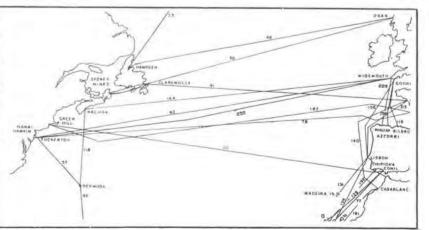
Transatlantic 7		ACRONYM TAT 7
Tuckerton - Lands End		
United States	COUNTRY B	United Kingdom
Tuckerton, New Jersey	TERMINUS B	Lands End
Beach Haven	LANDING POINT B	Porthcurno
39 <sup>0</sup> 33' N x 74 <sup>0</sup> 14' W	COORDINATES B	50 <sup>0</sup> 03'N x 06 <sup>0</sup> 39'W
	Tuckerton - Lands End United States Tuckerton, New Jersey Beach Haven	Tuckerton - Lands End         United States       COUNTRY B         Tuckerton, New Jersey       TERMINUS B         Beach Haven       LANDING POINT B

Participation is approximately 40% by U.S. entities including AT&T, ITTWC, RCAGC, WUI, FTCC, and

TRT, and by TGC, with approximately 22% by BTI and the remainder by 17 European administrations.

DATE IN 1983 NATURE SERVICE SERVIC	C D D D D D D D D D D D D D D	CABLE	3277	SINGLE OR TWIN SI	ngle	SYSTEM TYPE	SG
CABLE DESCRIPTION Una	rmored polyethylen	e coaxial		C 4	BLE SIZE	1.70" 4	3.2 mm
CABLE MANUFACTURERS STC,	Cables de Lyon, and	d Simplex	C	CABLESHIP(S) USED		INES, VI IARCH	ERCORS
REPEATER Monocontainer f DESCRIPTION	lexible bidirectiona	l solid st	ate	NUMBER OF REPEATERS	660	REPEATER	<b>7</b> 5.1 nm
REPEATER MANUFACTURER We	stern Electric Com	pany					
NOMINAL TRANSMISSION BANDW	ютн12000+12000 kH	ZTRANSMI	SSION FRE	QUENCIES T	0 - 13 5	167 2	0.2341
					0 - 15.5	10.1 - 2	9.5 MINZ
NUMBER OF EQUALIZERS	EQUALIZATION			te control	0 - 15,5 (	10.1 - 2	9,5 M NZ
NUMBER OF EQUALIZERS	EQUALIZATION	METHOD					9.5 MINZ
	EQUALIZATION ITY, NON-TASI, INITIAL	метнор 4200	remo	CHANNEL SPACING, CONST			9,5 MINZ
NOMINAL VOICE CIRCUIT CAPACI	EQUALIZATION ITY, NON-TASI, INITIAL URER Western El	METHOD 4200 ectric Co	remo ompany	CHANNEL SPACING, CONST	NITIAL 31 RUCTION RACTOR	kHz	

COST	\$ MILLION
CABLE	116.0
SUBMERGED ELECTRONICS	49.3
TERMINAL AND POWER FEED	9.3
TERMINAL STATIONS	2.0
INSTALLATION AND OTHER	3.4
TOTAL	180.0
SYSTEM DESIGN LIFE	25 years



#### SPECIAL FORMAT FOR FIBER-OPTIC SYSTEMS

#### SEACABLE SYSTEM DATA PROFILE

SEACA	ABLE SYSTEM	DATA	PROFILE	REFERENCE 256
OFFICIAL	British Deep-Sea Trial			
OTHER NAMES				
COUNTRY	United Kingdom			
TERMINUS	Ship Loop			

OWNER	British Telecom International and STC Submarine Systems Ltd.	

DATE IN 1983 SERVICE	SERVICE experimental	CABLE	SYSTEM TYPE NL 1 DESIGNATION
CABLE DESCRIPTION			
			C A B I. E O. D.
CABLE MANUFACTURER STC	Submarine Systems Ltd.		LESHIP(S) ILIZED
NUMBER OF I REGENERATORS	REGENERATOR TY DESIGNATION	NL 1	REGENERATOR SPACING
REGENERATOR DESCR: PTION		REGENERATOR S MANUFACTURER	TC Submarine Systems Ltd.
TERMINAL EQUIPMENT MANUFACTURER	STC Submarine	Systems Ltd.	
NOMINAL VOICE CIRCUI NON-TASI, INI		NO	OMINAL CHANNEL SPACING, INITIAL
TRANSMISSION 1.3	TRANSMISSION BIT-RATE	CONSTRUCTION	<sup>4</sup> STC SSL
POWER FEED MODE	NOMINAL VOL	TAGE	SYSTEM CURRENT

COST EXPERIMENTAL \$ MILLION
CABLE
SUBMERGED ELECTRONICS
TERMINAL AND POWER FEED
TERMINAL STATIONS
INSTALLATION
TOTAL
SYSTEM DESIGN LIFE

SEACAE	BLE SYSTEM	DATA PROF	ILE SYSTEM REFERENCE 257
NAME	Larne - Port Patrick		NUMBER
OTHER NAMES			
COUNTRY A	U.K. (Northern Ireland)	COUNTRY B	U. K. (Scotland)
TERMINUS A	Larne	TERMINUS B	Port Patrick
LANDING POINT A	Drains Bay	LANDING POINT B	Port Mora
COORDINATES A		COORDINATES B	

OWNER A British Telecom International

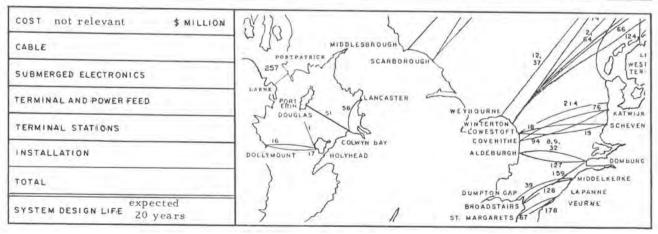
CIRCUITS HELD all

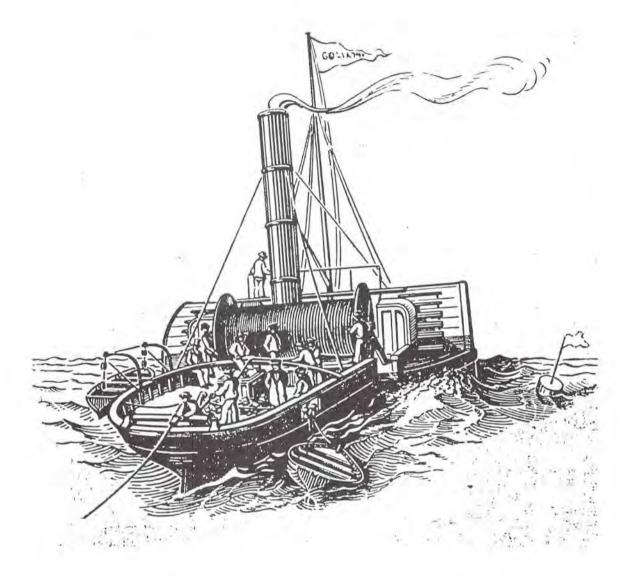
In 1983 a portion of the former Covehithe - Katwijk B system (No. 94, retired that year)

was recovered and re-laid by IRIS(3). Repeaters employed were 2 un-used spares plus 1 re-

covered; terminal station installations utilized un-used equipment on hand.

DATE IN 1983 NATURE OF SERVICE SERVICE	CABLE	24	SINGLE OR TWIN	single	SYSTE TYPE	мТ
CABLE DESCRIPTION armored polyethylene co	axial			CABLE	SIZE 0.935"	23,7 mm
CABLE MANUFACTURER Submarine Cables Ltd. (1	1967 produc	tion)	CABLESHIP USED	(5)	IRIS(3)	
REPEATER DESCRIPTION MONOCONTAINER INflexible bidirection	onal transi	storized	NUMBER OF	2	REPEATE	R 7.5 nm
REPEATER MANUFACTURER Submarine Cables	Ltd. (1967	product	ion)			
NOMINAL TRANSMISSION BANDWIDTH 1980+1980 kH	Z TRANSMIS	SION FR	EQUENCIES	312-22	96+2792-477	6 kHz
NUMBER OF EQUALIZERS none EQUALIZATIC	N METHOD	2				
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	AL 480	4	CHANNEL	INITIA	L 4 kHz	
none storetering	AL 480	- ndustrie	SPACING	INITIA	L 4 kHz on BTI	
NOMINAL VOICE CIRCUIT CAPACITY, NON-TASI, INITIA	AL 480		SPACING	INITIA NSTRUCTI NTRACTO	on BTI	





The first submarine cable of consequence was installed in 1850 between Dover and Calais. Here the paddle tug GOLIATH is seen bucking the channel chop with a monstrous spool of cable carried 'thwartships above the deck. The telegraph cable actually functioned for a few days before succumbing to an incident occurring all too frequently in the early cable days: it was cut by a curious fisherman. This book contains detailed information on all submarine telephone cable systems meeting the previously-described criteria for inclusion, that were in service by the end of 1983. Additionally, there are nine projects under way that will have been completed in 1984, expected to come into service during the preparation of this volume. They are described in the degree of detail available.

Beyond 1984 there are thirteen other projects committed for construction that are invarying stages of preparation, to come into service during 1985 through 1988. Further, there are scores of projects that have come into consideration by one means or another, that have not yet reached the stage of agreement to merit categorization as "committed". Some are "pending", meaning that negotiations among the potential owners are in progress; others are "deferred", those still under consideration but upon which action has been suspended.

Finally there is a great collection of projects once considered but no longer pursued, or that have been rendered unnecessary by construction of other facilities serving the originally-perceived needs for traffic, which are categorized as "indefinite". Also in this group are those speculative projects foreseen as possibly necessary at some future time, often promoted--quite reasonably--by the seacable system manufacturers and construction contractors.

A word about project identification is in order: to avoid the ambiguities at risk in any scheme of listing and indexing, each discrete project (whether one link between two destinations or a series of links to carry traffic between several locations along the route) is given a project reference number which is retained until the result of the project -- the completed system -- is put into service. When a project becomes identifiable, through releases to technical or financial media or from other sources judged reliable, the number enters the data base, at first serially. Then as more information may accrue about the project, its category within the data system may be altered. These mutations are confined to the inner workings of the data system; however, an inevitable consequence is an accumulation of "unassigned numbers" appearing in the sequential listing. These are purposely left in to maintain flexibility as the status of the project may change.

A "project" graduates into a "system" when installation is finished and the facility is placed into service.

\* \* \* \*

The following tabulations are, first, a listing of projects by category, i.e., pending, deferred, etc., in roughly chronological order. This is followed by an index of project geographic identification in alphabetic order.



Sometimes the distance between landing points of a transoceanic cable requires a length of cable greater than can be carried by the chosen cablelaying ship. In such instances the cable is laid in sequential segments, and the laying vessel attaches an anchor and a buoy, and streams a "recovery tail" to the end of a laid segment. The ship then returns to factory or depot, loads the next segment, returns to the site, recovers the buoy and cable end, joins the recovered end to the beginning of the next segment, and proceeds with the laying. Here is a view of a cable buoy being prepared for launching on KDD MARU.

#### LIST OF COMMITTED, PENDING, DEFERRED,

#### AND INDEFINITE PROJECTS

#### By Category, and in Approximate Chronological Order,

#### From January 1,1984 Onward

CATEGORY	SITUATION	PROJECT REFERENCE NUMBERS
COMMITTED	UNDER CONSTRUCTION, UNDER CONTRACT, UNDER OWNERS' AGREEMENT TO BUILD	258 - 284
PENDING	DURING NEGOTIATIONS BETWEEN POTENTIAL OWNERS FOR AGREEMENT TO BUILD	285 - 308
DEFERRED	STILL UNDER CONSIDERATION BY POTENTIAL OWNERS, BUT ACTION SUSPENDED	309 - 332
INDEFINITE	PROJECT ONCE PROPOSED OR CONSIDERED, BUT WITH NO ENSUING AGREEMENT TO BUILD, OR SUPERCEDED BY OTHER CONSTRUCTION; ALSO CONTEMPLATED POSSIBLE FUTURE REQUIREMENTS	333 - 429

#### COMMITTED PROJECTS

PROJECT REFERENO NUMBER		EDULED ERVICE DATE
258	BAHRAIN - QATAR - U.A.E. MANAMA - SUMAISMAH - ABU DHABI	1984
259	SPAIN - BELGIUM "MERIDIAN" VILLAVICIOSA - VEURNE	1984
260	JAPAN NINOMIYA - OKINAWA	1984
261	CANADA - HAWAII - FIJI - NORFOLK NEW ZEALAND - AUSTRALIA "ANZCAN"	1984
262	U.K NETHERLANDS 11 ALDEBURGH - DOMBURG	1984
263	NUMBER UNASSIGNED	
264	JAPAN DEEP-SEA TRIAL NO. 1 (FIBER OPTIC)	1984
265	FRANCE PORT GRIMAUD - ANTIBES (FIBER OPTIC	) 1984
266	GRAND CAYMAN - CAYMAN BRAC TURTLE BEACH - CAYMAN BRAC	1984
267	MALAYSIA - INDONESIA PENANG - MEDAN	1984
268	NUMBER UNASSIGNED	
269	SINGAPORE - HONG KONG - CHINA, REP OF "ASEAN S-H-T" CHANGI - DEEP WATER BAY - TOUCHENG	1985
270	U.K BELGIUM 5 BROADSTAIRS - DOSTENDE (FIBER OPTIC	) 1985
	NUMBER INTRODUCT	

271 NUMBER UNASSIGNED

272	NUMBER UNASSIGNED	
273	SPAIN (CANARY ISLANDS) ALTAVISTA - CANDELARIA (FIBER OPTIC)	1985
274	FRANCE MAINLAND - CORSICA (FIBER OPTIC)	1985
275	MALAYSIA KUCHING - KOTA KINABULU	1985
276	AUSTRALIA - INDONESIA - SINGAPORE "ASEAN A-I-S" PERTH - JAKARTA - CHANGI	1986
277	NUMBER UNASSIGNED	
278	PHILIPPINE REP - MALAYSIA - THAILAND CURRIMAD - KOTA KINABULU - SONGKHLA	1987
279	PAKISTAN - U.A.E KARACHI - FUJAIRAH	1987
280	BAHRAIN - KUWAIT	1987
281	INDIA - U.A.E. BOMBAY - FUJAIRAH	1987
282	U.S EUROPE "TAT 8" (FIBER OPTIC) TUCKERTON - BRANCHING UNIT; THENCE TO WIDEMOUTH AND TO PENMARC'H	1988
283	FRANCE - PORTUGAL PENMARC'H - SESIMBRA	1988
284	SINGAPORE - MARSEILLE "SEA-ME-WE" TOTAL PROJECT (SINGAPORE - MEDAN PORTION 1984) (DJIBOUTI - JEDDAH PORTION 1985) (MEDAN - COLOMBO PORTION 1986) (COLOMBO - DJIBOUTI PORTION 1986) (JEDDAH - SUEZ PORTION 1986) (ALEXANDRIA - PALERMO POR. 1987) (PALERMO - MARSEILLE PORTION 1988)	1988

#### PENDING PROJECTS

PROJECT REFEREN NUMBER			
285	UNITED STATES FLORIDA - VIRGIN IS. 4 (FIBER OPTIC)		
286	U.S.(HAWAII) - MARCUS IS.; THENCE BRANCHING TO GUAM AND JAPAN "TPC 3" (FIBER OPTIC)	PROJECT	DEFERRED PROJECTS
287	NUMBER UNASSIGNED	REFEREN NUMBER	IDENTIFICATION
288	ITALY - LIBYA CATANIA - TRIPOLI	309	ITALY - GREECE 3
289	U.S. (FLORIDA) - DOMINICAN REP - JAMAICA FLORIDA CITY - PUERTO PLATA - KINGSTON (FIBER OPTIC)	310	CATANIA - LEKHAINA ITALY - TUNISIA 2 NAPLES - TUNIS
290	ITALY - MOROCCO PISA - TETOUAN	311	SPAIN - ALGERIA 2 PALMA - BORDJ-EL-KIFFAN
291	U.S.(GUAM) - PHILIPPNE REP 2 AGANA - BALER (FIBER OPTIC)	312	ISRAEL - ITALY 2
292	NUMBER UNASSIGNED	313	NUMBER UNASSIGNED
293	U.S. (FLORIDA) - HONDURAS FLORIDA CITY - PUERTO CORTES	314	SPAIN - FRANCE BARCELONA - MARSEILLE
	(FIBER OPTIC)	315	SPAIN - GREECE
294	U.S. (VIRGIN IS.) - VENEZUELA 3 (FIBER OPTIC)	316	NIGERIA LAGOS - PORT HARCOURT
295	NUMBER UNASSIGNED	317	NUMBER UNASSIGNED
296 297	DENMARK NYKOBING - RONNE	318	JAPAN HACHIJO - OGASAWARA
298	MALAYSIA	319	NIGERIA - CAMEROUN
230	KUANTAN - KUCHING 2	320	NUMBER UNASSIGNED
533	JAMAICA - PANAMA - COLOMBIA (FIBER OPTIC)	321	MALAYSIA - PHILIPPINE REP
300	U.S JAMAICA (FIBER OPTIC)	322	NUMBER UNASSIGNED
301	U.S EUROPE "TAT 9" (FIBER OPTIC)	323	NUMBER UNASSIGNED
302	UNITED STATES MAINLAND - HAWAII "HAW 4" (FIBER OPTIC)	324	NUMBER UNASSIGNED
303	IVORY COAST - SENEGAL 2	325	FRANCE - ALGERIA 5 (FIBER OPTIC)
304	FRENCH SOMALIA - OMAN	326 327	NUMBER UNASSIGNED COSTA RICA - EL SALVADOR
305	NUMBER UNASSIGNED		NUMBERS UNASSIGNED
306	DENMARK - POLAND 2 (FIBER OPTIC)		
307	JAPAN - HONG KONG (OR PHILIPPINE REP)		

ITALY ROME - SARDINIA 308

## PROJECTS WITH INDEFINITE STATUS

	PROJECTS WITH INDEFINITE STATUS		(CONTINUED)
PROJECT REFEREN NUMBER		PROJECT REFEREN NUMBER	
333	ISRAEL - LEBANON	372	EUROPE - SOUTH AFRICA (FIBER OPTIC)
334	CANADA - GREENLAND	373	EUROPE - SOUTH AMERICA (FIBER OPTIC)
335	NUMBER UNASSIGNED	374	U.K BELGIUM 6 (FIBER OPTIC)
336	PHILIPPINE REP - VIET NAM	375	U.K DENMARK 4 (FIBER OPTIC)
337	NUMBER UNASSIGNED	376	DENMARK - IRELAND (FIBER OPTIC)
338	NUMBER UNASSIGNED	377	GERMANY - SWEDEN 4 (FIBER OPTIC)
339	NUMBER UNASSIGNED	378	DENMARK - NORWAY 5 (FIBER OPTIC)
340	MOROCCO - EASTERN MED "MAGHREB - MASHREK"	379	DENMARK DOMESTIC (FIBER OPTIC)
341	JAPAN	380	SWEDEN DOMESTIC (FIBER OPTIC)
	SHIKOKU - KYUSHU (HARUO - NAOTAKE IDE)	381	SWEDEN - GERMANY DEM. REP. (FIBER OPTIC)
342	SPAIN - ITALY 5	382	SWEDEN - FINLAND (FIBER OPTIC)
	BARCELONA - ROME	383	NETHERLANDS - DENMARK 5 (FIBER OPTIC)
343	SINGAPORE - MALAYSIA KATONG - PENANG	384	SPAIN PALMA - BARCELONA "PENBAL 3" (FIBER OPTIC)
344	SPAIN (NORTH COAST) - FRANCE	385	SPAIN
345	SPAIN - ITALY 6 CANADA - U.K. "CANTAT 3" (FIBER OPTIC)		PALMA - IVIZA (FIBER OPTIC)
346 347	U.S. (GUAM) - CHINA, PEOPLE'S REP OF	386	SPAIN (MALLORCA) - ITALY (SICILY) (FIBER OPTIC)
	AGANA - SHANGHAI	387	FRANCE - PORTUGAL - MOROCCO (FIBER OPTIC)
348	GREECE ATTICA - SYROS	388	ITALY ROME - PALERMO 2 (FIBER OPTIC)
349	GERMANY - U.K. 4	389	SPAIN - ARGENTINA
350	JAMAICA - TORTOLA	390	GREECE - CYPRUS - EGYPT (FIBER OPTIC)
351	PAKISTAN - SRI LANKA	391	ITALY - TURKEY 2 (FIBER OPTIC)
352	SYRIA - EGYPT	392	FRANCE - GREECE 3 (FIBER OPTIC)
353	TURKEY - LEBANON	393	BERMUDA - TORTOLA 2
354	U.K IRELAND 3 (FIBER DPTIC)	394	NUMBER UNASSIGNED
355	U.K NDRWAY 3	395	NUMBER UNASSIGNED
356	SPAIN - MOROCCO	396	DOMINICAN REP - U.S. (PUERTO RICO / VIRGIN IS.) (FIBER OPTIC)
357	NUMBER UNASSIGNED	397	HONG KONG - JAPAN (FIBER OPTIC)
358	JAPAN HONSHU - BONIN ISLANDS	398	CHINA, REP OF DOMESTIC (FIBER OPTIC)
359	PORTUGAL	399	KOREA DOMESTIC (FIBER OPTIC)
26.0	SESIMBRA - PONTA DELGADA	400	CHINA, REP OF - U.S. (GUAM) "TAIGU 2" (FIBER OPTIC)
360	EGYPT - GREECE ALEXANDRIA - HERAKLION (CRETE)	401	PHILIPPINE REP DOMESTIC (FIBER OPTIC)
361	TRINIDAD - GUYANA	402	SINGAPORE - BRUNEI (FIBER OPTIC)
362	CYPRUS - SYRIA	403	INDONESIA DOMESTIC (FIBER OPTIC)
363	INDONESIA - PHILIPPINE REP	404	HONG KONG - PHILIPPINE REP 2 (FIBER OPTIC)
364	U.S. (VIRGÍN IS) - COSTA RICA	405	PHILIPPNE REP - SINGAPORE "PHILSIN 2"
365	IRAN BANDA ABBAS - CHABAHAR	406	(FIBER OPTIC) INDIA - SRI LANKA
366	VIET NAM - SINGAPORE		BOMBAY - COLOMBO
367	SAMDA - SOLOMONS	407	U.S.S.R. DOMESTIC (FIBER OPTIC)
368	SPAIN MAINLAND - CANARY IS "PENCAN 4" (FIBER OPTIC)	408	MALAYSIA DOMESTIC (FIBER OPTIC)
369	ЈАРАN НОМБНИ — SHIKOKU	409	ITALY - GREECE 4 BARI - LEKHAINA (FIBER OPTIC)
370	VENEZUELA - NETHERLANDS WEST INDIES	410	NUMBER UNASSIGNED
	CARACAS - CURACAO	411	BRAZIL - SPAIN "BRACAN 2"
371	U.K SPAIN 4 (FIBER OPTIC)	412	HONG KONG - AUSTRALIA
		413	THAILAND BANGKOK - HAAD YAI

PROJECTS WITH INDEFINITE STATUS

	PROJECTS WITH INDEFINITE STATUS (CONTINUED)	PROJECTS WITH INDEFINITE STATUS (CONTINUED)
PROJEC REFERE NUMBER	NCE	PROJECT REFERENCE NUMBER IDENTIFICATION
414 415	SPAIN - CARIBBEAN REGION SAFEC (HISTORIC ONLY)	422 NORWAY EGERSUND - EKOFISK
415	UNITED STATES FLORIDA - PUERTO RICO 2	423 U.S. (FLORIDA) - GUATEMALA 424 CHINA, REP DF
417	SAUDI ARABIA - SUDAN	DOMESTIC
418	HONG KONG - MALAYSIA - SINGAPORE	425 UNITED STATES VIRGIN IS - PUERTO RICO
419	U.S. (VIRGIN IS) - COLOMBIA	UNITED KINGDOM
420	SPAIN - GULF OF GUINEA	426 WALES - ISLE OF MAN (FIBER OPTIC) 427 ENGLAND - ISLE OF WIGHT (FIBER OPTIC)
421	U.S.(GUAM) - JAPAN (DKINAWA) AGANA - CHINEN	428 NORTH SEA POINT(S) (FIBER OPTIC) 429 WALES - NORTHERN IRELANS (FIBER OPTIC)

## ALPHABETIC INDEX OF ALL COMMITTED, PENDING, DEFERRED.

## AND INDEFINITE PROJECTS

CATEGORY	BITUATION
COMMITTED	UNDER CONSTRUCTION, UNDER CONTRACT, UNDER DWNERS' AGREEMENT TO BUILD
PROJECT	REFERENCE NUMBERS 258 THROUGH 284
PENDING	DURING NEGOTIATIONS BETWEEN POTENTIAL OWNERS FOR AGREEMENT TO BUILD
PROJECT	REFERENCE NUMBERS 285 THROUGH 308
DEFERRED	STILL UNDER CONSIDERATION BY POTENTIAL OWNERS, BUT ACTION SUSPENDED
PROJECT	REFERENCE NUMBERS 309 THROUGH 327
INDEFINITE	PROJECT ONCE PROPOSED OR CONSIDERED, BUT WITH NO ENSUING AGREEMENT TO BUILD, OR SUPERSEDED BY OTHER CONSTRUCTION; ALSO CONTEMPLATED POSSIBLE FUTURE REQUIREMENTS

PROJECT REFERENCE NUMBERS 333 THROUGH 429

0

INDEX OF COMMITTED, PENDING, DEFERRED, AND INDEFINITE PROJECTS

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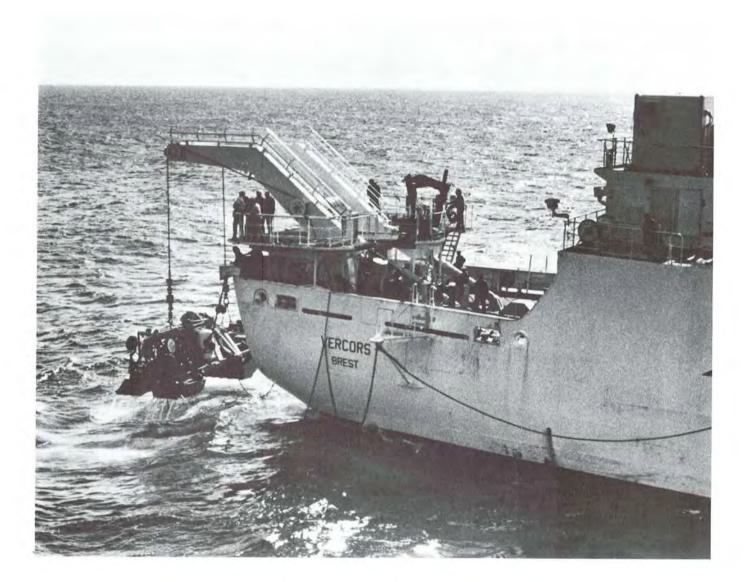
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It is the general practice today to embed the cables beneath the sea-floor in water depths at which man-initiated activities such as trawling and dredging could disturb them. Here French cableship VERCORS has a sea-bottom plow at the stern ready for deployment to bury a portion of Transatlantic No.6.

#### DESCRIPTIONS OF COMMITTED PROJECTS

1984 - 1988

Project Reference Numbers 258 - 284

Project Reference Number Description

## 258 Bahrain - Qatar - U.A.E.

From Manama the 1.50-inch 116-mile coaxial cable with 18 repeaters stretches to Sumaismah, Qatar, and then 196 miles to Abu Dhabi in the U.A.E. Using cable made by Ocean Cable Company Ltd. and electronics by themselves and NEC, the project was carried out by Fujitsu using cableship IRIS (3). The system provides 1200 circuits at 4 kHz spacing and is to be completed in 1984.

#### 259 Spain - Belgium

Named MERIDIAN, this project is a joint effort of CTNE and Belgium, Netherlands, and the FRG. The 1.47-inch coaxial, provided by Les Cables de Lyon, runs 723 miles from Rodiles on the north coast of Spain to St. Idesbald on the Belgian coast near Veurne, with 159 repeaters approximately 5.3 miles apart. The system, a French S25/3, was installed by SUBMARCOM using electronics supplied by CIT-ALCATEL. It provides initially 2580 circuits at 4 kHz, and is scheduled to go into service in 1984. The cableship used: VERCORS.

#### 260 Ninomiya - Okinawa

Called "The Okinawa Cable", the 1.5-inch coaxial runs 930 miles from the coast of Honshu to Gushikama, with 139 repeaters spaced about 7 miles apart. The cable for the CS 12M system was produced by OCC and the electronics to accommodate 1600 circuits at 3 kHz were supplied by NEC and Fujitsu. The system is owned by KDD who acted as prime contractor, using their cableship KDD MARU for the project. The scheduled service date is 1984.

## 261 Canada - Hawaii - Fiji - Norfolk - New Zealand - Australia

One of the largest single undertakings of a multi-link transocean system, the project is designated "ANZCAN". It consists of 4 links of 1.47-inch coaxial cable produced by STC, beginning at Vancouver and running for 2487 miles to Hawaii, with 343 repeaters, then 3033 miles to Fiji, with 416 repeaters, then 985 miles to Norfolk Island with 138 repeaters, and to Sydney 928 miles with 138 repeaters. The main run just described is a British NE system produced and installed by STC to provide 1380 circuits at 4 kHz. Cableships MERCURY and CABLE VEN-TURE were used.

From Norfolk there is a 1.00-inch coaxial made by OCC running 654 miles, with 137 repeaters, to Auckland. It is a Japanese CS 5M system with electronics by Fujitsu and NEC, giving 480 4 kHz-spaced circuits.

The Vancouver - Hawaii portion was finished first, in 1983, and the remainder of the project is scheduled for completion in 1984.

Participation in the project is widely distributed, the owners being TGC, NZPO, OTC(A), FINTEL, BTI, PTT France, DBP, Papua NG, KDD, PLDT, and C&W.

#### 264 KDD First Deep Sea Trial (Fiber Optic)

This 1984 experimental installation was placed in a water depth of over 7000 meters to the southeastward of Honshu. Conducted by KDD using their cableship KDD MARU, the 24-km cable, containing 6 single-mode fibers, was made by OCC and the 2 regenerators were supplied by Fujitsu and NEC.

#### 265 Port Grimaud - Antibes (Fiber Optic)

Under the auspices of CNET this 1984 experimental installation of a 44-km cable was carried out by SUBMARCOM using cableship RAYMOND CROZE. Two regenerators produced by CIT-AL-CATEL were installed in the S280 system. Operating at 1.3 µm and 280 Mbps per fiber, it provides for 7690 circuits.

#### 266 Grand Cayman - Cayman Brac

The 120-mile installation, known locally as The Brac Connection, is being carried out by C&W using 0.99-inch coaxial cable and electronics by STC. To be placed in service before the end of 1984, the cable-laying was to be performed by C&W's cableship CABLE VENTURE.

#### 267 Medan - Penang

A joint project by P. T. Indonesian Satellite Corporation and Jabatan Telekom Malaysia, the installation was carried out by NEC using cableship KUROSHIO MARU. The 162-mile 1.0-inch coaxial cable was produced by OCC and the 20 repeaters in it were the contribution of both NEC and Fujitsu. Service is scheduled for 1984. Project Reference Number Description

## 269 Singapore - Hong Kong - Toucheng

Known also as ASEAN S-H-T, the Singapore-Hong Kong link will be composed of 1585 miles of 1.47-inch coaxial cable with 221 repeaters, to be produced by STC and installed in 1985 by cableship CABLE VENTURE. The system is a British NE producing 1380 circuits at 4 kHz.

From Hong Kong to the Republic of China on Taiwan the 1.00-inch coaxial, to be produced by OCC and equipped with 89 repeaters by Fujitsu and NEC, will be installed by Fujitsu in 1985.

#### 270 U.K. - Belgium 5 (Fiber Optic)

To run the 65 miles from Broadstairs to Oostende, the cable will use single-mode fibers and have three regenerators, all provided by STC. The system will operate initially in 1985 as an experimental installation, providing 11,520 circuits, to be put into commercial service sometime thereafter.

## 273 Las Palmas - Tenerife (Fiber Optic)

AT&T has contracted with CTNE to provide a cable with 6 monomode fibers for the 65-mile stretch between Las Palmas and Tenerife. The system will require 3 regenerators for an initial capacity of 7680 circuits, and is to go into service in 1985.

## 274 Mainland (France) - Corsica (Fiber Optic)

The DTRE of France has engaged SUBMAR-COM to place a 210-mile fiber optic system between Marseille and Ajaccio using 8 regenerators in a 6-fiber single-mode cable made by Les Cables de Lyon. With electronics by CIT-ALCATEL, the S 280 system will provide 7560 circuits. It is planned to be in operation by the end of 1985

#### 275 Kuching - Kota Kinabulu

Reported to be committed for service by the end of 1985, an analog system is to be installed connecting the above-named Malaysian points.

## 276 Australia - Indonesia - Singapore

Under a contract signed in July 1984 STC will build and install a British NG analog system affording 1380 circuits at 4 kHz between Perth and Jakarta and then onward to Singapore. Known also as ASEAN A-I-S, the project will be concluded 1986.

## 278 Thailand - Malaysia - Republic of the Philippines

Reported to be under agreement for service by the end of 1987, an analog system of 1200 circuits is to be placed between Thailand and Malaysia and thence to the Philippines.

#### 279 U.A.E. - Pakistan

Under agreement between the two owners, the analog cable project will be tendered for in 1984 with a projected service date of 1987.

#### 280 Bahrain - Kuwait

Under agreement between the two owners the analog cable project is expected to be in service by 1987.

#### 281 U. A. E. - India

Under agreement between the two owners the analog cable project is expected to be in service by 1987.

## 282 Transatlantic No. 8

Under contract to AT&T with subcontracts to STC and SUBMARCOM, the project for TAT 8, the first transoceanic fiber optic system, is scheduled for service in 1988. A multi-owner project (at least 28), the cable will run from the U.S. east coast to a point on the continental shelf off the coast of England and France. There a branching device will allow connection to both Britain and France. The first portion of the cable from the U.S. to European waters will be manufactured by Simplex and the regenerators, at about 30-mile spacing, will be furnished by AT&T. From the junction point to England, STC will supply cable and electronics, as will SUBMARCOM for the portion to France. The project service date is 1988. Froject Reference Number Description

## 283 France - Portugal 2

A project to provide a second connection between Penmarc'h and Sesimbra is under agreement, for service in 1988.

## 284 Singapore - Marseille "SEA-ME-WE"

This multi-link, multi-owner project will be one of the largest cable enterprisee ever undertaken. Singapore is to be connected to Medan in 1984 with a French S 25 analog system, 345 miles and 1200 circuits, to be supplied by SUBMARCOM, who are to supply also the system between Egypt and Italy, a 1036-mile S 25 link, the Saudi Arabia-Egypt 696-mile S 25 system, and the Sri Lanka -Djibouti portion, a 2337-mile S 12, and finally the Italy - France portion, of a capacity not presently known. The other parts, Sri Lanka - Indonesia and Djibouti - Jeddah are to be supplied by Fujitsu and STC respectively, a Japanese CS-12M system and a British NE 14M. The entire project, including the overland portion between Suez and Alexandria, is expected to be finished in 1988.



The major maritime nations all make extensive use of submarine cables for national defense. Cableship KATUNJ seen here is typical of the 7 other large ships INGUL, JANA, DONETS, ZEYA, ZNA, TAVDA, and INGURI, of the Soviet Union. Three newer cableships EMBA, NEPRYADVA, and SETUN have been commissioned since 1980.

## COMMENTS ON PENDING PROJECTS

Project Reference Numbers 285 - 308

285 U.S. Mainland - Puerto Rico/Virgin Is.

Looking toward future traffic growth and facility requirements in the Caribbean/Gulf of Mexico region, a fourth system from the continental U.S. to either St. Thomas or San Juan, possibly favoring the latter for geographic diversity, is under consideration for service sometime about 1990, likely to be of fiber-optic nature.

#### 286 U.S. - Japan TPC 3

Under active pursuit for some time, TPC 3 is now expected to run from Hawaii to a sub-sea branching device, possibly at or near Marcus Island, with legs to Guam and to Ninomiya on the Island of Honshu. It is anticipated that the system comprising the main cable and the two branches will be an AT&T type SL design.

#### 288 Italy - Libya

Reported to be under active consideration, the analog system would connect from Catania, Sicily to Tripoli, with a projected service date of about 1987.

#### 289 U.S. - Dominican Republic - Jamaica

With foresight for continuing traffic growth, additional facilities to connect from the Florida coast to the Dominican Republic and thence to Jamaica are being considered, along with the overall plans for the region. The links would very likely be fiber optic systems, with service dates in 1987/1988.

290 Italy - Morocco

Stated as "under consideration" by two reliable sources, still the ASST of Italy cannot yet make any positive forecast. The project would connect Pisa and Tetouan; whether fiber-optic or analog is not settled.

#### 291 U.S. - Republic of the Philippines

To parallel the aging Guam - Baler system of 1964, the traffic requirements having long ago exceeded the capacity of the initial link, it is considered likely that the new system would be a fiber-optic design, for service possibly by 1988.

#### 293 U.S. - Central America

For many years a direct link from the continental U.S. to a point on the northeast coast of Central America has been under consideration: first to Guatemala or perhaps Costa Rica, but more lately Honduras is indicated, the project to connect Florida City to Puerto Cortes. A fiberoptic system is thought to be probable, for service estimated by one source as early as 1986.

#### 294 U.S. - Venezuela 3

Hard on the heels of the 1980 project, forecasts of traffic growth and the desirability of facility diversity are causing the active consideration of a third link from either the Virgin Islands or Puerto Rico, probably a fiber-optic system.

#### 297 Denmark Domestic

Although considered "moribund" by one source, and with no comment from the Danish authorities, another source has submitted a proposal for a parallel service to the 1968 Nykobing-Ronne system.

#### 298 Malaysia Domestic

According to one source a Kuantan - Kuching project, obviously to parallel the 1980 system, is being considered, although the Malaysia authorities are silent. It is expected that tenders may be called for in 1985.

#### 299 Jamaica - Panama - Colombia

As part of an overall treatment for the traffic growth and future facility needs of the whole region to the south of the U.S., a project for two fiber-optic links is under active consideration, for service about 1987/1988.

#### 300 U.S. - Jamaica

In connection with general plans for the region, a second Florida - Jamaica system, fiber optic, is being considered for service about 1988/ 1990.

#### 301. U.S. - Europe TAT 9

The commissioning of TAT 8, to occur in 1988, will almost certainly raise the requirement for TAT 9 for the reason of facility diversity if for no other. A service date of 1992 has been mentioned.

## 302 U.S. Mainland - Hawaii HAW 4

Under active consideration for service in 1988, HAW 4 would likely be an AT&T SL system. Related of course to TPC 3, HAW 4 is almost certain to go forward soon.

## 303 Ivory Coast - Senegal 2

It is expected that tenders will be called for in 1985 for a second analog system between Dakar and Abidjan.

## 304 French Somalia - Oman

There are indications that agreement for this project may be reached within a year or two, for a large-capacity analog system.

#### 305 Denmark - Poland 2

The present 60-circuit Denmark - Poland facility, in service since 1960, has long been of inadequate capacity and it is now under consideration to provide a new system, fiber optic, possibly for service in 1987/1988.

#### 307 Japan - Hong Kong

The project to connect Hong Kong directly to Japan--either to Okinawa or to one of the home islands--has long been under consideration, and it is now forecast that a service date of 1989 is likely, and that the system would probably be of fiber-optic design. If agreement for Hong Kong is not reached, the project may go to the Philippine Republic instead.

#### 308 Italy Domestic

There will be a submission of tenders in 1984 for a large analog system connecting the Italian mainland at a point near Rome to some point on Sardinia, for service probably in 1987.



Cableship MUROTO of the Japan Maritime Defense Agency was commissioned in 1980, and engages in oceanographic research related to defense of Japanese home waters. DIRECTORY OF THE PRINCIPAL SUBMARINE TELEPHONE CABLE SYSTEM OWNING AND OPERATING AGENCIES

#### Algeria

Ministry of Posts and Telecommunications Submarine Department 4 Bd Salah Bouakouir Algiers

#### Australia

The Overseas Telecommunications Commission (Australia) 32-36 Martin Place, P.O.Box 7000 Sydney 2000/2001

#### Belgium

Department of Transmission Régie des Télégraphs et des Téléphones Administration Centrale Rue de Palais, 42 Bruxelles 3. LE

#### Brazil

International Engineering Division Emprese Brasileira de Telecomunicacoes Av. Fresidente Vargas, 1012, 6<sup>°</sup> Andar 20,017 Rio de Janeiro - RJ

### Canada

Teleglobe Canada 680 Sherbrooke Street West Montreal, Quebec H3A 2S4

#### China, Republic of

Directorate General of Telecommunications Ministry of Communications No. 31 Aikuo E. Rd. Taipei, Taiwan

#### Cyprus

Cyprus Telecommunications Authority 121 Prodomus Street, P. O. Box 4929 Nicosia 116

#### Denmark

Central Telecommunications Ssrvice Long Lines Office Posts and Telegraphs of Denmark Valkensdorfsgade 9 DK-1151 København K

The Great Northern Telegraph Co. Ltd. 26-28 Kongens Nytorv, P.O. Box 2167 DK-1016 København K Dominican Republic

Cía. Dominicana de Teléfonos, C.por A. Santo Domingo

## Egypt

The Undersecretariat of State International Telecommunications Sector A. R. E Telecom. Organization Ramsis Street, P. O. Box 795 Cairo

#### France

Direction des Télécommunications Sous-Marines Direction des Télécommunications des Réseaux Extérieurs 246, Rue de Bercy 75584 Paris Cedex 12

Germany, Federal Republic

Fernmeldetechnisches Zentralamt Deutsche Bundespost Postfach 800 6100 Darmstadt

#### Greece

International Communications Department OTE Hellenic Telecommunications Organization S. A. 15 Stadiou Street Athens 124

#### Indonesia

P. T. Indonesian Satellite Corporation INDOSAT Jakarta

#### Ireland

International Division, Commercial Directorate TELECOM EIREANN The Irish Telecommunications Board (Ltd.) St. Stephen's Green West Dublin 2

#### Israel

International Communications Department Ministry of Communications P. O. Box 29107 Tel Aviv 61 290

#### Italy

Aziendo di Stato per i Servizi Telefonici Ministero delle Poste e delle Telecomunicazione Viale Europa 160 00144 EUR - Roma

## ITALCABLE

Servizi Cablografici Radiotelegrafici e Radioelettrici Via Calabria 46-48, C.P. 2470 00187 Roma A.D.

#### Ivory Coast

Societé des Télécommunications de Cote d'Ivoir Abidjan

## Jamaica

Jamintel Centre Jamaica International Telecommunications Limited 15 North Street, P. O. Box 138 Kingston

#### Japan

Kokusai Denshin Denwa Co., Ltd. KDD Building, P. O. Box No. 1 3-2, Nishi-Shinjuku 2-Chome Shinjuku-ku, Tokyo 160

Nippon Telegraph and Telephone Public Corporation 1-6 Uchisaiwai-cho, 1-chome Chiyoda-ku, Tokyo 100

#### Lebanon

Direction Générale des Télégraphs et des Téléphones Ministere des P. T. T. Republique Libanaise Beirut

#### Libya

International Telecommunications Division Ministry of Communications P. O. Box 5095 Tripoli

#### Malaysia

Telecommunications Cable Operations International Region, Telecommunications Department Jalan Pantai Baru Kuala Lampur 22-07

#### Malta

Wireless Telegraphy Branch Republika Ta'Malta Auberge de Castille Valetta

#### Morocco

Bureau of International Telecommunications Facilities Ministry of Posts, Telegraphs and Telephones Rabat

#### Netherlands

Central International Telecommunications Department Headquarters, Netherlands Postal and Telecommunications Services P. O. Box 3000 2500 GA The Hague

#### New Zealand

Directorate of Overseas Telecommunications Post Office Headquarters Wellington

#### Nigeria

Nigerian External Telecommunications Ltd. Necom House 15, Marina, P.O. Box 173 Lagos

#### Norway

Norwegian Telecommunications Administration Postboks 6701, St. Olavs Pl. N-Oslo 1

#### Philippines, Republic of the

Eastern Telecommunications Philippines, Inc. Telecom Plaza, 316 Sen. GilJ. Puyat Ave. P.O. Box 126 MCC, Makati Metro Manila

Philippine Long Distance Telephone Company Department of Overseas Services PLDT Building, P. O. Box 952 Legazpi Street, Makati Rizal

#### Poland

Telecommunications Service Department Administration of Posts and Telecommunications Arshava Ul. Chalubinskiego 4/6 00928 Warszawa

#### Portugal

Companhia Portuguesa Rádio Marconi Divisao de Cabos Submarinos Rua da Madalena, 36, 2<sup>°</sup> And. 1100 Lisboa

#### Senegal

Societé des Télécommunications Internationales du Sénégal TELESENEGAL Boite Postale 69 Dakar

## Singapore, Republic of

Telecoms Headquarters, Comcenter Republic of Singapore 31, Exeter Road Singapore 0923

#### South Africa, Republic of

South Atlantic Cable Company, Pty. Ltd. Ground Floor, IDC Building 19 Fredman Drive, Sandown, Sandton P. O. Box 65650, Benmore 2010

#### Spain

Companía Telefónica Nacional de España Departamento Internacional Plaza de España, 4, Apartado 753 Madrid 13

#### Sweden

Network Department Swedish Telecommunications Administration TELEVERKET S-123 86 FARSTA

#### Syria

Etablissement General des Télécommunications Republique Arabe Syrienne Damas

#### Thailand

International Services Division The Communications Authority of Thailand Bangkok, 1051

#### Tunisia

Bureau des Cables Sous-Marins Direction de Télécommunications Rue d'Angleterre Tunis

#### Turkey

Technical Department General Directorate of Turkish PTT Republic of Turkey Ankara

#### United Kingdom

British Telecom International Submarine Cable and Microwave Systems Division The Holborn Centre 120 Holborn London EC1N 2TE

Cable and Wireless PLC Cableships and Submarine Systems Division Mercury House, Theobalds Road London WC1X 8RX

## United States

AT&T Communications, Inc. 340 Mt. Kemble Avenue Morristown, New Jersey 07960

Defense Communications Agency Defense Communications System Organization Washington, D.C. 20305

Eastern Space and Missile Center (AFSC) Patrick Air Force Base, Florida 32925

FTC Communications, Inc. FTCC 90 John Street New York, New York 10038

Hawaiian Telephone Company P. O. Box 2200 Honolulu, Hawaii 96841

#### Venezuela

Companía Anonima Nacional Teléfonos de Venezuela CANTV Apartado Postal 1226 Caracas 101



Comparable in size and power to the largest commercial cableships, U. S. Naval Ship ZEUS (T ARC 7) came into service in 1984. Embodying many innovations, ZEUS has cable payout and recovery machinery duplicated at bow and stern, and like other recently-built cableships, has centralized and automated positioning capability utilizing powerful tunnel thrusters fore and aft together with precise-controlled DC motors on the twin shafts. AACR EMBRATEL All America Cables and Radio, Inc. AACRPR All.America Cables and Radio (Puerto Rico) ASST Azienda di Stato per i Servizi Telefonici AT&T AT&T Communications, Inc. BPO British Post Office BTC Bahamas Telecommunications Corporation BTI British Telecommunications International C&W Cable and Wireless PLC C&WHK Cable and Wireless (Hong Kong) Ltd. CANTV Cía. Anónima Nacional de Teléfonos de Venezuela CAT Communications Authority of Thailand CDT Cía. Dominicana de Teléfonos CH Canton Helvetie (Switzerland) CIT Cie. Industrielle de Télécommunications CNET Centre National d'Etudes de Télécommunications CODETEL Cía. Dominica de Teléfonos COTC Canadian Overseas Telecommunications Corporation CPRM Cia. Portuguesa Rádio Marconi CTNE Cía. Telefónica Nacional de Espana CYTA Cyprus Telecommunications Administration DBP

Deutsche Bundespost

Empresa Brasileira de Telecomunicacoes FNTF Empresa Nacional de Telecomunicaciones de Espana ENTEL Empresa Nacional de Telecomunicaciones de Argentina FTPI Eastern Telecommunications Philippines Inc. EXCOFINA International Telecommunications Co. Ltd. F&G Felten & Guilleaume Carlswerk AG FC French Telegraph Cable Company FCR France Cable et Radio FTCC FTC Communications Inc. FUJ Fujitsu Limited GMCR Globe Mackay Cables and Radio GNTC Great Northern Telegraph Company Ltd. HTC Hawiian Telephone Company INDOSAT Indonesian Satellite Corporation INTELCI Societé des Télécommunications Internationales de Cote Ivoir TRU Indefeasible Right of Use ITA International Telecommunications Administration ITALCABLE Servici Cablografici Radiotelegrafici e Radioelettrici S.p.A. ITDC International Telecommunications Development Corporation

ITTCVI ITT Communications Inc., Virgin Islands ITTWC ITT World Communications Inc. JITL Jamaica International Telecommunications Limited ITM Jabatan Telekom Malaysia KDD Kokusai Denshin Denwa Company Limited MPT Ministry of Posts and Telecommunications NAG Netherlands Antilles Government NASC Nippon Asia Submarine Cable Company NATDC Nippon Asia Telecommunications Development Corporation NEC NEC Corporation NL International Telecommunications, The Netherlands NSW Norddeutsche Seekabelwerke AG NTTPC Nippon Telegraph and Telephone Public Corporation NZPO New Zealand Post Office OCC Ocean Cable Company Limited OTC(A) Overseas Telecommunications Commission (Australia) OTE Hellenic Telecommunications Organization PERUMTEL Perum Telekomunikasi Indonesia PGC Fhilippine Global Communications Inc. PHILCOM Philippine Overseas Telecommunications Company PLDT Philippine Long Distance Telephone Co.

Administration of Posts and Telegraphs PW Press Wireless RCAGC RCA Global Communications Inc. SACC South Atlantic Cable Company Pty. Ltd. SCL Submarine Cables Limitsd SDTL Societé de Developement des Télécommunications du Liban SEACOM Southeast Asia Communications Group SFRT Service d'Etudes et des Recherches et des Techniques des P.T.T. SODETEL Societé de Developpement des Télécommunications du Liban STC Standard Telephones and Cables PLC STICI Societé des Télécommunications International de Cote Ivoir SUBMARCOM Les Cables de Lyon and Cie. Industrielle de Télécommunications CIT-ALCATEL TAS The Telecommunications Authority of Singapore TELECOMS The Telecommunications Authority of Singapore TELESENEGAL Societé des Télécommunications International du Senegal TELEVERKET Central Administration of Swedish Telecommunications TGC Teleglobe Canada TRL Telecommunications Research Laboratories, Denmark TRTT

TRT Telecommunications Inc.

PTT

USUCC

United States Underseas Cable Corporation

WUI Western Union International

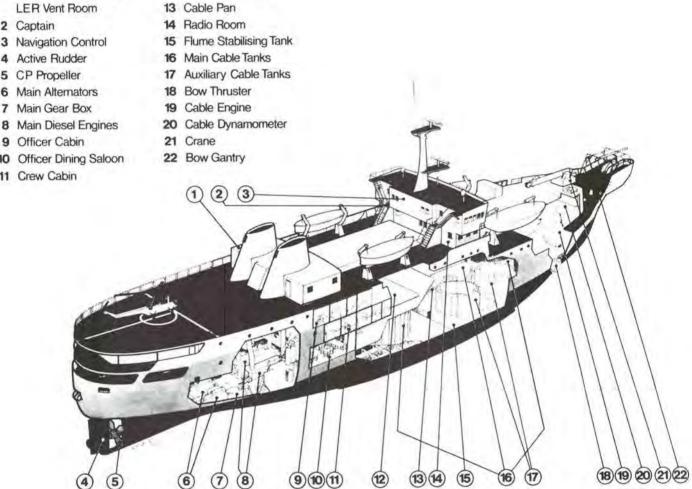
WECO

Western Electric Company

1 Air Conditioning Plant LER Vent Room

12 Cable Tank Hatch

- 2 Captain
- 3 Navigation Control
- 4 Active Rudder
- 5 CP Propeller
- 6 Main Alternators
- 7 Main Gear Box
- 9 Officer Cabin
- 10 Officer Dining Saloon
- 11 Crew Cabin



MONARCH (5) and IRIS (3) came into service in 1975 for the then-designated British Post Office, now British Telecom, principally for cable service restoration in the British home waters, and in the North Sea and the North Atlantic. Highly innovative in many respects, they have removable cable tanks enabling the depot storage of a wide variety of cable styles individually, allowing quick loading of any particular cable type to speed response to a cable interruption. This cut-away drawing shows many features common to nearly all cableships, plus the innovative feature mentioned.

#### GLOSSARY

The definitions given are related specifically to the submarine cable industry and may not cover the full range of the general sense or usage of the terms. Underlined words are those found elsewhere in the glossary.

Regarding the most important development in submarine telephone cable technology in decades, the advent of the fiber-optic mode for undersea applications, a new lexicon is in process of formation with consequent instability and inconsistency in usage. This has prompted us to attempt a brief supplementary glossary specifically for fiber-optic-related terms instead of interlacing the new terms with the existing glossary. The parts of the glossary relating to physical cable-laying activities are applicable equally to conventional cable and fiber-optic cables. Terms relating to telephonic transmission and electronic technology are generally those of the analog mode.

B

active rudder. Term for a ship's rudder with a powerful motor-driven propeller mounted to give thrust in the direction of the plane of the rudder blade; aids the ship to meneuver more precisely, particularly at slow speed and in close guarters.

A

- armor. Steel in the form of wires or tapes applied to the outside of cables.
- armor, double. The application of two layers of armor wire.
- armor, single. the application of a single layer of armor wire.
- armor, tape. Steel tape applied for protection of cable intended for direct burial on land; tape armor.
- armor wire. Zinc-coated mild or high-tensile steel wire of various gauges for the protection of — and to provide tensile strength for — seacables.
- armored cable. Cable with an outside layer or layers of <u>armor wires</u> or tapes to provide tensile strength during the laying operation, and protection while resting on the sea bottom.
- armorless cable. Cable having a stranded steel tensile strength member located inside the <u>center conductor</u>, and which has no outer armor.
- articulated. Term used partially to describe some early designs of <u>repeaters</u> made up of a jointed string of water-tight containers, intended to behave mechanically somewhat like the cable into which they were inserted.
- attenuation. A measure of the loss in electrical strength encountered by the signals sent through a cable, usually expressed as a function of frequency.

- beach anchor. The hold-fast at the shore-line for a submarine cable, usually consisting of an earth-embedded strong cross member to which the armor of the shore-end cable is connected inside the beach pit.
- beach pit. The excavation made to accommodate the joining of the sea and land portions of a cable system; sometimes finished as a concrete vault at the landing point, to accommodate the beach anchor and the beach splice.
- beach splice. The junction of the land cable and  $\frac{\text{shore-end}}{\text{cable}}$  above the water's edge at the cable landing point.
- bell mouth. Name given to a device mounted above a <u>cable tank</u> with an opening in the form of a hyperboloid of revolution, through which cable is led from the tank to the deck.
- bending radius. Term used to describe the limitation of allowable curvature of the cable.
- bidirectional. Term used to describe the transmission of electrical signals in both directions simultaneously by a single facility.
- bow sheaves. Large free-running wheels with grooved or flat circumferences, with one, two, or more wheels side by side, mounted on a 'thwartship axis at the bow of cable ships, over which cable is led aboard (or overboard) to or from the <u>cable engine</u> and the ship's cable tanks.
- bow thruster. A powerful motor-driven propeller mounted in a tunnel across the bow of the ship below the water line to swing the bow to port or starboard without any headway on the ship; also aids in maneuvering at very low speeds or astern.
- broad-band transmission. The transmission of a range of frequencies much wider than a voice channel, encompassing all of the voice channels in a multi-channel transmission system.
- buoy. A floating device of nearly spherical shape, overboarded with an anchor and line, to mark a certain geographical position (marker buoy) or the position of a cable end;

in the latter case the buoy is physically connected (rope, chain) to the cable.

hurial, direct. The instalation of <u>land cable</u> or shore-end cable directly into the ground without conduits.

C

- CCITT. Comite Consultative International de Telephonie et Telegraphie.
- cable. As related to submarine cable systems, the physical <u>facility</u> used for transmission of electrical signals between <u>termini</u>, consisting of <u>conductors</u> and <u>insulants</u>, usually in <u>coaxial</u> form, with provisions for tensile strength to permit laying in the sea, and exterior protection as required by ambient conditions.
- cable, armored. Cable with steel wires on the outside; see armored cable.
- cable, armorless. Cable without steel wires on the outside; see armorless cable.
- cable attenuation. The measure of the loss in electrical strength encountered by signals sent through the cable, usually expressed as a function of frequency and measured between reactance-free resistors representing the resistive component of the cable impedance at high frequencies.
- cable core. The part of the cable consisting of the center conductor and the dielectric.
- cable drum. Motor-driven and power-braked large cylinder with a smooth circumference and means for <u>fleeting</u>; used to <u>pick-up</u> and <u>pay-</u> <u>out</u> cable; achieves friction between the cable and the drum surface by several turns of cable <u>held back</u> or <u>drawn off</u>.
- cable engine. Industry term for the main element of the <u>cable machinery</u>, the powered <u>drum</u> or other device which performs the pick-up and controls the pay-out of cable. See also linear engine.
- cable fault location. The process of electrical testing at a <u>terminal station</u> to find the location (and sometimes the cause) of a malfunction.
- cable floats. Inflatable pillow-shaped plastic bags or empty metal drums which during the installation of the <u>shore-end cable</u> enable the cable to be kept afloat near the water's surface so that it can be pulled from the ship towards the beach. Floats are connected to the cable at regular intervals; once the cable has reached its correct position, the pennants are cut and the cable sinks to its intended resting place.

- cable joint. The connection between two pieces of <u>core</u>. Joints are made in the factory to make up <u>repeater section</u> lengths, and on board ship when cable sections have to be joined either during installation or repair. See also cable splice.
- cable, land. The portion reaching from the water's edge to the terminal station.
- cable layer. Industry term for a ship designed for cable laying; usually with cable storage tanks having capacity for hundreds of miles of cable; also usually capable of making cable repairs.
- cable machinery. Term for the mechanical devices on board a cable ship for picking up and paying out cable, <u>repeaters</u>, and <u>equalizers</u>; for repair operations <u>drum-type</u> machines are mostly used; for laying operations generally <u>linear</u> engines of the <u>caterpillar</u> or <u>multi-</u> wheel type are utilized.
- cable, main. The major portion of a total cable system represented by the part usually laid in the deeper reaches of the route, to distinguish it from the cable configurations used to come ashore, and those that are laid across land.
- cable mile. By industry, taken as 1,855.3 meters, or 6,087 feet. See also mile, nautical.
- cable pan. 1. A large container for holding up to twenty miles of armorless cable. For technical reasons, armorless cable is not stored in factory storage tanks; instead, each repeater section is stored in individual pans which can be submerged in a floodable test tank for making electrical measurements under controlled temperature conditions. Pans are transportable within the plant grounds and may be moved one by one near to the cable ship for loading.

2. Part of a recently-achieved cable repair system, the cable repair ship being designed to have pans loaded or unloaded into or from the ship, many pans being kept charged with various configurations of cable in a depot. When called for repair, the appropriate pans are put aboard promptly, saving in some instances many hours of reaction time over conventional procedures.

- cable pilot. The designation for the transmission of a supervisory pilot frequency which is inserted as close to the seacable termination as practicable and extracted likewise at the opposite terminal. See also pilot, system.
- cable plow. A device which is towed over the ocean bottom making an opening into which the seacable is placed and buried; used to protect cable against commercial fishing equipment and ship's anchors.

- cable, repair. Cable of lesser attenuation than the <u>main cable</u>, which is used in deep water repairs to permit lengthening of a <u>repeater</u> <u>section</u> without upsetting the repeater gain/cable loss relationship.
- cable, shore-end. Seacable with heavy armor (single armor or double armor depending on the water depth and other conditions) for mechanical protection in shallow water, and containing shielding to reduce electromagnetic interference.
- cable splice. The connection between two pieces of cable including the armor wires (as distinct from a <u>cable joint</u> which connects only the core); the <u>armor wires</u> of armored cable are normally connected by an <u>overlay splice</u> where the tensile strength is transferred by friction between the armor wires of the opposite cable ends.
- cable, station. The piece of cable sometimes installed from the end of the <u>land cable</u> to the <u>cable terminal equipment</u>, inside the terminal station.
- cable tank. Name given to the cylindricallyconfigured holds of cable ships; also to cable storage facilities in factories and depots.
- cable terminal equipment. The apparatus installed in the terminal stations at the ends of an undersea cable system.
- cable transition. The junction between cable ends of different designs, e.g. from <u>single armor</u> to <u>double armor</u> or from <u>shielded</u> to unshielded cable.
- cable transporter. A large movable device with a motor-driven V-grooved cable sheave and a jockey wheel to keep the cable in the groove, or a small linear engine, used to transfer cable from one tank to another or to haul cable toward and into the ship during the cable loading operation.
- cable vault. An enclosure usually located in the basement of the <u>terminal station</u> where the <u>land cable</u> enters the building and where some excess land cable may be coiled up; sometimes there is a transition between land cable and station cable in the vault.
- cableship. A ship specially equipped for cable laying or cable repair; basic equipment comprises <u>cable engines</u>, <u>hold-back gear</u>, <u>dynanometer</u>, <u>cable tanks</u>, <u>bow sheaves</u>, and <u>fault-location</u> and <u>test</u> equipment.
- carrier. A shortening of the term <u>carrier</u> <u>frequency</u>, to describe an electrical signal used to accomplish the translation of frequency bands.

- carrier, commercial telecommunications. The term applied to an organization whose function is to render telecommunications service.
- carrier, record. The term used in the United States to distinguish the organizations dealing with the transmission of the printed or written word only from those engaged in the telephone business.
- carrier telegraphy. The transmission of telegraph signals by means of discrete frequencies allowing the utilization of a wider frequency band (e.g. voice grade channel) for many simultaneous telegraph transmissions; see also multiplex.
- caterpillar gear. Industry term to describe the machinery installed on <u>cable layers</u> consisting of devices with two or more endless treads which run together tangentially to grip cable being paid out or hauled in.
- center conductor. The inner conductor of the <u>coaxial</u> structure of seacables; comes in three configurations: solid copper wire (for armored cables), solid copper wire plus surrounding copper tapes (now obsolete), and a copper tube over a stranded steel member in armorless cable.
- channel. The electrical means for one-way transmission.
- chute, stern. The name given to a structure or device located at the stern of a <u>cable layer</u>, to provide a guide for the passage of cable and submerged devices being overboarded, having a radius of curvature consistent with the allowable bending radius of the cable.
- circuit. The electrical means for a two-way transmission.
- circuit, data. The electrical means for two-way transmission of binary signals.
- circuit, telegraph. Circuit suitable for transmission of binary signals such as teleprinter signals, usually obtained by subdividing a voice circuit into as many as 24 or more telegraph circuits.
- coaxial. Term used in industry as a noun to designate the assembly of <u>center conductor</u>, <u>insulant</u>, and <u>outer conductor</u>; the portion responsible for the <u>cable's electrical</u> characteristics.
- coiling. The process of stowing cable into a cable tank, by manpower, placing the cable into flat spiral layers called flakes.
- composite center conductor. Industry term to describe a <u>center conductor</u> composed of solid copper wire surrounded with several helically-applied copper tapes. Now obsolete.

- conductor. Metallic (usally copper or aluminum) portion of the coaxial.
- cone. The structure rising in the center of a <u>cable tank</u>, in the form of a truncated cone (conic frustum), around which the cable is coiled at the inside of a <u>flake</u>. The diameter of the cone at the top is commensurate with the allowable <u>bending radius</u> of the cable. The cone tends to stabilize the load of cable in the tank against extreme ship movement, and together with the <u>crinoline</u> aids in the prevention of tangles or kinks during laying.

core. The center conductor and the dielectric.

- concentricity. Important mechanical characteristics of the core; a measure of the deviation of the center conductor position relative to its ideal location in the exact center of the dielectric cross-section.
- conditioning. A process sometimes required to modify a channel or circuit normally used for voice communications to make it suitable for the transmission of high speed binary data.
- confidence test. A test of several weeks duration to which <u>repeaters</u> are subjected before shipping in order to discover "early ailment" cases; during the test one or more critical characteristics of each repeater are continuously monitored; the repeater may be subjected to hydrostatic pressure at the same time.
- crinoline. Ring-shaped structure which surrounds the <u>cone</u> and which can be vertically adjusted so that its distance from the top of the cable coil can be kept virtually constant; together with the cone it forms a relatively narrow opening around the cone through which the cable is paid out smoothly.
- D
- data channels; data circuit. Facility for the one- or two-way transmission of binary data.
- datum line. The axis of the cable from the point it enters the linear cable engine, through the engine, and tangent to the stern sheave or chute.

deadman. Industry term for the beach anchor.

deep-sea cable. In the case of armored cable, that with a minimum amount of <u>armor</u>, sufficient to withstand the tensile forces during the laying operation but not intended for protection against physical damage which is generally considered to be almost nonexistent in deep water; <u>armorless</u> or <u>light-</u> weight cable.

- depth profile. The graphic description of the water depth along a seacable <u>route</u> where the abscissa represents the distance along the route and ordinate the water depth, usually at an exaggerated scale.
- depth recorder. The instrument which makes a continuous plot of water depth versus time. See also echosounder.
- dielectric. The insulation between the inner conductor and the outer conductor of the coaxial structure of a coaxial seacable; consists usually of high-molecular polyethylene with high insulation resistance and low dissipation factor.
- direct burial. The installation of <u>land cable</u> or <u>shore-end cable</u> directly into the ground without using conduits.
- directional filter. A combination high-pass and low-pass filter with a common branching point; used to separate the higher and lower tranmission bands of a bidirectional system.
- double armor. The application of two layers of <u>armor wires</u> to a <u>coaxial</u>, usually done to provide a high order of abrasion resistance, and also high breaking strength to resist parting by dragging anchors and trawls.
- drag coefficient. Relates drag forces on a towed cable to towing velocity and cable diameter; mostly determined by towing tests.
- draw-off gear. The <u>hold-back gear</u> becomes the draw-off gear when picking up. The draw-off device rotates (or moves) slightly faster than the drum, exerting a pull tending to tighten the turns around the drum.
- drum, cable. Industry term to designate the principal part of a <u>cable engine</u>; the cylindrical power-driven and power-braked member around which the cable passes.
- drum room. Industry term for the location on board ship where the instrumentation and control of the mechanical activity of cable laying is concentrated.
- dunnage. Wooden slats or boards that are placed between layers (<u>flakes</u>)of cable as it is coiled into a cable tank.
- dynamometer. Device to measure cable tension on board a cable ship during <u>pick-up</u> or <u>pay-out</u>; consists of a sheave over which the cable runs, located between the cable engine and the overboarding <u>sheave</u> or <u>chute</u>, and which is mechanically connected to a load cell or sensor of similar function, giving a continous read-out of tension; in another form, <u>plate</u> dynanometer, a curved plate offset upward from the cable <u>datum line</u>, over which the cable slides, exerting a force proportional to tension, read by a load cell.

- earth potential. The difference in potential between the points on the earth's surface at the terminals of a cable system.
- echosounder. Shipboard equipment which measures the distance between the ship's bottom and the ocean floor by sending out ultrasonic pulses via a transucer; the pulses are reflected at the sea bottom and the echoes are received with the same transducer; the elapsed time between sending the pulse and receiving the echo is a measure of the depth; a <u>PDR</u> (Precision Depth Recorder) is often used with the echosounder to provide an increased degree of accuracy.
- engine, cable. Synonymous with the industry term <u>cable machinery</u>, to designate the facilities for <u>pick-up</u> and <u>payout</u> of cable from a cableship.
- engine, pay-out. Industry term generally applied to the mechanism for controlling the overboarding of cable and repeaters during a normal cable-laying operation.
- equalization program. Sequence of events to determine the required <u>ocean block</u> equalizer characteristics during the laying operation and the assembly or adjustment or selection of the <u>equalizer</u> networks; related to <u>system</u> tests during laying.
- equalizer, ocean block. Assembly of networks placed in a water-tight enclosure and inserted in the cable, which reduce the level deviations accumulated over an ocean block; typically they are assembled or adjusted on board the ship during the laying operation; mechanically they are practically identical to repeaters.
- equalizers, terminal station. Adjustable networks for equlization and control of transmission parameters properly controllable at the ends of the system.
- equalizer assembly. Operation on board a cablelaying ship where <u>equalizers</u> are assembled during the laying operation after the requirement for their characterteristics have been determined by computation.
- equalizer section. A <u>repeater section</u> containing an ocean block equalizer.
- expansion matrix. A computation which reflects the nonlinear gain behavior of <u>bidirectional</u> <u>repeaters</u> with a common amplifier for both directions of transmission; permits the establishment of the margin of a system against nonlinear singing.

- extrusion. The process in cable manufacturing of applying the <u>insulant</u> in hot plastic form to the <u>center conductor</u> as it passes through the extrusion machine; also the process of applying the outer jacket on <u>armorless</u> or light-weight cable.
- F
- FIT. A unit which is used to indicate the reliability of a component or device; one FIT corresponds to a failure rate of 10 /hour.
- facility. A term used broadly to describe those things which are used for telecommunications service.
- fairlead. A shipboard device for guiding the movement of cable from or to the <u>tank</u> and to or from the deck, <u>cable engines</u>, and <u>sheaves</u>, configured to restrain the bending of the cable to the allowable <u>bending radius</u>.
- fathom. A length of six feet. One thousand fathoms approximates a <u>cable mile</u> or a nautical mile.
- fault location. Procedure of electrical tests made from a terminal station or a cableship to determine the location (and sometimes the cause) of system malfunction.
- feather edging. Industry term for boards of triangular cross-section that are placed alongside cable crossing the turns of a <u>flake</u> in a <u>cable tank</u> to avoid the undesirable concentrated compressive stresses occasioned by cables crossing at right angles under heavy weight from successive flakes above.
- final splice. Cable junction between the seaward end of the previously-installed shore-end cable and the bitter end of the cable in the cable laying ship. The final splice concludes the cable laying operation.
- first splice. Cable junction between the seaward end of previously-installed shore-end cable and the first end of the cable in the cable laying ship. The first splice commences the cable laying operation.
- five-wheel gear. Term to describe the <u>pay-out</u> engine developed in England about 1950 to enable laying of <u>rigid repeaters</u>; five <u>sheaves</u> in the same vertical fore-and-aft plane with axes athwartships, around which the cable was led over-and-under, with arrangements for by-passing the repeaters around the engine on a trolley with the ship slowed to about one knot.

- flake. Industry term for one spirally-laid-down layer of cable in a cable tank.
- fleeting. the process of moving the turns of cable that are around a cable drum in an axial direction (sliding them over) so that cable leading onto the drum may meet the surface of the drum perpendicualrly and not pile up toward the flange.
- fiber optics. <u>Facilities</u> for the transmission of light through glass fibers, used for digitized telecommunications.
- fleeting knife. Mechanical controlling device applied to the cable drum; its purpose is to move over the cable turns on the drum by the amount of one cable diameter per revolution of the drum, thereby making sure that the incoming cable is encountering the drum perpendicularly.
- flexible. Term applied to repeaters designed to behave somewhat like enlarged segments of cable, to permit their handling, storage, laying, and recovery with cable machinery not initially designed for repeatered cable systems, typified by the <u>multicontainer articulated</u> repeaters produced in the 1950-60 period; term also justifiably applied to those relatively short (about 3 to 1 lengthdiameter ratio) <u>monocontainer</u> repeaters to which the cable is attached by flexible couplings (gimbals, universal joints) permitting the repeater to safely pass around <u>drums</u> and <u>sheaves</u>.
- floating in. The process of drawing cable from a cable ship to shore by a pulling line, the cable having <u>floats</u> progressively attached so that it remains near the surface until the end is made fast ashore, after which the floats are removed allowing the cable to sink to the pre-determined location on the seafloor.
- floats, cable. Inflatable pillow-shaped plastic
   bags or empty metal drums for use in <u>floating
   in</u>. See also <u>cable floats</u>.
- flooding, tar. The application of an asphaltic tar in hot fluid state to the cable at the point of application of the <u>armor wires</u>, or just afterward; also applied to jute serving.
- G
- gain compression. Small reduction in <u>repeater</u> gain under traffic load conditions; only significant in systems with a large number of repeaters in tandem.

gear, cable. Term for cable machinery.

- grapnel. Device to grapple (hook) the cable from a cable repair ship in order to bring it to the surface; grapnels come in different configurations, their selection for use depending upon the nature of the bottom and other considerations.
- grapnel rope. Special rope connecting the cable repair ship with the grapnel during a grappling operation.
- group. The voice channels occupying a band of 48 kiloHertz, either 12 at 4 kHz spacing, or 16 at 3 kHz spacing.
- gutta-percha. Organic resin with properties suitable for a <u>cable insulant</u>; widely used for the oceanic telegraph cables of the cable telegraph era, now obsolete.
- H
- half-circuit. One half interest in the total cost of a cable circuit from terminus to terminus.
- hold-back gear. A sheave with jockey wheel coupled to the cable drum, turning a little slower on pay-out and a little faster on pick-up, to keep the cable tight so that it does not slip on the drum when under tension; properly called draw-off gear when picking up; comprised of caterpillar or paired-wheel machinery on some more recently-built cable ships.
- hydrodynamic constant. The term related to the certain physical parameters of the cable such as weight in water, outer diameter and surface smoothness; this constant is used to determine the slope of the line that a cable forms when towed through water; the unit is degree-knots.
- I
- IRU. Indefeasible Right of User, an obligation on the part of the owners of a facility to furnish to the purchaser of IRU continuing access to and enjoyment of the agreed-upon circuitry.
- ITU. International Telecommunications Union.
- inflexible. Term describing a <u>repeater</u> configuration not designed to be handled (loaded, stored, laid, recovered) in the same manner as cable; rigid.
- insulant. the material existing between the inner and outer conductors of a <u>coaxial</u> cable; <u>dielectric</u>.
- interface, ongoing. The point of connection between the seacable system and the facilities that extend the service into the telecommunications network ashore.

interlock. Circuitry and mechanical restraints which prohibit access to the high-voltage sections of cable <u>power feed</u> equipment until potentials are removed and cables appropriately and safely terminated.

J

- jacket. The outer coating of high-density polyethylene on an <u>armorless</u> or <u>light-weight</u> cable; also a coating of an <u>appropriate</u> elastomer on individual <u>armor wires</u>, such as polyvinyl chloride or neoprene, as an erosion inhibitor.
- jet-bedding. The process of fluidization of the soil of the sea-bottom by pumped water jets, to imbed cable and repeaters into the sea floor.
- jockey wheel. A wheel small in diameter compared to the <u>sheave</u> upon which it "rides", whose purpose is to maintain the cable firmly in the groove of the sheave.
- joint, cable. The union of the <u>center conductor</u> and the <u>dielectric</u> of two sections of <u>core</u>.
- jute bedding. One or more layers of jute yarn between the <u>outer conductor</u> and the armor layer so that the <u>coaxial</u> is not damaged during cable armoring and cable handling.
- jute serving. A layer of jute yarn on top of the armor to give more corrosion protection to the armor wires, to resist any tendency of displacement of the wires during handling or laying, and to reduce slippage of cable on the cable drum.

К

knitted armor wire. The preparation of the armor wires with coverings of organic (such as cotton) or inorganic (such as nylon) fibers, for purposes related to the overall cable design.

knot. One nautical mile per hour.

L

- lagging. The outer protection for cable placed on reels for shipping, consisting of boards parallel to the reel's axis fitted between the peripheries of the flanges of the reel.
- land cable. The portion of the cable of a seacable system installed on land.

- landing point. The name of the place where the cable comes ashore.
- laying effect. Change of cable <u>attenuation</u> caused by mechanical stress during the laying operation; somewhat dependent on cable laying parameters and type of laying engine.
- lead. The angle formed between the vertical plane
   of the cable being laid or picked up, and the
   lubber-line of the ship.
- leak test. A test to determine whether a repeater or equalizer housing is leak proof; mostly performed under a test pressure which is well above the actual working pressure.
- leased service. The arrangement whereby a user contracts for the exclusive--and generally continuous--use of a circuit or facility.
- life, system design. Variously stated as the useful life of a system, meaning the period over which it is reasonable to continue maintenance, or during which no unrestorable deterioration or failure of cable or submerged electronics will occur; usually taken as twenty years or more for submarine telephone cable systems.
- light-weight cable. Synonymous to <u>armorless</u> <u>cable</u>; although light in weight relative to <u>armored cable</u>, light-weight cable is considerably heavier than water.
- linear engine. Cable <u>laying engine</u> wherein the cable forms a straight line while going through the engine; principle designs are the <u>caterpillar</u> and the <u>multi-wheel</u> engine.
- load line. Structure between the tank building of the cable factory and the pier, to support and guide the cable being loaded into the cable ship.

М

- machinery, cable. The apparatus on board ship for the pick-up and pay-out of cable.
- main cable. The major portion of a total cable system represented by the part usually laid in the deeper reaches of the route, to distinguish it from the cable configurations used to come ashore, and those placed from the water's edge to the terminal station.
- mile, cable. By industry tradition, 1,855.3 meters, or 6,087 feet.
- mile, nautical. Taken generally as 1,852 meters, or 6,076 feet.

- monocontainer. Description of a <u>repeater</u> (or <u>equalizer</u>) configuration that consists of a single cylindrical chamber to which cable is attached to the ends, either <u>flexibly</u> or <u>inflexibly</u>.
- multichannel. A term used to describe a transmission system in which many circuits are operating simultaneously with commonality of facilities.
- multicontainer. Description of a repeater (or equalizer) configuration consisting of several "containers" coupled end-to-end flexibly, to which the cable connects at the end containers; also called <u>articulated</u>.
- multiplex. The modifier applied to telephony or telegraphy to indicate the build-up of a wide transmission band from many narrower ones, or the simultaneous transmission of many discrete circuits with commonality of facilities.
- multi-wheel gear. Description of a laying <u>engine</u> consisting of a number of pairs of pneumatictired wheels running tangent to each other and all in the same verical fore-and-aft plane, each pair pressed together so as to grip the cable as it is led between them in a straight line, equipped with drive and brake mechanisms that limit the shear forces, and arranged so that each pair may be successively parted to allow the passage of a repeater. Referred to also as paired-wheel.
- mushroom anchor. An anchor with special characteristics, the head of which is a portion of a hollow iron sphere, from about latitude 50<sup>0</sup> and on up, with the stock affixed inside at the "pole". Placed in mud or sand it tends to become imbedded, and is used principally as a buoy anchor or a mooring anchor.
- Ν
- nautical mile (cable). Unit of measure for cable, by industry tradition taken as 1,855.3 meters, or 6,087 feet.
- nautical mile (general). Unit for measuring oceanic distances, generally taken as 1,852 meters, or 6,076 feet.
- nonlinear singing. A possible defect in long systems having a high number of repeaters with common amplifiers for both directions of transmission; nonlinear singing may occur if there is an irregularity in the system resulting in surplus gain and if the nonlinear singing margin of the repeaters is insufficient.
- noise band, system. A frequency band outside the regular transmission band which is monitored continuously for the occurrence of excessive system noise.

0

- ocean block. Portion of a seacable system between <u>equalizers</u>, typically consisting of 10 or <u>more repeater sections</u> and 2 equalizer halfsections.
- ongoing interface. The junction between the seacable system and the facilities of inland telecommunications network on shore.
- optical fibers. Small-diameter glass strands; when clad, act as light-guides from modulated (mostly digital) light sources to light detectors; increasingly useful for wide-band telecommunications purposes.
- order wire circuit. One or more service telephone channels between <u>terminal stations</u> using frequency bands located outside the regular transmission bands.
- outer conductor. Copper or aluminum tape surrounding the <u>dielectric</u>; generally helical copper in the case of armored cable, longitudinal copper or aluminum for <u>armorless</u> cable.
- outer jacket. Plastic jacket on top of the outer conductor of armorless cable, consists of high-density polyethylene, with or without pigment.
- overlay splice. A means of preserving the continuity of the strength and protection of the armor wires at a cable junction, by cutting the coaxials shorter than the armor, and after conclusion of the joint, restoring the wires beyond the joint over the undisturbed wires of each section of cable.

P

PDR. Precision Depth Recorder; an instrument with a higher order of accuracy, and usually much larger chart trace, than the regular ship's echosounder, which, using the echosounder's pulse transmission and echo reception, produces a depth profile of desirable accuracy and size.

paired-wheel. See multi-wheel.

- pan. Containers for cable; see <u>cable pan</u> for details.
- parachute. Device sometimes affixed to <u>repeaters</u> during their transit from rest aboard the cableship to deployment over the stern, opening to form a drogue in the water, intended to slow the repeater sink rate to match the cable subsidence.

- paragutta. An <u>insulant</u> resin compounded of <u>gutta</u> <u>percha</u> and rubber, with some improved characteristics over gutta percha, used in the seacable telegraph industry until about 1950; now obsolete.
- pay-out. The process of dispensing cable from a cable ship.
- pay-out engine. On a cable-laying ship, which is usually equipped with cable engines fore and aft, the after engine, used for laying long lengths of cable over the stern.
- piano wire. Synonymous to <u>taut wire</u>; paid out during cable laying for precise measurement of distance travelled.
- pick-up. The process of inboarding cable into a cable ship from the sea bed.
- pilot, cable. Supervisory frequency inserted near the termination of the seacable and extracted likewise at the other end.
- pilot, system. Supervisory frequency inserted and extracted near the <u>ongoing interface</u>.
- pit, beach. The excavation just above the water's edge to accommodate the junction of the sea and land portions of cable, and the <u>beach</u> anchor.
- plate dynamometer. A tension-measuring device, by which the cable's straight line trajectory from engine to sheave (or chute) is slightly distorted by the cable sliding over a raised plate resting on a load cell, the output of which gives a measure of tension.
- plowing. The process of imbedding the cable into the sea-bottom as the cable is being laid, by means of a sled-like device which is pulled by the cable-laying ship.
- polyethylene. The thermoplastic synthetic polymer which, in a highly refined state, is used, in high molecular weight form, for cable <u>insulant</u>, and in high density form, for cable jacket material.
- polythene. British designation for polyethylene.
- potential, earth. The difference in potential between the points on the earth's surface at the terminals of a cable system.
- power feed equipment. Equipment designed to energize the in-water portion of a seacable system; normally consists of a constant- current source of high reliability and double redundancy.
- power separation filters. Networks designed to separate the energizing current from the transmission signals; located in repeaters, equalizers, and the power feed equipment.

- pressure coefficient of attenuation. Change of attenuation of cable per increment of a pressure unit (psi, kg/cm<sup>2</sup>); the pressure coefficient itself may be a function of pressure and frequency.
- 0
- quadrant. Portable mechanical guide consisting of a framework carrying many grooved rollers, which has the shape of a quarter circle; used during cable loading or cable transfer in order to guide the cable through a 90-degree change of direction.
- R
- RFI. Radio frequency interference. The intrusion of unwanted signals or electromagnetic noise into the cable, for which shielding is required.
- recorder, depth. That part of an echosounder which produces a continuous plot of the depth versus time.
- reel, shipping. Device upon which short lengths of cable are "spooled" for transportation, and used to facilitate placement on land.
- repair cable. Cable of lesser attenuation than the <u>main cable</u>, used in deep water repairs to permit lengthening a <u>repeater section</u> without upsetting the repeater gain/cable loss relationship.
- repair repeater. One of a group of spares manufactured concurrently with the production of the system <u>repeaters</u>, whose circuitry permits its substitution for any repeater in the system.
- repeater. Electronic device whose purpose it is to amplify system transmission signals. Placed at regular intervals along the cable, they are housed in mechanical containers able to withstand the tensile stress during the laying operation and the water pressure while resting on the sea bottom.

repeater, repair. Repair repeater.

- repeater section. Length of cable between repeaters.
- repeater supervision. The electrical monitoring of repeater performance from the <u>terminal</u> station.
- rigid. Term applied to a configuration of <u>monocontainer repeaters</u> having a length-todiameter ratio of about 10 and to which the cable is attached <u>inflexibly</u> at each end; requiring either a <u>linear laying engine</u> for deployment, or the use of <u>five-wheel gear</u> or other by-pass technique.

- route. The actual location of the cable; also, loosely, the names of the cable landing points or the system termini.
- rudder, active. One containing a motor-driven propeller with its shaft in the plane of the rudder blade, used as a maneuvering aid.

S

- SB. A system type designation, SB representing the design of the first transatlantic telephone cable system, and SD, SF, and SG representing later generations of development.
- sea-earth cable. Cable connecting the earth terminal of the power feed equipment with the sea-earth electrode.
- sea-earth electrode. Electrode or set of electrodes connected to the end of the seaearth cable, intended to afford the seacable system freedom from station earth potential disturbances; generally essential in direct current cable telegraphy.
- service channel. Means of communication between cable <u>terminal stations</u> using frequency bands outside the regular transmission bands; same as order wire.
- shaving. Process in cable manufacture of sizing the extruded <u>dielectric</u> precisely within tolerances as specified, and the required degree of concentricity with respect to the <u>center conductor</u>, before application of the outer conductor.
- sheaves. The wheels at the bow of all cable ships and at the stern of some, over which the cable passes when entering or leaving the ship in laying or recovery operations; also variously-sized V-grooved wheels in other devices, such as cable transporters.
- sheaves, bow. The two or more free-turning wheels, generally of diameter above six feet, mounted on a 'thwartship axis at the bow.
- sheave, stern. The wheel at the stern of a cable-laying ship (as distinct from a cable repair ship which usually has no stern sheave).
- shielding. The provision of materials (iron or copper tapes, lead extrusions) on the outside of the <u>coaxial</u> under the <u>armor</u> to reduce electromagnetic interference.
- shore-end cable. Seacable with heavy armor (single armor or double armor depending on the water depth and other conditions) for mechanical protection in shallow water, and containing shielding to reduce electromagnetic interference.

single armor. One layer of steel wires.

- slack. The difference between the length of cable paid out and the geographic distance along the bottom contour.
- solid-state. Description of a repeater which contains no thermionic devices; transistorized.
- splice, beach. The junction between the sea portion and the land portion of a cable system.
- splice, final. The junction between the seaward end of the previously-laid <u>shore-end cable</u> and the bitter end of the <u>main cable</u>.
- splice, first. Cable junction between the seaward end of a previously-installed <u>shore-end cable</u> and the first end of the cable in the cablelaying ship; the first splice commences the cable-laying operation.
- splice, overlay. A procedure by which the strength of the <u>armor wires</u> is maintained at the junction between two sections of <u>armored</u> <u>cable</u>.
- station cable. The portion of cable between the cable vault and the terminal equipment.
- station, terminal. The physical plant comprising shelter, utilities, and the cable system terminal equipment.
- stern chute. In laying cable over the stern, the last mechanical element cable and repeaters pass before they go into the water is the stern chute (or <u>stern sheave</u>); a guide element whose radius of curvature should exceed the <u>bending radius</u> of the cable.
- stern sheave. The wheel at the stern of a cable laying ship over which the cable and repeaters are deployed into the sea.
- stop band. The frequency band between the two transmission bands of a bidirectional system.
- stopper. The means by which a cable can be made fast without cutting or bending; by one means, a piece of grapnel rope is attached to the cable using the <u>overlay</u> splicing technique; the bight of the rope is terminated in a thimble which can easily be connected to more rope or chain, anchors, etc.; other devices such as self-tightening grips and pre-formed wire stoppers are also used.
- storage tank. Large cylindrical <u>tanks</u> are located in the cable factory or depot for the storage of several types of seacable; depending on the diameter of the cable these tanks can hold hundreds of miles of cable; some tanks may be flooded and have facilities for water circulation for temperature stabilization preparatory to electrical measurements.

- supergroup. Five groups, the voice channels occupying a banwidth of 240 kiloHertz, 60 at 4 kHz spacing or 80 at 3 kHz spacing.
- supervisory equipment. Equipment located at the terminal station for the purpose of monitoring repeater performance.
- surround tapes. The copper tapes which were helically applied to a central copper wire, to form a <u>composite center conductor</u> consisting of the central wire and three tapes; an obsolete configuration.
- system. A term used to designate the collection of apparatus, facilities, wires, cables, or whatever, to comprise a two-directional broadband pathway for telecommunications transmissions.
- system design. The proper relationship of all system parameters such as basic noise, intermodulation noise, circuit capacity, overload margin, cable characteristics, sea-bottom profile and temperatures, repeater characteristics, equalization margins, etc.
- system design life. Variously stated as the useful life of a <u>system</u>, the period during which it is intended to be economically satisfactory to continue the system in service, or the period over which there will be no significant deterioration of the cable or the submerged electronics; usually taken as 20 years or more.
- system noise band. A frequency band outside the regular transmission band which is monitored continuously for detection of the cccurrence of excessive system noise.
- system pilot. A supervisory pilot frequency which is inserted near the <u>ongoing interface</u> of one <u>terminal station</u> and extracted near the ongoing interface of the other terminal stations.
- system tests during laying. Upon completion of the <u>first splice</u>, the first <u>ocean block</u> of the system is energized and transmission tests are continuously made from which required <u>equalizer</u> characteristics are computed; repeated for successive ocean blocks.

Т

- TASI. Acronym for time assignment speech interpolation equipment, enabling the effective expansion of the number of useful <u>voice</u> <u>circuits</u> in a <u>system</u>.
- TAT. Acronym formed from transatlantic telephone, referring to submarine cables, TAT 1 being the first, in 1956.

- tank, cable. The cable stowage spaces aboard a cable ship, cylindrical in from with a center <u>cone</u>; also at cable factories and depots, similarly for cable storage.
- tape armor. Steel tapes helically applied to cable for physical protection from damage from the back-filling of land cable trenches in direct-burial installations.
- tar flooding. The application of asphaltic tar in a hot fluid condition to armored cable at or near the point of armoring.
- taut wire. A small-guage high-tensile steel wire which is overboarded with an anchor and paid out with controlled tension over the stern of the cable ship during the laying operation; the length of the wire is continuously measured and thus provides the exact distance between the ship and the fixed geographical starting point. This information is used to determine <u>slack</u>, and as a corroborative aid to navigation; called also <u>piano wire</u>.
- temperature coefficient of attenuation. Change of <u>attenuation</u> per degree centigrade temperature change; the temperature coefficient itself may be a function of temperature and frequency.
- temperature profile. Graphic representation of the sea bottom temperatures along the <u>route</u>; for the shallow-water portion the seasonal fluctuations of the temperatures are also shown.

terminal equipment. Equipment located at the <u>terminal station</u> and consisting of: <u>Power feed</u> equipment <u>Wide-band</u> transmission equipment <u>Repeater supervision</u> equipment <u>Fault location</u> equipment <u>Pilot</u> monitoring equipment <u>Interface</u> equipment <u>Multiplex</u> equipment (if required) <u>Order wire</u> <u>Carrier supply</u>

- terminal station. The physical plant (buildings, utilities) near the <u>landing point</u> of the seacable system, containing the <u>terminal</u> equipment.
- terminus. The name of the place at which the <u>terminal station</u> is located.
- test, system, during laying. Upon completion of the <u>first splice</u>, the first <u>ocean block</u> of the system is energized and transmission tests are continuously conducted from which equalizer characteristics are computed; repeated for successive ocean blocks.
- thruster, bow. The motor-driven propeller in the 'thwartship tunnel near the bow.

- transistorized. Equipped with <u>solid-state</u> devices in lieu of thermionic vacuum tubes, to distinguish the current generation of <u>repeaters</u> and <u>terminal equipment</u> from earlier systems which were dependent upon long-life tubes.
- trough. A guide structure for the transit of cable and repeaters along the deck; in the cable factory, the facility for cooling the extruded core to ambient temperature.
- U
- unidirectional. Term describing <u>repeaters</u> configured for transmission in one direction only, requiring twin facilities for complete comeand-go service; characteristic of the first transatlantic telephone cable system.

V

- voice circuit. A means for the intelligible interchange of human speech in the approximate range of a few hundred to a few thousand Hertz, with bandwidths of about 3 or about 4 kiloHertz.
- voice grade circuit. A circuit suitable for use as a <u>voice circuit</u>; sometimes used for purposes other than the interchange of speech.

W

- wheel, jockey. Small wheel riding in the groove of a larger wheel, to help keep cable securely running in the groove.
- whiting. A chalk and water slurry applied to cable that has been previously <u>tar-flooded</u>, to discourage sticking of adjacent turns or adjacent <u>flakes</u> in the ship's cable <u>tanks</u> during laying.
- wire, armor. Galvanized mild steel wires for application in one or two layers for installations relatively shallow; galvanized high tensile steel wires for application in a single layer for relatively deep water.
- wide band. Synonymous with <u>broad band</u>; also modifier for <u>facility</u> indicating capability of broad band transmission.

Х

X-ray procedure. The universal industry requirement that every joint made in the factory or aboard ship shall be X-rayed with 3 shots rotated 120° and the results examined for voids or contaminants in the insulant before the outer conductor is applied.

#### SUPPLEMENT TO GLOSSARY

## SOME FIBER-OPTIC TERMS

It is not presently within the scope of this compendium to provide a comprehensive technical glossary of fiber-optic submarine telephone cable terminology--indeed it will be obvious that this small supplement falls far short of adequacy.

The few terms shown here were chosen to aid the non-technical reader in approaching the strange new world of fiber-optic--or lightwave--or lightguide--telecommunications.

#### ADPCM

Adaptive Differential Pulse Code Modulation. Process by which <u>analog</u> signals are converted to digital form.

#### analog

From the term "analogous" to denote the relationship of the converted electrical signal to the un-converted source, as, for example the intensity of sound pressure relating to the value of electrical potential, or the frequency of the sound source to the frequency of the electrical signal.

#### bit

Binary digit. In <u>digital</u> transmission, the elemental unit of information, corresponding to a two-condition, i. e., binary, situation: zero or one, or "on" or "off".

#### bit rate

The measure of how many <u>bits</u> per unit of time are accommodated by the transmission system; in fiber-optic technology, usually expressed in Megabits per second (millions of bits per second)

## cabling

In the construction of fiber-optic cables, the <u>fibers</u> are formed around the axis of the cable structure in a helical mode and the optical behavior of the fibers relates to the process of formation; thus there are "cabling losses" for instance.

#### cladding

The <u>fibers</u> are encased in protective sheaths of appropriate plastic material with specific refractive indexes, the sheath material being called "cladding".

## conversion, A-D and D-A

The transformation of an intelligence-carrying signal from <u>analog</u> to <u>digital</u> form, or vice-versa.

#### digital

In <u>binary</u> form, as for an intelligence-carrying signal consisting of a stream of <u>bits</u>, the occurrence and distribution of the zeros and ones determining the value of the analog.

#### fiber

In <u>lightwave</u> technology, a silica-based glass monofilament drawn to a diameter of about 125 µm.

#### housing, pressure

1. The enclosure in the cable structure that is impervious to pressure; the metal tube that contains the <u>fibers</u>;

2. The enclosure that contains the electronic submerged equipment in a cable system.

#### jointing, fusion

The procedure for joining <u>fibers</u> so as to create a continuous fiber obviously necessary in cable fabrication, and for joining fibers in performing a repair of a severed cable.

#### laser diodes

Diodes that produce coherent light in response to electrical stimulus, that are coupled to <u>fibers</u> physically and inject light pulses that flow through the fiber to a receiver at the far end.

#### lightguide

Term formerly in general use to describe transmission of intelligence by means of light through conduits, initially hollow tubes but not exclusively so defined; <u>lightwave</u>.

#### lightwave

Term denoting transmission of intelligence by means of light pulses in a conduit or via an optical fiber, formerly in general use; now mostly succeeded by the term "fiber optic".

#### photodetectors

Semiconductors whose electrical characteristics alter with the presence of illumination, thereby converting light pulses into electrical pulses.

#### regenerator

Electronic device which, upon receiving a bit that may be degraded in pulse form or position, will recognize the bit and in response, send forward a re-constructed bit with renewed shape and position; term also applied to the entire submerged device which receives degraded light pulses, converts to electrical pulses, recognizes the character of the bit, produces a re-constructed bit, converts this to a light pulse which is then transmitted forward. In some literature the regenerator is called an optical repeater.

#### wavelength

A characteristic of any monochromatic light flux, relating inversely to the frequency of the light and to the speed of light in vacuum. Current developments in fiber-optic telecommunications technology have singled out as optimun light of 1.3 micro-meters wavelength. Halsey, R. J. and Duerdoth, W. T., "The First Submerged Repeater", <u>The Post</u> Office Electrical Engineers' Journal, Vol. 37, Part 2, July 1944

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Cableship VERCORS is part of the fleet of the Ministry of Posts and Telegraphs of France. One of the larger cable-layers, VERCORS is equipped to handle the sea-bottom plow used to sequester cables beneath the sea floor. Commissioned in 1974, VERCORS has been joined recently by the two newest French cableships LEON THEVENIN and RAYMOND CROZE.

#### LIST OF SIGNIFICANT CABLESHIPS

#### SINCE 1900

Cableships--and conversions to cableships--are listed here in approximate chronological order.

The Ship Reference Number is taken from this contractor's data files and is as seen in his book <u>Cableship Characteristics</u> (Second Edition, 1980). The first two digits indicate the decade, i. e., 00=1900-1909, 10=1910-1919, and the second two digits are assigned to the vessel, to remain throughout the life of the ship.

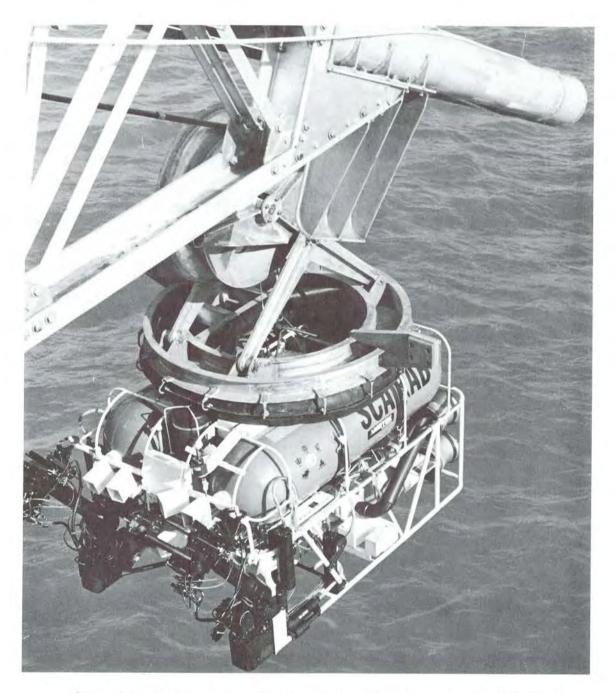
Date A is the year built or commissioned, or re-named

Date B is the year retired, or lost, or sold out of the cable world.

SHIP REFEREN NUMBER	ICE NAME (S)	DATE	B				
0001	JOHN PENDER (2)	1900	1928	1008	ALERT (2)1	1918	1945
0002	IRIS (1)	1908	1928	1009	ESKILL	1911	
	AS RECORDER (2)	1929	1952		AS JEHANDER NO. 5 AS OSLANDSAND	1946	
0003	COLONIA	1902	1928		AS CABEL AS ETTAN AS KABEL (2)	1970 1971 1974	1979
0004	LADY LAURIER	1905	1959	1010	WAR SIMDON	1918	1919
0005	STEPHAN	1902	1926	1011	KABEL (1)	1918	1940
0006	HENRY HOLMES	1903	1950				1,240
0007	PACIFIC	1903	1935	2001	AS CABLESHIP	1920 1941	1947
0008	PATROL	1903	1933	2002	LADY DENISON PENDER	1920	1963
0003	RESTORER	1903	1952	2003	ALL AMERICA	1921	1961
0010	CAMBRIA	1905	1945	2004	EDOUARD SUENSON	1922	1968
0011	GROSS HERZOG VON OLDENBURG AS CITTA DI MILANO	1905	1943	2005	JOHN W MACKAY	1922	
0012	CORMORANT (2)	1906	1922	2006	MARIE LOUISE MACKAY	1922	1961
0013	DGASAWARA MARU	1906	1945	2007	RAMPIND AS CABLESHIP	1922 1943	1953
0014	AS SENTINEL II	1905 1918	1924	8005	STORE NORDISKE AS OHTAKA	1922	1972
0015	GUARDIAN	1907	1940	2009	FARADAY (2)	1923	1941
0016	JUAN AS BJORNOY	1908 1934		2010	MIRROR (2)	1923	1964
	AS REINA AS CASTILLO DLMEDO	1937 1939		2011	UNASSIGNED		
	AS CABLESHIP	1944	1968	2012	UNABSIGNED		
0017	JOSEPH HENRY AS THALIS D MILISSIDS	1909 1946		2013	NORSEMAN (4)	1923	1964
0018	RETRIEVER (3)	1909	1940	2014	CABLE ENTERPRISE (1)	1924	1960
0019	SAMUEL MILLS	1909	1 340	2015	CYRUS FIELD	1924	1966
cors	AS PEQUOT	1955	1955	2016	THE CABLE	1924	1935
0020	TELCONIA	1909	1932	2017	ZUIDERKRUIS	1924	1938
0021	VIKING	1901	1945	2018	NANYO MARU	1925	1944
0022	AS MAGNET, AS CABLESHIP	1904 1904	1923	2019	DOMINIA RS NIKOLAI EJOV	1926 1937	****
0023	CORMORANT (1)	1903	1908	2020	NEPTUN (1)	1926	1945
				2021	LANDEGO	1927	1942
1001	RAMOS	1912	1945	2022	GIASONE (1)	1929	1940
1002	EDOUARD JERAMEC AS PIERRE PICARD	1913 1945	1952	3001	AMPERE (2)	1930	1944
1003	TRANSMITTER AS ARAGO	1914	10/2	3002	MATAI	1930	1963
1001		1932	1946	3003	MANKO MARU	1934	1953
1004	NDRDENEY AS CABLESHIP AS ALERT (3)	1915 1922 1945	1960	3004	ELLERY W NILES AS F V HUNT AS CABLESHIP	1937 1937 XXXX	1977
1005	LORD KELVIN	1916	1966	3005	ELVESHORN	1937	
1006	MONARCH (3)	1916	1945		AS POOLSTER (1) AS INGENIEUR-EN-CHEF HANFF	1946	1953
1007	EMILE BAUDOT	1917	1962		And an an an and an an and a state of the second se		227

3006	JOP	1937	1950	4027	NORDKABEL (1)	1948	1969
3007	TOYO MARU	1937	1945	4028	EMPIRE FROME	1948	
3008	DIETRICH AHRENS	1938	1945		AS OCEAN LAYER, AS CABLESHIP	1953	1959
3009	HOWEWEG	1938	1944	4029	POOLSTER (2)	1948	1969
3010	LASSO	1938	1959	4030	EDWARD WILSHAW	1949	1979
3011	NORDERAU AS KLAVDIA NIKOLAEVA	1938 1945	xxxx	4031	OLWE AS CABLESHIP	1940 1943	1945
3012	ALSACE	1939	1972	4032	LSM 275	1944	
3013	ARIEL	1939	1973		AS PORTUNUS (ARC 1), AS CABLESHIP AS MEDUSA	1952	
3014	WESTERN UNION	1939	1974		Ha HEDOSH	1959	1959
3015	UNASSIGNED						
3016	NEUENFELDE	1939	10000	5001	DAME CAROLINE HASLETT	1950	
	AS CABLESHIP	1954	1958	5002	AMPERE (3)	1951	
				5003	IRMGARD PLEUGER	1952	1953
4001	BULLFINCH	1940	1975	5004	STANLEY ANGWIN	1952	1972
4002	IRIS (2)	1940	1976	5005	RECORDER (3)	1954	
4003	C E KRARUP (2)	1941	1961	5006	TSUGARU	1955	
4004	GIASONE (2) AS D'ARSONVAL	1941 1945	1965	5007	PRESIDENT KRUGER AS NEPTUN (2)	1955 1959	1961
4005	KONGO MARU	1941	1945	5008	NORDENHAM AS CABLESHIP	1956 1956	1963
4006	OSEI MARU AS CABLESHIP	1941 1946	1953	5010	SETO MARU	1956	
4007	TSURUSHIMA MARU	1941	1968	5011	TELEKABEL	1958	
4008	BUTJADINGEN	1942	1945	5012	SEITOKU MARU NO. 1	1959	
4009	KAIKD MARU	1942	1956	6000	PHOTINIA	1961	
4010	MURRAY (ACM 9)	1942	1336		AS CABLESHIP	1962	
	AS TRAPPER (WARC 333) AS YAMACRAW (ARC 5)	1944	1965	6001	AMAKUSA MARU	1960	
4011	BASIL O LENOIR	1944	1973	6002	ALERT (4)	1961	
4012	BULLFROG	1944	1375	6003	MARCEL BAYARD	1961	1981
	AS RETRIEVER (4) AS CABLE RESTORER	1946 1961		6004 6005	PETER FABER (2) RETRIEVER (5)	1961 1961	
4013	COLONEL WILLIAM A GLASSFORD (AG 142)	1944		6006	INGUL	1962	
	AS NASHAWENA (YAG 35) AS OMEGA	1944 1960	1071	6007	JANA	1963	
4014	TESSY	1944	1971	6008	MERCURY	1962	
4014	AS DELFIN AS TESSY	1957		6009	NEPTUN (3)	1962	
	AS KABEL JAU, AS CABLESHIP	1966	1971		AS CABLE VENTURE	1976	
4015 4015	STANELCO	1944	1969	6010	SIRPA DAN AS NORTHERN, AS CABLESHIP	1962 1968	
4016	ST MARGARETS	1944		6011	LONG LINES	1963	
4017	BULLHEAD AS ELECTRA (2)	1945 1946		6012	CABLE ENTERPRISE (2)	1964	
	AS CABLE GUARDIAN	1959	1964	6013	JOHN CABOT	1965	
4018	SUIEI MARU NO. 5	1945		6014	SAKATA MARU ND. 12	1965	
4019	WILLIAM H G BULLARD AS NEPTUNE (ARC 2)	1945 1953		6015	PEGGY G	1966	1981
	AS NEPTUNE (T-ARC 2)	1973		6016	KDD MARU	1967	
4020	ALBERT J MYER AS ALBERT J MYER (T-ARC 6)	1946 1966		6017	DIRECTEUR GENERAL BAST	1969	
4021	MONARCH (4)	1946		6018	ZNA	1969	
	AS SENTINEL (2)	1971	1977	6019	TSUGARU MARU	1969	
4022	TURANDOT (AKA 47) AS AEOLUS (ARC 3), AS	1946		6020	DONETS	1969	
	CABLESHIP AS AEOLUS (T-ARC 3)	1954 1954		6021	ZEYA	1969	
4023	VANADIS (AKA 49)	1946		6022	NORDKABEL (2)	1969	
2012	AS THOR (ARC 4), AS CABLESHIP	1954		6023	PUTSAARI	1965	
	AS THOR (T-ARC 4)	1973	1975	6024	DENKO MARU	1969	
4024	SORKABEL	1947		7001	KATUNJ	1974	
4025	CHIYODA MARU	1948	1974	7002	MONARCH (5)	1974	
4026	HUMMEL AS CABLESHIP	1948 1948	1964	7003	IRIS (3)	1975	

7004	UNASSIGNED		7021	FUTAMI
7005	TAVDA	1977	7022	SETOUCHI MARU
7006	INGURI	1978	8001	MUROTO
7007	YOUDIAN YIHAO	1976	8002	EMBA
7008	VERCORS	1975	8003	NEPRYADVA
7009	NEWTON	1975	8004	SETUN
7010	SKAGERRAK	1976	8005	ZEUS (T-ARC 7)
7Ø11	KUROSHIO MARU	1976	8006	PETER FABER (3)
7012	UNASSIGNED		8007	PACIFIC GUARDIAN
7013	UNASSIGNED		8008	UNNAMED (GREECE)
7014	UNASSIGNED		8009	UNNAMED (U S A)
7015	SEELEICHTER 1	1971	8010	UNNAMED (U S A)
7016	UNASSIGNED		8011	RAYMOND CROZE
7017	ELEKTRON	1969	8012	LEON THEVENIN
7018	RAVENSWORTH	1960	8013	UNNAMED (T-ARC 8)
	AS FLEXSERVICE, AS CABLESHIP	1975	8014	KOYOO MARU
7019	UNASSIGNED		END	
7020	APACHE	1979		

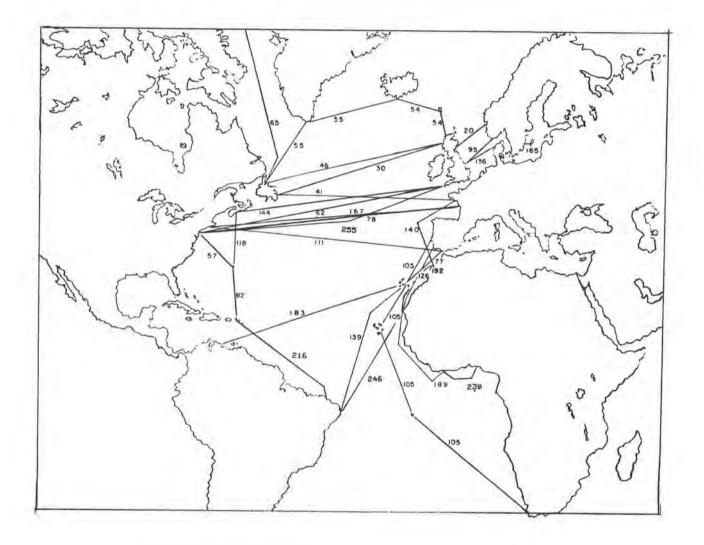


Since about 1970 there has been increasing utilization of remote-controlled undersea vehicles for various tasks in cable work, such as inspection of the burial of cable and submerged electronic units, and the location and retrieval of buried cable. Here is seen the unmanned submersible vehicle SCARAB being deployed from cableship SENTINEL just before the retirement of that ship in 1977.

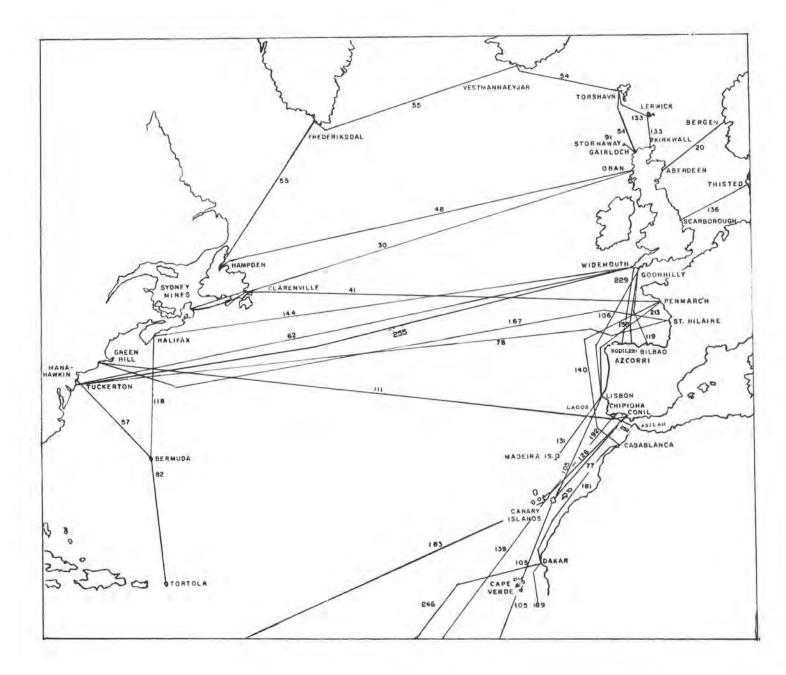
# MAPS OF SUBMARINE TELEPHONE CABLE INSTALLATIONS

It is impossible to portray with clarity all of the world's submarine telephone cable systems on a single map. Therefore a collection of regional maps has been assembled, and is presented in the following pages.

Region	Page Number
Atlantic Ocean, Main Routes	402
North Atlantic Ocean	403
West Indies; Caribbean Sea	404
United Kingdom; Northern Europe	405
Western Mediterranean Sea	406
Eastern Mediterranean Sea	407
Canary Islands	408
Pacific Ocean, Main Routes	409
Western Pacific Ocean	410
Eastern Pacific Ocean	411
Oahu, Hawaii	412
Southeast Asia	413
Japan	414
Sagami Bay	415
Okinawa	416



# ATLANTIC OCEAN



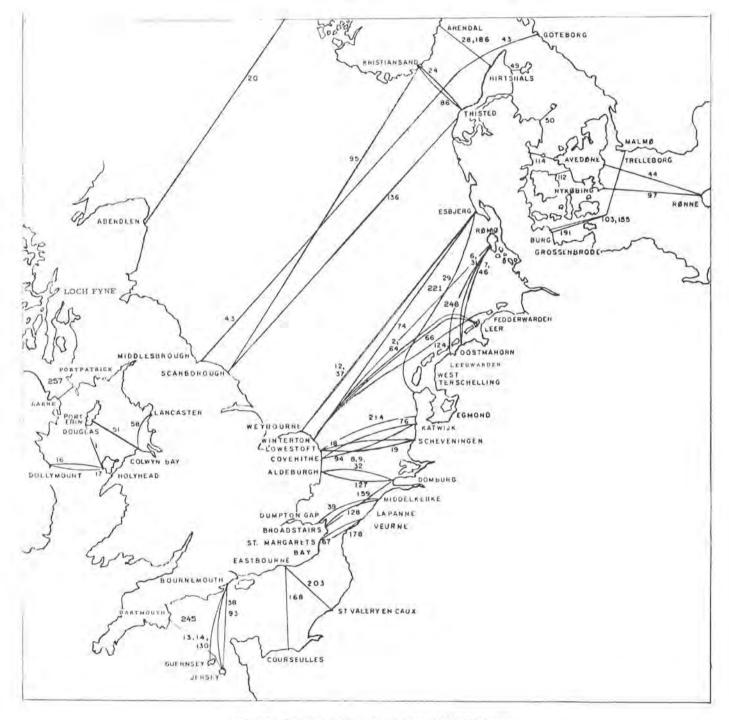
- 10-

# NORTH ATLANTIC OCEAN

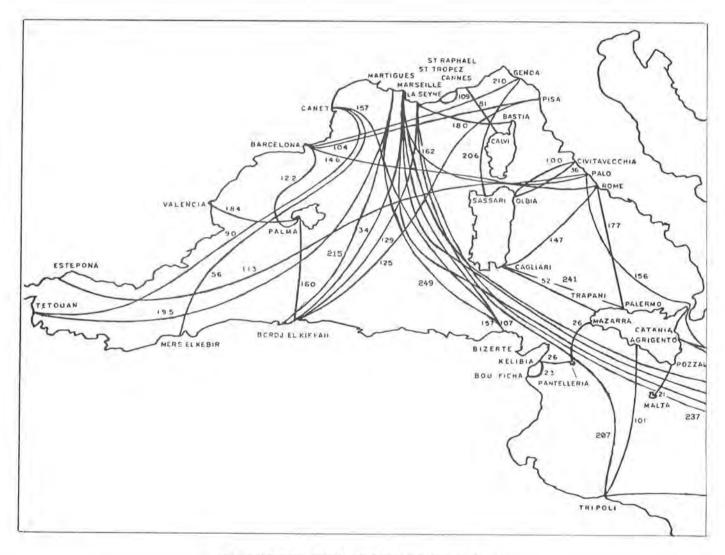


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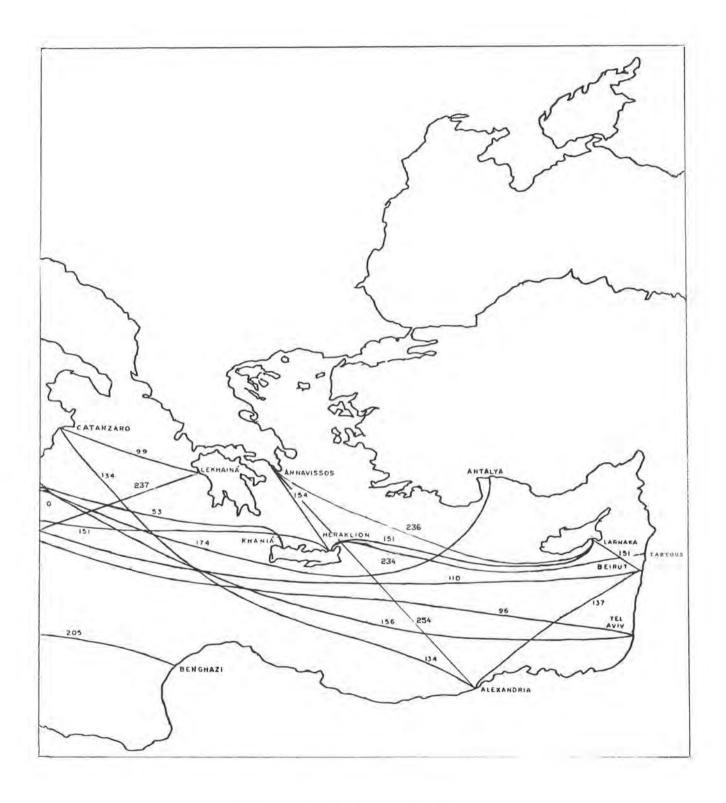
# WEST INDIES - CARIBBEAN SEA



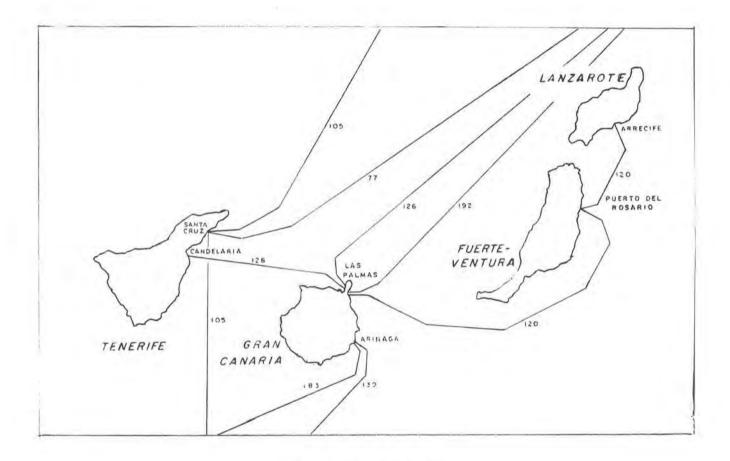
UNITED KINGDOM - NORTHERN EUROPE



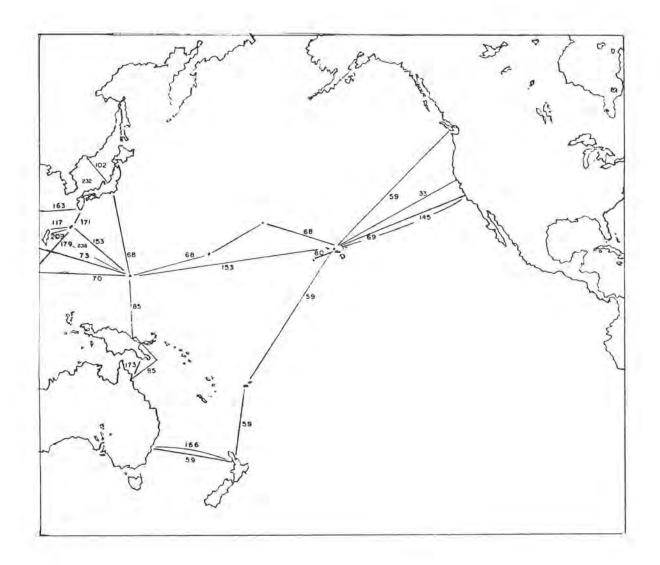
## WESTERN MEDITERRANEAN SEA



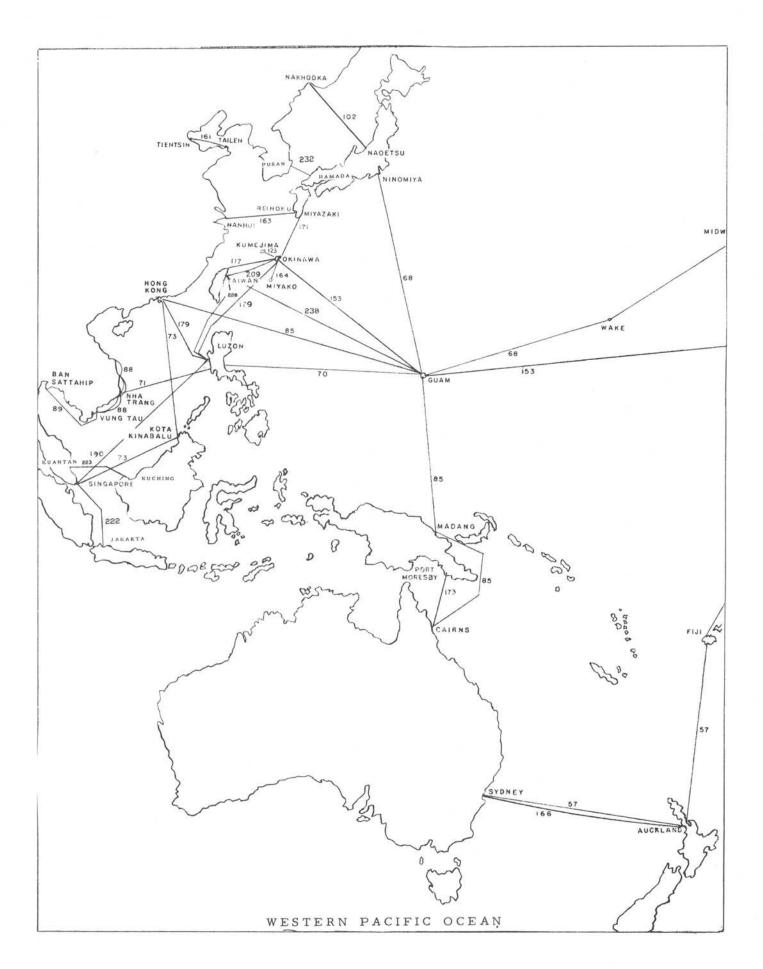
### EASTERN MEDITERRANEAN SEA

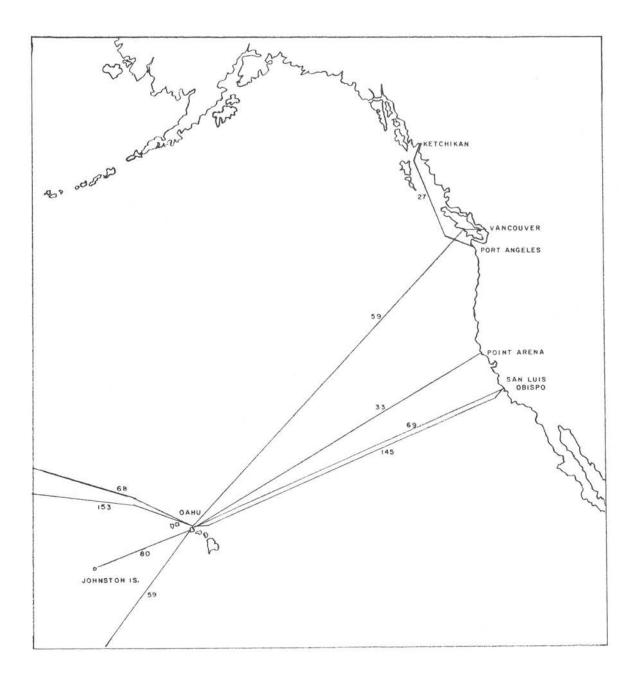


CANARY ISLANDS

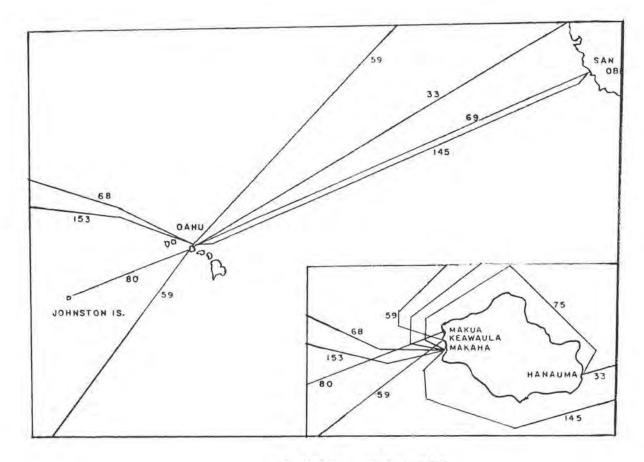


PACIFIC OCEAN



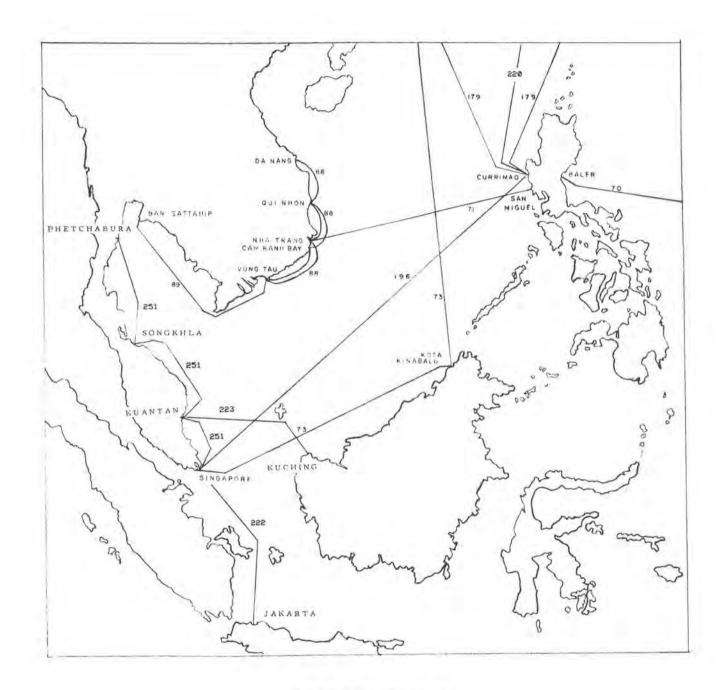


# EASTERN PACIFIC OCEAN

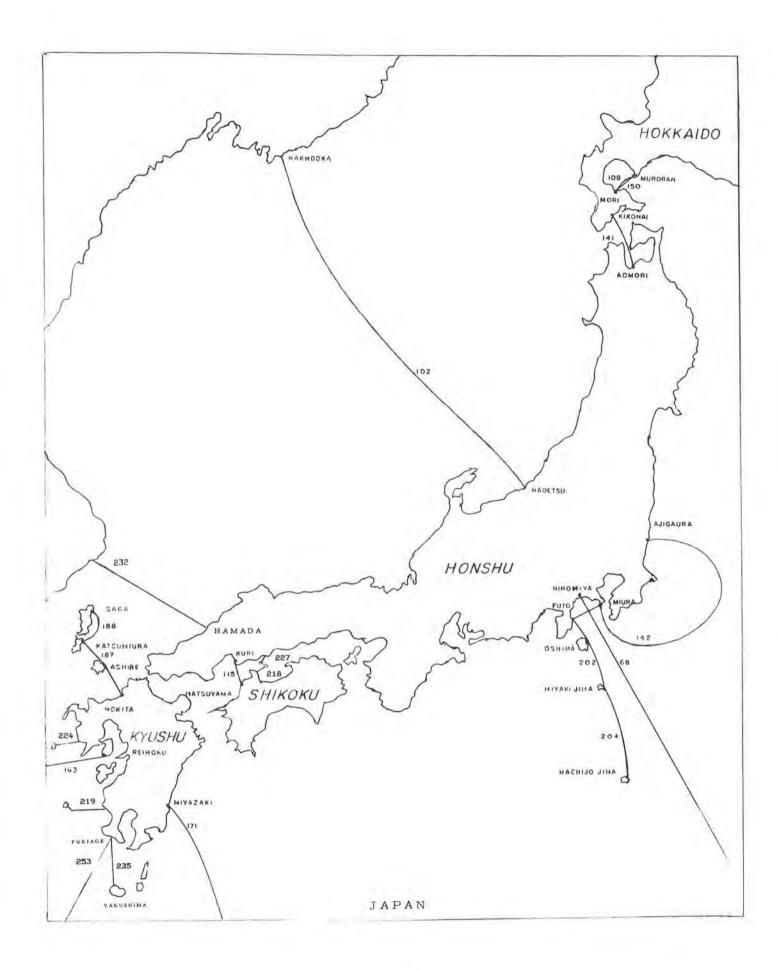


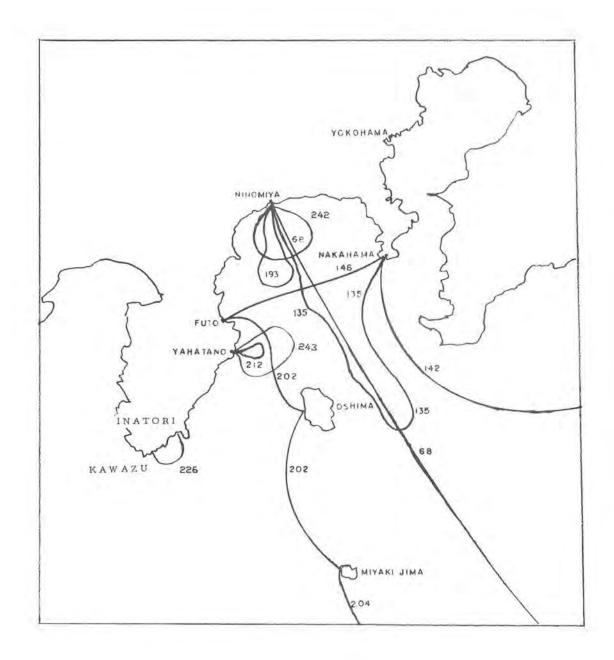
and a lot of the

OAHU, HAWAII

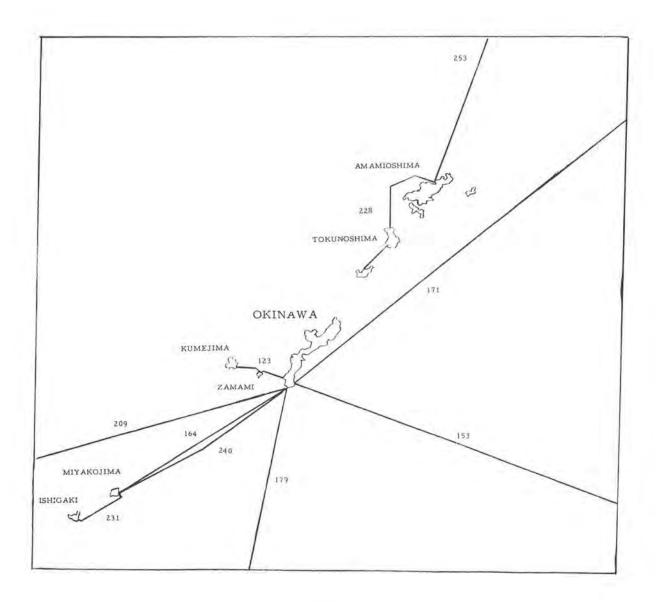


SOUTHEAST ASIA





SAGAMI BAY



### OKINAWA

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