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////	WORLDWIDE UTE NEWS	////
////	An Electronic Club Dealing Exclusively in Utility Stations	////
////	Special Report 04 July, 1996	////

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THE GLOBE WIRELESS NETWORK
by Ary Boender

This WUN special report is a review of the vast maritime network of Globe Wireless. I'd like to express my gratitude to the people at Globe's for their kind co-operation and for providing all this info. -Ary Boender-

The Globe Wireless Network

Globe Wireless (formerly KFS World Communications) based in Half Moon Bay, California, is a maritime communications service provider dedicated to the modernization of HF radio for marine applications. The new service, GlobeEmail, is revolutionizing HF radio data communications. A complete range of data communication services - including electronic mail, fax, telex and telegrams - is available worldwide. The company offers all messaging services through the Global Radio Network of HF coastal radio stations.

o QSL info

Reception data from numerous receiving locations, worldwide, is needed to confirm the coverage area of the network, and especially the newer stations. For this reason, the Globe Wireless Engineering Department is requesting assistance from interested listeners.

Send in your reception reports and you will receive a handsome QSL card suitable for display in your radio shack. Every listener is eligible to receive one QSL card for each Globe Wireless coast station received and correctly reported. Reports are needed from ships at sea, as well as listeners on shore.

"We find reception reports from listeners extremely useful," said Rod Deakin, Chief Engineer, Globe Wireless. "They include valuable technical information and we are happy to send QSL cards in return."

Globe Wireless SITOR transmitters can be easily recognized. They broadcast a unique "free signal" pattern, followed by the station's call sign, when not otherwise in use. Similarly, available CW transmitters broadcast a repetitive "wheel" including the call sign and other information. The 6 traditional maritime HF bands - 4, 6, 8, 12, 16 and 22 megahertz - are utilized by Globe Wireless stations.

To be of maximum value to the Globe Wireless Engineering staff, reception reports should contain the following information:

- # Date and Time (UTC) of your reception
- Call Sign (QRA) of the Globe Wireless network station heard
- Either the actual frequency (QRG), or ITU channel number
- Mode of transmission heard (SITOR, CW, etc.)
- Signal strength (QSA) and quality
- Any interference (QRM) heard on frequency, or on adjacent channels
- # Did you hear traffic or idle signals? If traffic, whom was Globe working?
- Model number of receiver and type of antenna used
- Location (QTH) of your receiving station
- Any other comments

Include a complete mailing address with all reports so that Globe may send your QSL card by return post. Ships are requested to include either the address of the vessel's home port or the Radio Officer's personal address. Please send your reception reports for all Global Radio Network stations to:

GLOBE WIRELESS
ATTN.: ENGINEERING DEPARTMENT
ONE MEYN ROAD
HALF MOON BAY, CA 94019 USA

o Palo Alto Radio / KFS

Palo Alto Radio, call sign KFS, is a proud and historic radio station on the West coast of the United States. It has been on the air, continuously, since 1912, including throughout both world wars. It is the flagship station of Globe wireless.

Transmit site

The KFS transmit site is located in the city of Palo Alto, (Santa Clara county) California. The Latitude is 37 degrees, 26 minutes and 44 seconds North; the Longitude is 122 degrees, 06 minutes and 44 seconds West; and the ground elevation is 5 feet. The site is in a marshy area near the southern end of San Francisco Bay. The antenna complement includes twelve full-wave dipoles, two inverted cones and a loaded vertical for MF. Seventeen transmitters are in use for CW, SITOR and GlobeEmail service on MF and HF. Some Press Wireless (World War II vintage) transmitters are still on-line.

The base of the original antenna tower with its 1921 inscription is still visible. The landline call sign of the site used to be MX for Marsh Transmitter.

Receive site

The receivers for KFS are located six miles south of Half Moon Bay, (San Mateo county) California. The Latitude is 37 degrees, 23 minutes and 03 seconds North; the Longitude is 122 degrees, 24 minutes and 38 seconds West. The site is on a 150 foot cliff overlooking the Pacific Ocean. The antenna complement includes three log-periodic dipole arrays, several wire V-beams and several rhombics. The receivers in use for CW are Watkins-Johnson model 8271 and for SITOR TCI 8074 are used. The landline call sign of the site used to be LO for Lobitos Creek which runs into the ocean on the Southern boundary of the 200 acre property.

o Hawaii Radio / KEJ

Hawaii Radio, call sign KEJ, is a new coastal radio station constructed by Globe wireless in early 1995. It is located on the island of Molokai in the Hawaiian Islands, Pacific Ocean.

Transmit site

The KEJ transmit site is located near Kahalelani, Maui county, Hawaii. The Latitude is 21 degrees, 10 minutes and 45 seconds North; the Longitude is 157 degrees, 10 minutes and 49 seconds West; and the ground elevation is 640 feet.

The antenna complement is five quarter-wave vertical's with elevated ground planes. Five Henry two kilowatt transmitters are in use for SITOR service on HF.

Receive site

The receivers for KEJ are also located near Kahalelani. The shared receive antenna is an omni-directional cone array. The receivers in use are TCI model 8074.

o Goteberg Radio / SAB

Goteberg Radio, call sign SAB, operates Globe wireless transmitters from a location in Sweden. The station is owned and maintained by Telia Mobitel, a Swedish company.

Transmit site

The SAB transmit site is located near Goteberg, Sweden. The Latitude is 57 degrees, 28 minutes North; the Longitude is 11 degrees, 56 minutes East. Six transmitters are in use for SITOR and GlobeEmail service on HF.

Receive site

The receivers for SAB are also located near Goteberg, Sweden.

o Slidell Radio / WNU

Slidell Radio, call sign WNU, is a proud and historic radio station on the Gulf of Mexico coast of the United States near New Orleans, Louisiana. The station was first constructed to provide communication with banana boats loading in Central America and sailing to the United States mainland. It was operated for many years by Tropical Radio and Telegraph (TRT).

Transmit site

The transmitters for WNU are located near Pearl River, (St. Tammany parish) Louisiana. The Latitude is 30 degrees, 22 minutes and 12 secs North; the Longitude is 89 degrees, 47 minutes and 26 seconds west; and the ground elevation is 26 feet. Twenty one transmitters are in use for CW and SITOR service on MF and HF.

Receive site

The receivers for WNU are located on Radio Road near Pearl River, Louisiana... The antenna complement... Most of the receivers in use are Watkins-Johnson model 8274.

o VCT Radio

VCT is located the island of Newfoundland in the northwest Atlantic Ocean. The facilities for VCT are provided and operated by NEWEAST TELEOCEANICS, a Globe Wireless partner. NewEast also operates Tors Cove Radio (CHC419) that provides HF SSB voice services for an area of 1500 nautical miles around Newfoundland.

Transmit site

The VCT transmit site is located 40 kilometers south of St. John's, Newfoundland, Canada. The Latitude is 47 degrees, 14 minutes North; the Longitude is 52 degrees, 51 minutes west. Four Collins HF-80 transmitters, with one kilowatt of output power, are in use for SITOR and GlobeEmail service on HF.

Receive site

The receivers for VCT are located near ???, Newfoundland, Canada. Most of the receivers in use are made by Collins.

o Awanui Radio / ZLA

Awanui Radio, call sign ZLA, is a new coastal radio station constructed by Globe Wireless in 1995. It is located on the north island of New Zealand, in the Southern Pacific Ocean. Operation of the station is controlled from Globe Wireless headquarters in California. The transmitter installation is located at a historical radio site on Wireless Road, between Kaitaia and Awanui, in the North Island. Commissioned in 1913 "Radio Awanui was New Zealand's main station for communications with ships," according to information provided by the Far North Regional Museum in Kaitaia, New Zealand. A Telefunken quenched spark system was used for transmission. The original station was dismantled in 1930 and the area has been used for farming since then. The call sign used by the original station, ZLA, is once again in use.

Transmit site

The ZLA transmit site is located near Awanui, New Zealand. The Latitude is 30 degrees, 00 minutes South; the Longitude is 175 degrees, 00 mins West.

Eight Henry two kilowatt transmitters are in use for SITOR service on HF. The antennas are individual omni-directional vertical arrays for each marine band in use.

Receive site

The receivers for ZLA are also located near Awanui, New Zealand, about ten miles from the transmit site. The shared antenna is an omni-directional discone. The receivers in use are TCI 8074.

o New Station - Bahrain Radio / A9M

Bahrain Radio is located in the central Arabian Gulf and offers superb coverage of the INDIAN OCEAN and extended coverage from the EASTERN MEDITERRANEAN SEA to the WESTERN PACIFIC OCEAN. Globe's construction crew is currently busy in the desert atmosphere on the island of Bahrain in the Arabian Gulf constructing antennas and installing transmitters, receivers and radio equipment. This station is expected to become operational later this summer.

o New Station - Perth Radio / VIP

Located in the Southwest corner of the Australian continent, Perth Radio offers excellent coverage of the Eastern Indian Ocean and the Southwestern Pacific Ocean.

TELSTRA, the Australian telephone company, will be using existing radio equipment for Globe wireless services. Installation of the new data equipment and the connection to Half Moon Bay is expected to be completed by this fall.

o More new stations

MCI and Globe wireless have recently announced an agreement under which Globe will acquire the licenses of MCI coastal stations CHATHAM RADIO/WCC and SAN FRANCISCO RADIO/KPH. The changeover of services is expected to be completed by September.

o Dixon Transmit Site

Globe wireless has acquired a radio transmitting location previously used by the VOICE OF AMERICA. The former DIXON RELAY STATION, located eight miles southeast of Dixon, California, will be used to connect vessels in the Pacific Ocean with land based electronic mail systems, including the Internet.

The history of the Dixon Relay Station goes back more than fifty years. Construction began for the radio transmitting facility at the 640 acre Dixon site in 1943. The Voice of America used the Dixon location, starting in 1944, to broadcast information and entertainment to short-wave radio listeners in Asia and the Pacific. Until 1963, the NATIONAL BROADCASTING COMPANY (NBC) operated the site under contract to the US Government. Transmissions from the Dixon Relay Station ceased in 1983. The VOA used three COLLINS 250 kilowatt transmitters and two GENERAL ELECTRIC 100 kilowatt transmitters when the facility was operational. Still remaining on the site are two massive dipole curtain arrays and ten rhombic antennas, most still in operating condition. Skeletons of the GE and Collins transmitters also remain.

Globe wireless plans to install transmitters and antennas for its maritime public coast station KFS at the new site. The current KFS transmitter location, in Palo Alto, California, will be phased out of operation over the next few years.

According to company officials, Globe wireless may also relocate the transmitters for public coast station KPH to the new Dixon location. Transfer of that station's license to Globe wireless from MCI INTERNATIONAL is pending FCC approval. The MCI station currently transmits from Bolinas, California.

AERONAUTICAL RADIO, INC. (ARINC) will sub-lease space at the Dixon site from Globe wireless. ARINC is installing transmitters to communicate with the flight crews of aircraft flying over the Pacific Ocean and South America.

o Global Radio Network frequencies and services

Effective: 3 March 1995, the following ITU NBDP channels and frequencies listed below are in use by the coastal radio stations in the Global Radio Network. Most channels are in operation 24 hours a day.

Channel	Xmit frequencies		c/s
	Shore	Ship	
401	4210.5	4172.5	WNU
402	4211.0	4173.0	ZLA
403	4211.5	4173.5	KFS
416	4217.5	4180.0	VCT
418	4218.5	4181.0	SAB

WUN-str04

	4300.4	4154.5	KEJ
602	6315.0	6263.5	ZLA
603	6315.5	6264.0	KFS
625	6326.0	6275.0	KEJ
626	6326.5	6275.5	SAB
627	6327.0	6281.0	WNU
632	6329.5	6283.5	VCT
802	8417.0	8377.0	ZLA
803	8417.5	8377.5	KFS
819	8425.5	8385.5	WNU
830	8431.0	8391.0	KEJ
837	8434.5	8394.5	SAB
838	8435.0	8395.0	VCT
1202	12580.0	12477.5	ZLA
1203	12580.5	12478.0	KFS
1219	12588.5	12486.0	WNU
1257	12607.5	12505.0	WNU
1263	12610.5	12508.0	VCT
1265	12611.5	12509.0	KEJ
1291	12624.0	12522.0	SAB
1347	12652.0	12555.0	SAB
1602	16807.5	16684.0	ZLA
1647	16829.5	16706.5	KFS
1657	16834.5	16711.5	WNU
1673	16842.5	16719.5	KEJ
1676	16844.0	16721.0	VCT
1691	16851.5	16728.5	SAB
2203	22377.5	22285.5	KFS

o Traffic Lists

The combined network traffic list is broadcast from all stations via Sitor-B, as noted.

c/s	station / location	traffic list
VCT	St. Johns, Newfoundland, Canada	H +05
KEJ	Hawaii, Pacific Ocean	H +15
KFS	Palo Alto (San Francisco) California, USA	H +25
SAB	Goteborg Radio, Sweden	H +35
ZLA	Awanui, New Zealand	H +45
WNU	Slidell Radio, Louisiana, USA	H +55

o Super CW-stations

Palo Alto Radio / KFS

Palo Alto Radio, call sign KFS, is a proud and historic radio station on the West coast of the United States. It has been on the air, continuously, since 1912, including throughout both world wars. It is the flagship station of the Globe wireless CW Super-Stations.

Slidell Radio / WNU

Slidell Radio, call sign WNU, is a proud and historic radio station on the Gulf of Mexico coast of the United States near New Orleans, Louisiana.

- Palo Alto Radio, KFS, broadcasts via CW on 476, 8558.4, 12844.5, 17026 and 22581.5 kHz
- Traffic lists are broadcast by KFS at 25 minutes past each hour. The combined traffic list is sent from all CW Super-Station locations.
- KFS broadcasts Pacific High Seas weather at 0450, 1050, 1650 and 2250 UTC.
- KFS broadcasts the American Radio Association (ARA) newsletter on Sunday at 0517 UTC.
- Slidell Radio, WNU, broadcasts via CW on 478, 4310, 8570, 12826.5, 17117.6 and 22575.5 kHz
- Traffic lists are broadcast by WNU at 55 minutes past each hour. The combined traffic list is sent from all CW Super-Station locations.
- WNU broadcasts Gulf of Mexico/Caribbean Sea weather at 0350, 0950,

1550, and 2150 UTC.

- Operating Frequencies.

	Palo Alto		ship
4 MHz	4274.0		4185.0
8 MHz	8444.5	8558.4	8368.5
12 MHz	12695.5	12844.5	12552.5
16 MHz	17026.0	17184.8	16736.5
22 MHz	22581.5	22282.5	

	Slide11		ship
4 MHz	4294.0	4183.0	4310.0
6 MHz	6389.5		6278.0
8 MHz	8525.0	8570.0	8367.0
12 MHz	12826.5	12869.0	12551.0
16 MHz	17038.0	17117.6	16735.0
22 MHz	22575.5	22281.5	

o GlobeTOR

The GlobeTOR auto-forward radio telex service extends the benefits of modern computer E-Mail forwarding technology to maritime communications. This "time shift" capability allows both ship and shore users to send and respond to messages at their convenience. For SHIP-TO-SHORE traffic, messages are delivered to the shore destination immediately upon filing by the ship. After normal business hours, messages can be delivered to alternate shore destinations (e.g., by telephone to key management at home). This service is available twenty-four hours a day, seven days a week.

For SHORE-TO-SHIP messages, the ship's call sign is broadcast several times each hour in the Global Radio Network traffic list. Pending traffic is listed by, and available from, all Global Radio Network stations. Arrangements can be made to immediately deliver messages by automatically calling cooperating ships.

The "time shift" capability of the automatic forwarding technology means the shipboard Radio Officer can send his telex message, for instance, even if the destination telex machine is otherwise engaged. There is never a busy signal!

Ship to shore messages are normally delivered electronically within seconds, often while the ship is still in contact with the station.

Shipboard operation

By using the proper command, the ship originating a message may specify the delivery method to be used when forwarding to a shore destination. Methods currently available include automatic telex (AUTOTLX+), electronic mail (EMAIL+), facsimile (FAX+), cable telegram (TGM+) and radio telex letter, via the U.S. Postal Service (RTL+).

o Globeweather

No matter what ocean, sea, bay, lake, river or port you are sailing in, you can obtain the latest available weather conditions and forecasts from one, reliable, source - Globeweather. Weather agencies from around the world feed information into the Globeweather database 24 hours a day. Never again will you have to wait hours for the next scheduled weather broadcast. Globeweather can provide the products you need, when you need them. - any time, night or day, from any Global Radio Network coast station, worldwide.

o GlobeEmail

In the last twenty years, almost all of the technological advancements in commercial marine communications have been directed at satellite. This is in marked contrast to the military, where high frequency (HF) radio has received significant technological research. Globe wireless has taken the concepts developed by the military over these two decades (and recently declassified), plus the availability of computer-controlled HF radios, to build a global communications system. The system is much

cheaper to operate than a satellite system while at the same time offering the capabilities of such a system and then some.

GlobeEmail is an automated system, both on the shore side, and on the ship. Every GlobeEmail ship has a copy of a software program written by Globe and a dual mode modem. The user on the ship uses the simple e-mail interface in this program to send and receive messages, much the same as we do on Internet. Another part of this program is in control of the HF radio. It scans the radio, sampling every Global Radio Network channel and keeps a table of the six best, at any point in time. It also watches the Out Box of the E-mail program, and when a message is placed there, it automatically links with (any) one of Globe's shore stations and sends it. Since all of the Globe stations are connected via landlines, the message actually comes to California for processing, no matter what station the ship calls. Shore to ship messages are automatically sent in a similar way. Like there are function commands for telex, direct dialing telex, fax and many other services, there are also commands for the e-mail service. For Internet the command is INTyyy+, for instance, and for a private cc:Mail system the command is CCMyyy+ ('yyy' is replaced with the actual e-mail address, as appropriate). Ships not equipped with GlobeEmail can use these commands also. In the case of GlobeEmail, the initial connection is always made in SITOR. If the message is text only, and short, it is just sent in SITOR, if not both the ship and the shore station will switch to a special form of CLOVER so that full binary data can be transferred.

GlobeEmail is strictly a computer-to-computer connection. To prevent an error in the address line (SITOR is not always error-free), a four digit error-detecting code is added at the beginning of the messages.

Globe wireless designed GlobeEmail to overcome the deficiencies of past marine communications systems - radio and satellite. GlobeEmail is a software system that provides easy, intuitive message creation, that controls the radio to send (and receive) messages automatically, and that transmits any file - text, graphic or binary - much faster than has previously been possible via radio. This is the latest High Frequency radio technology, spawned by the military but reduced to commercially reasonable costs, to extend modern office communications to ships at sea. It literally makes marine communications as easy and as reliable as electronic mail at a cost far less than satellite.

A new radio modem removes the restriction of alphanumeric characters and allows the transmission of any file that can be sent on a phone line. Facsimiles, word processing documents, spreadsheets, diagrams, maps, data files and even computer programs can now be sent by radio. The speed has increased tenfold today and will be increased another fourfold within a year. Sophisticated, error-correcting, transmission protocols have increased the reliability to an estimated 99.98%. A network of stations around the world, linked to a central control point, provides coverage world-wide, including the polar regions. In each characteristic - speed, reliability, coverage - GlobeEmail exceeds Standard C satellite performance.

The combination of sophisticated Digital Signal Processing mathematics and computer control technology with ionosphere transmission of radio waves produces the lowest available underlying marine communications costs. Globe wireless does not have to pay for, and thus its prices need not cover, the cost of satellites and complicated earth stations. Globe wireless customers need not install expensive shipboard satellite equipment, but can instead use standard HF radios and inexpensive computers.. All of these lead to a long-term lower cost of GlobeEmail than of satellite.

Furthermore, GlobeEmail prices are based on delivered kilobits of info, not the time the circuit is open, as do most satellite systems. This eliminates the cost of expensive retries and dropped links that the satellite customer's incur where little or no usable data is actually transmitted.

GlobeEmail uses a patented modem technology that allows HF radio to transmit binary files. Before the introduction of GlobeEmail, radio telex (SITOR) was the most sophisticated protocol available to ships. Radio telex has a very limited character set and is unable to transmit files such as word processing documents, spreadsheets, or interact with on line services. A new technology, named CLOVER, brings all of these features to HF radio. This new technology also dramatically improves the throughput available on HF radio. Radio telex operates at 50 bits per second. GlobeEmail, using CLOVER, will move data at a rate of 2400 bits per second.

CLOVER is robust even under the poorest propagation conditions due to its use of a very low base data rate that relies upon differential modulation between pulses. The CLOVER signal fits perfectly within existing channel allocations because it consists of a time sequence of amplitude-shaped pulses. Its data throughput is always the highest possible since the CLOVER modem is capable of shifting among ten different modulation modes using various combinations of frequency, phase-shift and amplitude modulation.