

SSB in the US Navy

- Naval Communications
 - Global (Shore-Shore)
 - Long Distance (Ship-Shore)
 - Local (Ship-Ship & Ship/Shore-Air)
- World War 2
 - Global – LF/HF CW + HF RATT
 - Long Distance – LF/HF CW
 - Local - HF AM & UHF AM
- Post War – HF SSB

1950's SSB Trials



Local - 1950's Interim SSB



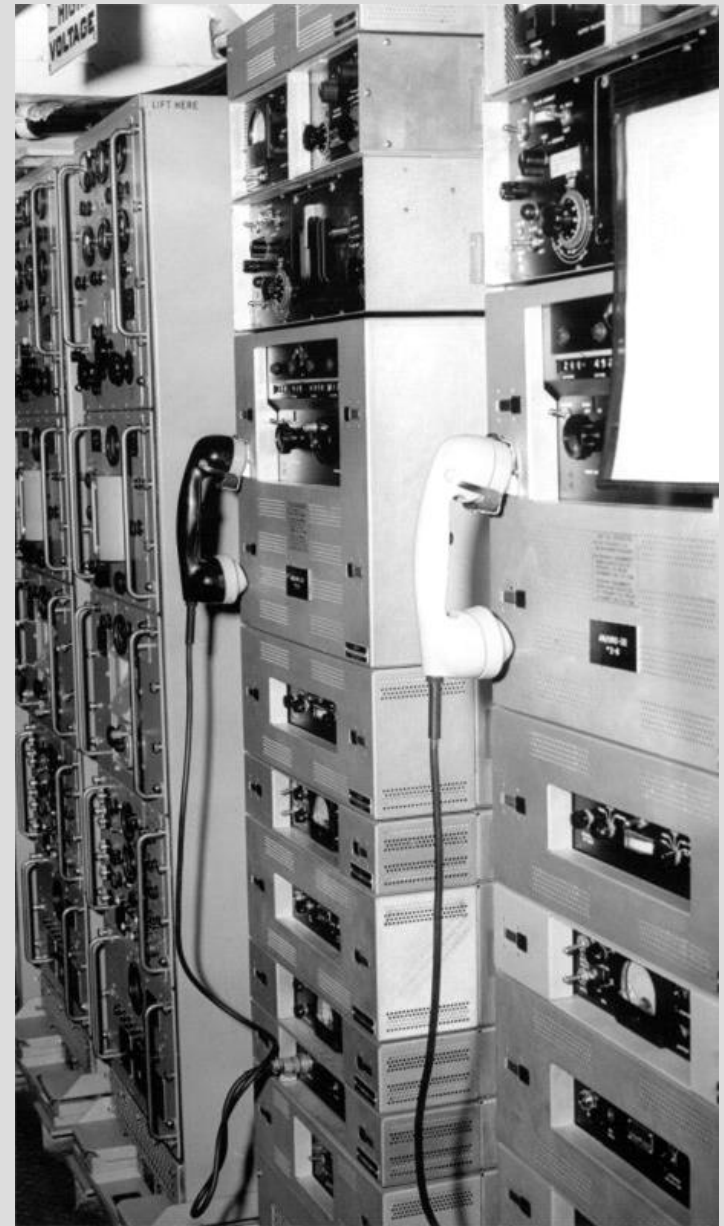
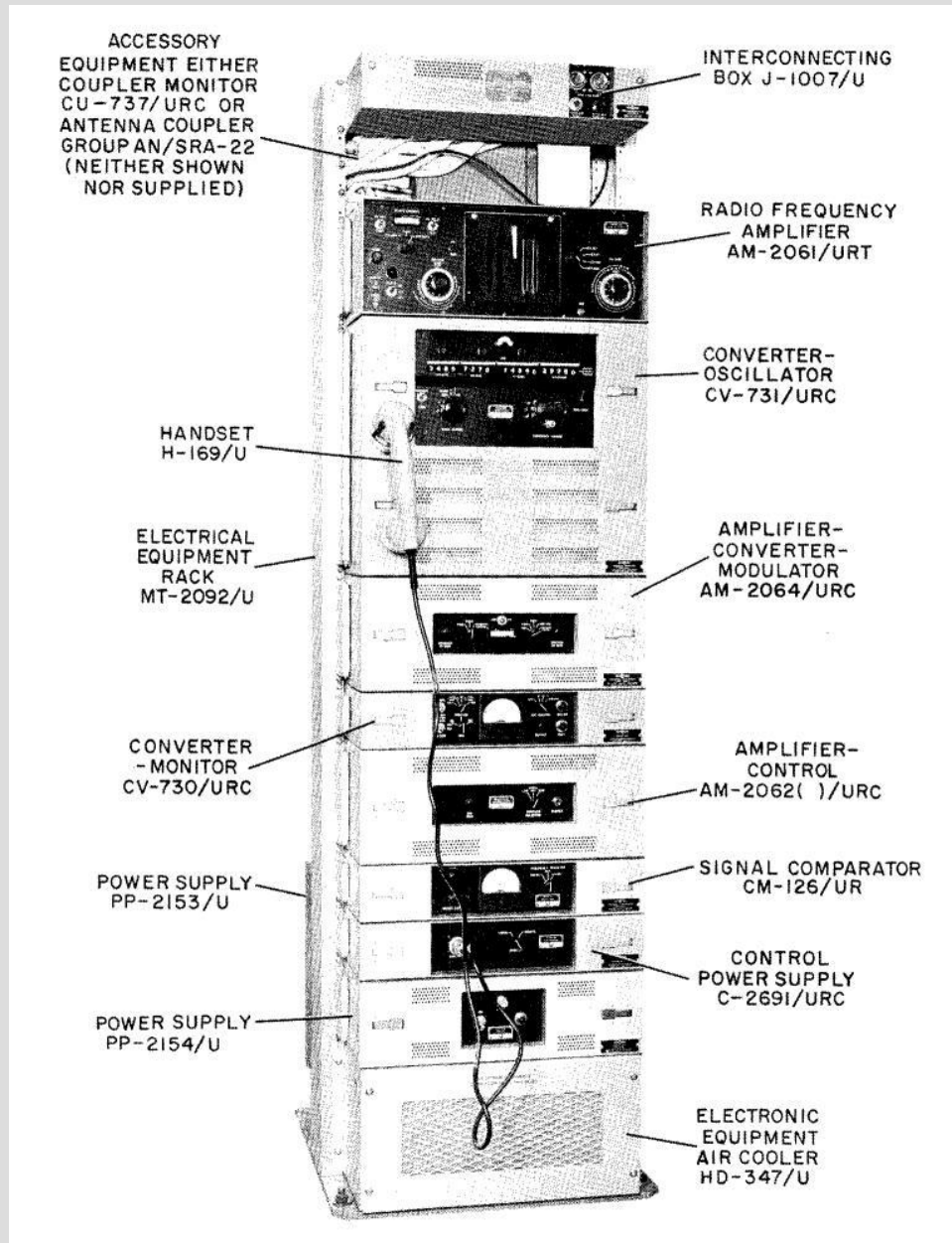
RCA SSB-1



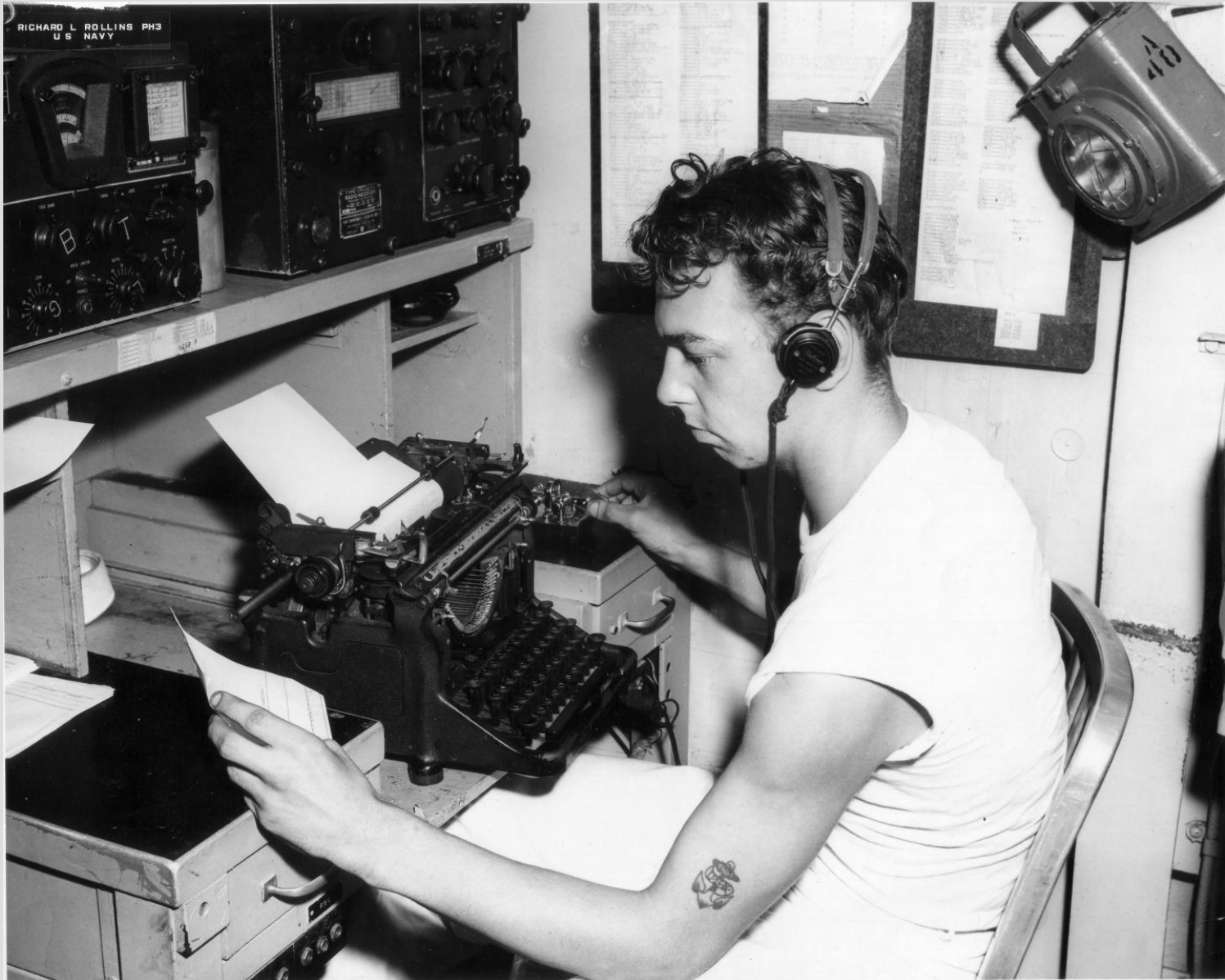
Eldico S-100



500W AN/URC-32 SSB Transceiver



Where's the Microphone?



Record Communications

FOX SKED - 0400 - 9 JULY 1944 - WOOD, L. 819 10 47

1

SFIBL	WSDRT	MPNBT	AAZOG	AQAPP	PERFD	QVHOO	XZLQP	CCNJS	LWESX
CORTN	ZQASD	CNMND	OGIEK	ZLSKE	NNDME	QWOOD	DJQPA	QNGGD	WOCII
QQPUO	RIOUK	CCMDK	EHGGH	DIOOX	NNEMD	QAEET	PCVSB	HKJID	NNXBD
ZJQII	DDFER	GHAAT	MQDJO	BELVA	DONOT	GOQUI	ETLYI	NTOTH	EGOOD
NIGHT	BUTIN	SNTEA	DRAGE	MEBAC	KINTO	THEMA	KINGH	OUSEI	SAQUO
TEFRO	MTHEW	ELSHP	OETDY	LANTH	OMASN	OWALA	SNOLO	NGERW	ILLIN
GWITH	USHER	ONTHI	SSHIP	OFFOO	LSMNQ	PEROF	NMWWQ	DIDIT	BOLOF

AR 0410 9 JUL 44

ALL SHIPS DE NSA - 0 - 9 JULY 44 - BT - STRONG TROPICAL STORM
APPROX CENTER 5 DEG NORTH 145 DEG EAST WINDS 50 KNOTS AND MOUNTING
- ALL FORCES IN AREA TAKE PRECAUTIONS - COMSEVENTHAMPHIB - BT

WN6RE DE NSA - 0 - 9 JULY 44 - DE WN5RE WN2RE

Off-Line Crypto

FOX SKED - 0400 - 9 JULY 1944 - WOOD, L. 819 10 47 1

SFIBL WSDRT MPNBT AAZOG AQAPP PERFD QVHGG XZLOP CCNJ5 LWESX
 CORTN ZGASD CNMND OGIEK ZLSKE NNDME QWOOD DJGPA QNGGD WOC11

QGPUD RJOUK CCMK EHGHH DIOOX NNEMD GAET PCVSB HKJID NNXB
 ZJ911 DDFER GHAET MQDJ0 BELVA DONOT GOGUI ETLV1 NTOIM EGOOD
 NIGHT BUTIN SNTEA DRAGE MEBAC KINTO THEMA KINGH OUSE1 SAGUD
 TEFRO MTHEW ELSHP OETDY LANTH OMASN OWALA SNOLO NGERW ILLIN
 GWITH USHER ONTHI 6SHIP OFFOO LSMNQ PEROF NMMWQ DIDIT BOLOF

AR 0410 9 JUL 44

ALL SHIPS DE NSA - 0 - 9 JULY 44 - BT - STRONG TROPICAL STORM
 APPROX CENTER 5 DEG NORTH 145 DEG EAST WINDS 50 KNOTS AND MOUNTING
 - ALL FORCES IN AREA TAKE PRECAUTIONS - COMSEVENTHAMPHIB - BT

WN6RF DE NSS - R - 9 JULY 44 - RE WN5RF WN2RF - BT -

DINID NMQRE ANDLE EMTET LLYOU THISO NETHI NGWHE THEFO XISRO
 LLING INLIK ETHIS ATTHR TYFIV EWORD SPERM INUME ONECO ULDNA
 TFIND AMUCH HAPPE RLIFE BUTWH ALLFO XSTOP SANDT THATO MINOU
 SOPRI ORITY SOUND SALLH ELLBR EAKSL OOSEA NDIAM LUCKY IFIQA
 NCOPY THELO CATIO NOPTH TYPHO ONORT HEEEN EMYEL EETNM DINID

AR 0415 9 JUL 44

annhatsai/

A PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY "B" ENCRYPTION. PHYSICALLY REMOVE ALL INTERNAL REFERENCES BY DATE -TIME-GROUP PRIOR TO DECLASSIFICATION.

FROM: INFO:

TO:

TOR/TOD / TIME BROKEN / BROKEN BY / WU CHECKED / SYSTEM / PRECEDENCE

CO / XO / OPSOFF / COMMOFF / C/C / OTHERS

PAGE ___ OF ___ DTG: MONTH COPY OF

COPY ___ OF ___ COPY OF

COPY ___ OF ___ COPY OF

CONFIDENTIAL



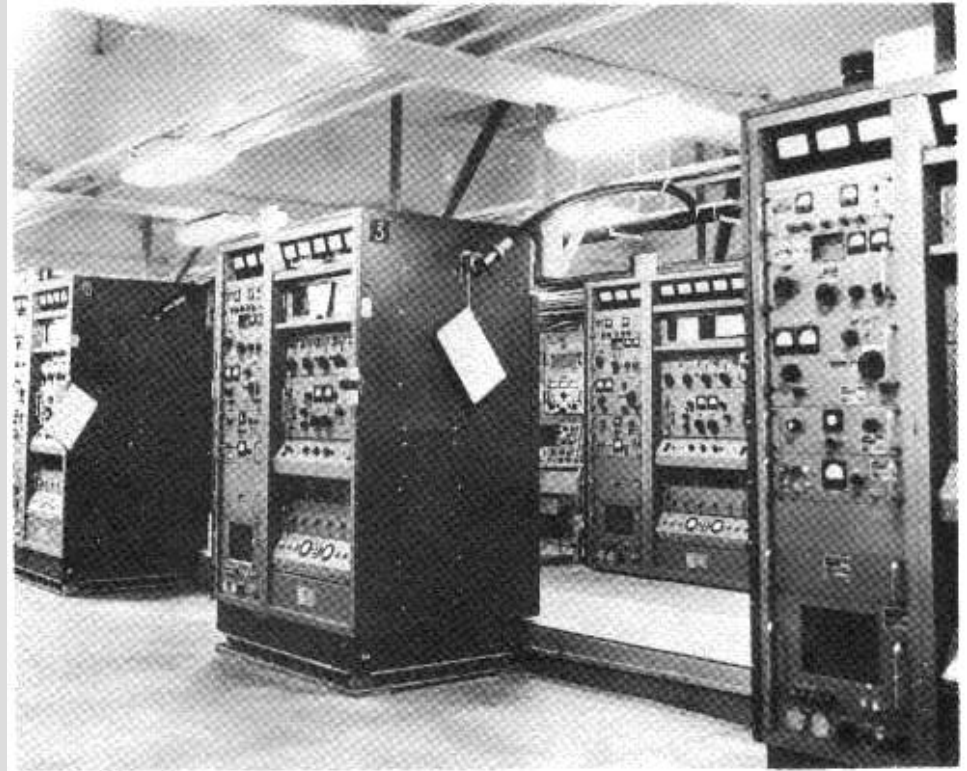
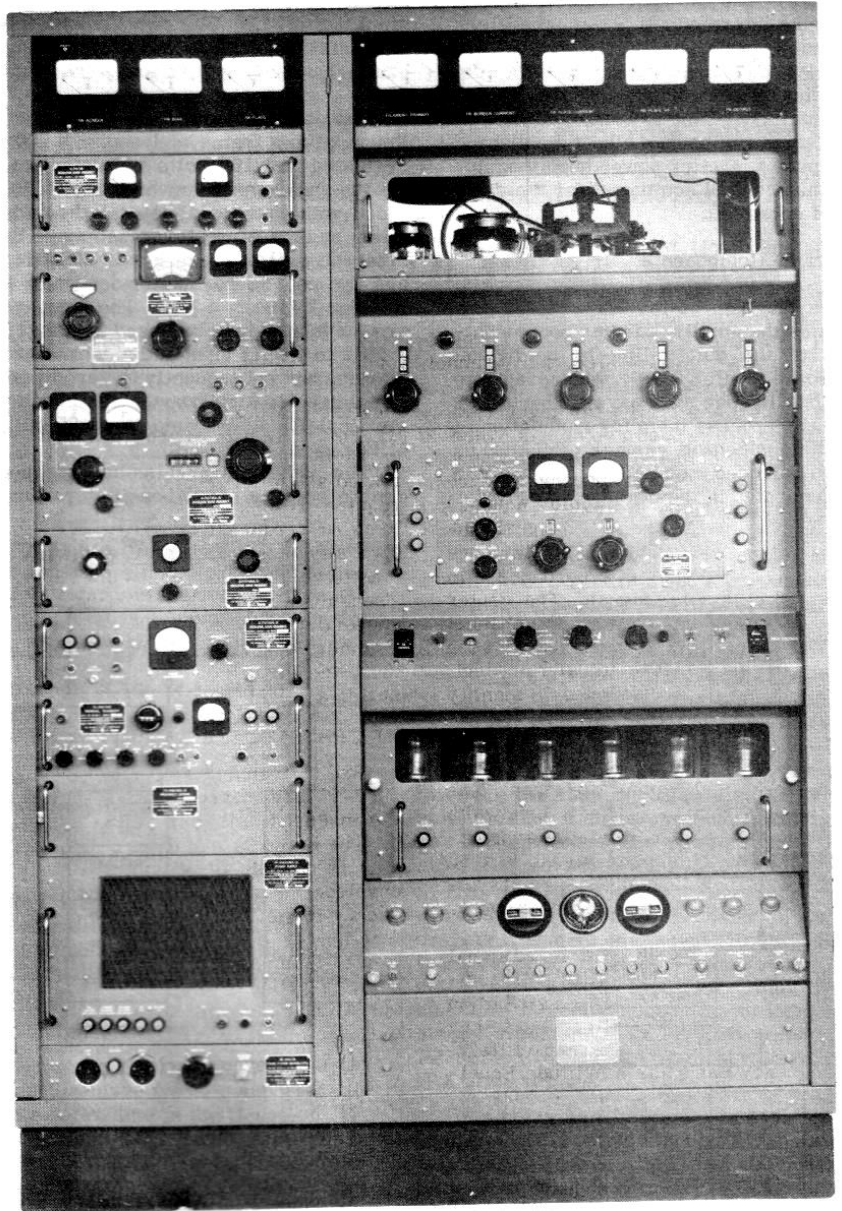
Long Distance Secure Comms



RATT + On-Line Crypto



10KW AN/FRT-39 ISB Transmitter

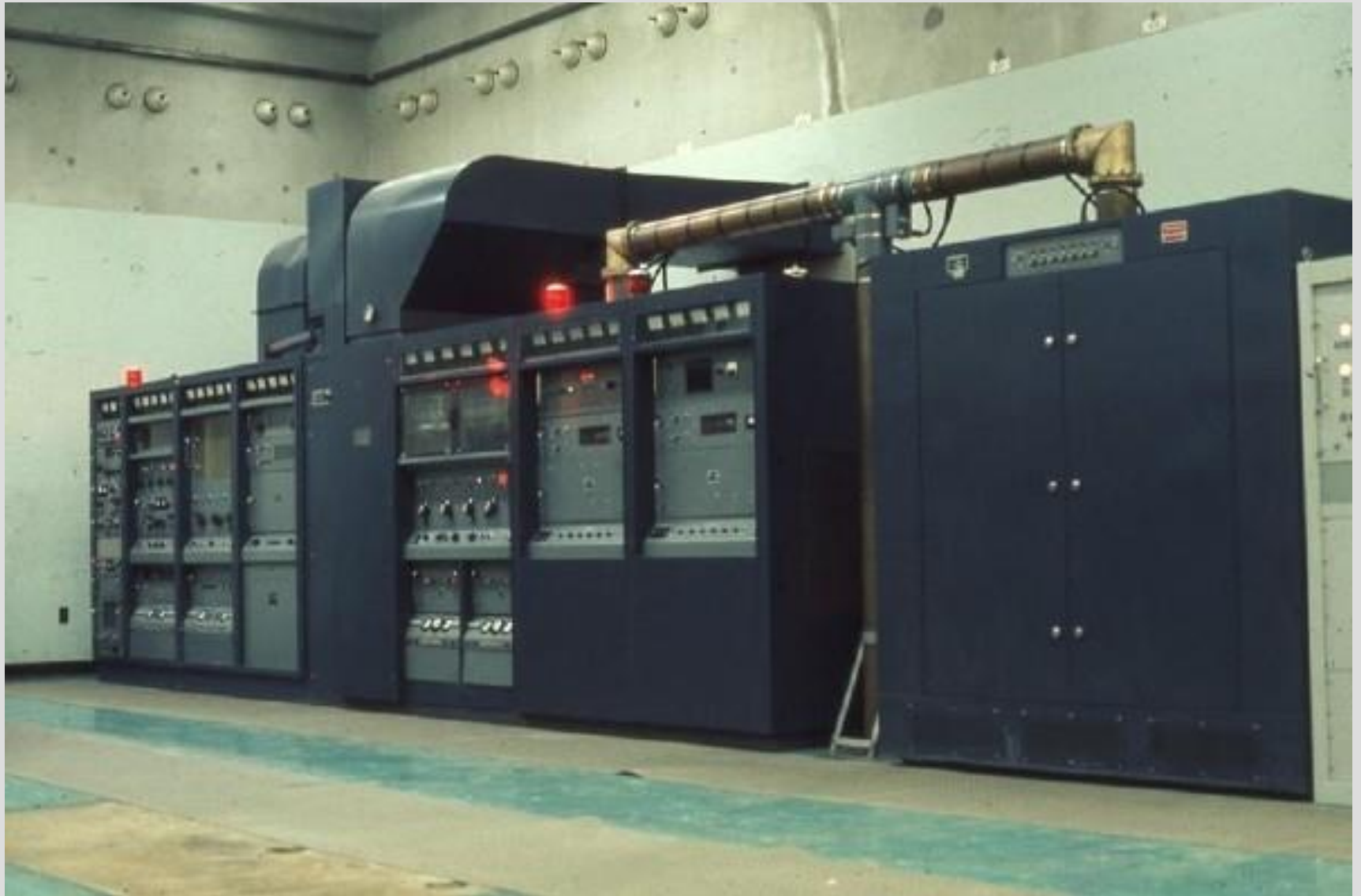


Located in the largest compartment on the ANNAPOLIS, the transmitters make her "voice of the sea" heard all through South-east Asia.

40KW AN/FRT-40 ISB Transmitter



200KW AN/FRT-62 ISB Transmitter



Lots and Lots of ISB Transmitters



Did I say ISB?



Did I say ISB?



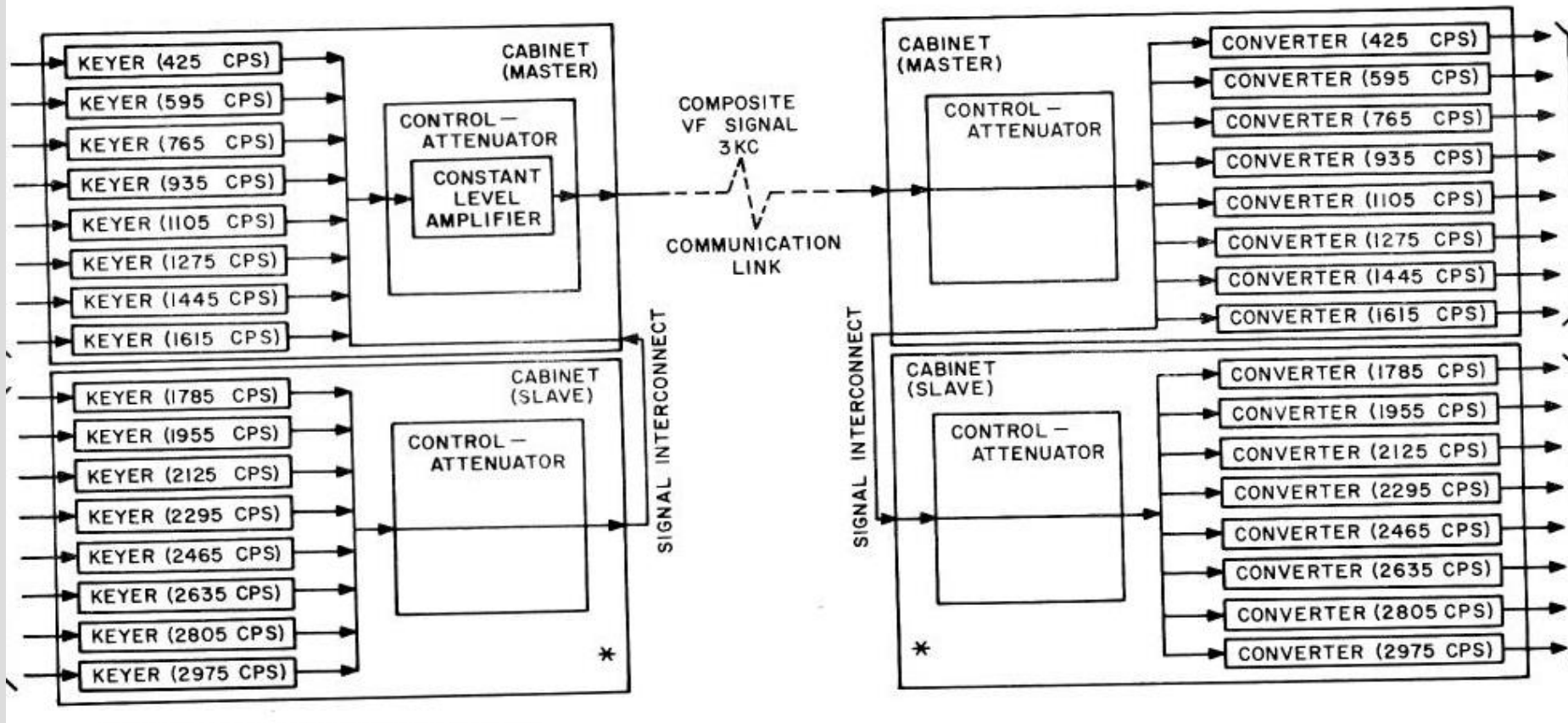
USB Voice

LSB RATT FSK

Did I say ISB?

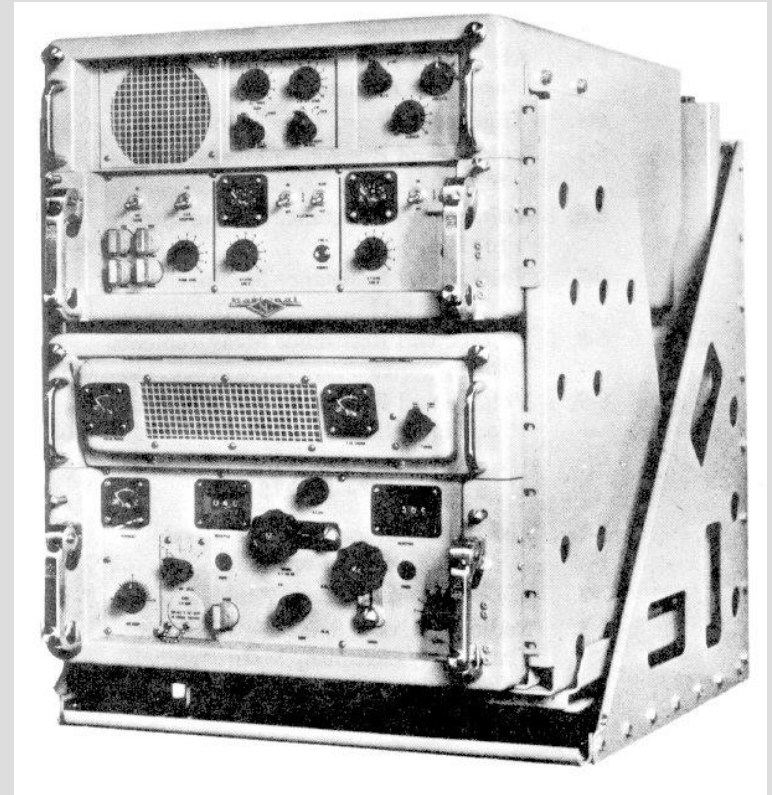


Multiplexing = More messages



16 channels, +/- 42.5 cps shift
Requires Stability and Accuracy

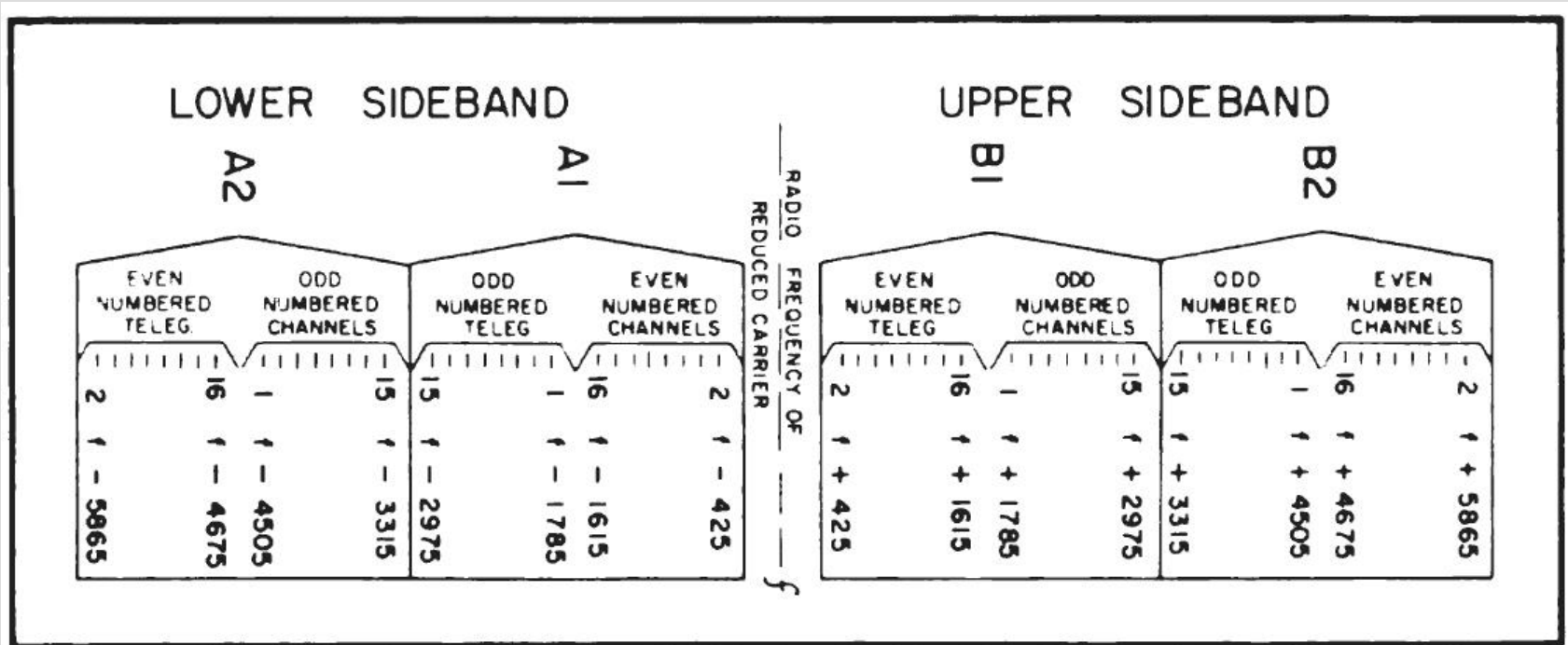
Synthesized ISB Receivers



-30dB Carrier => 1 cps AFC

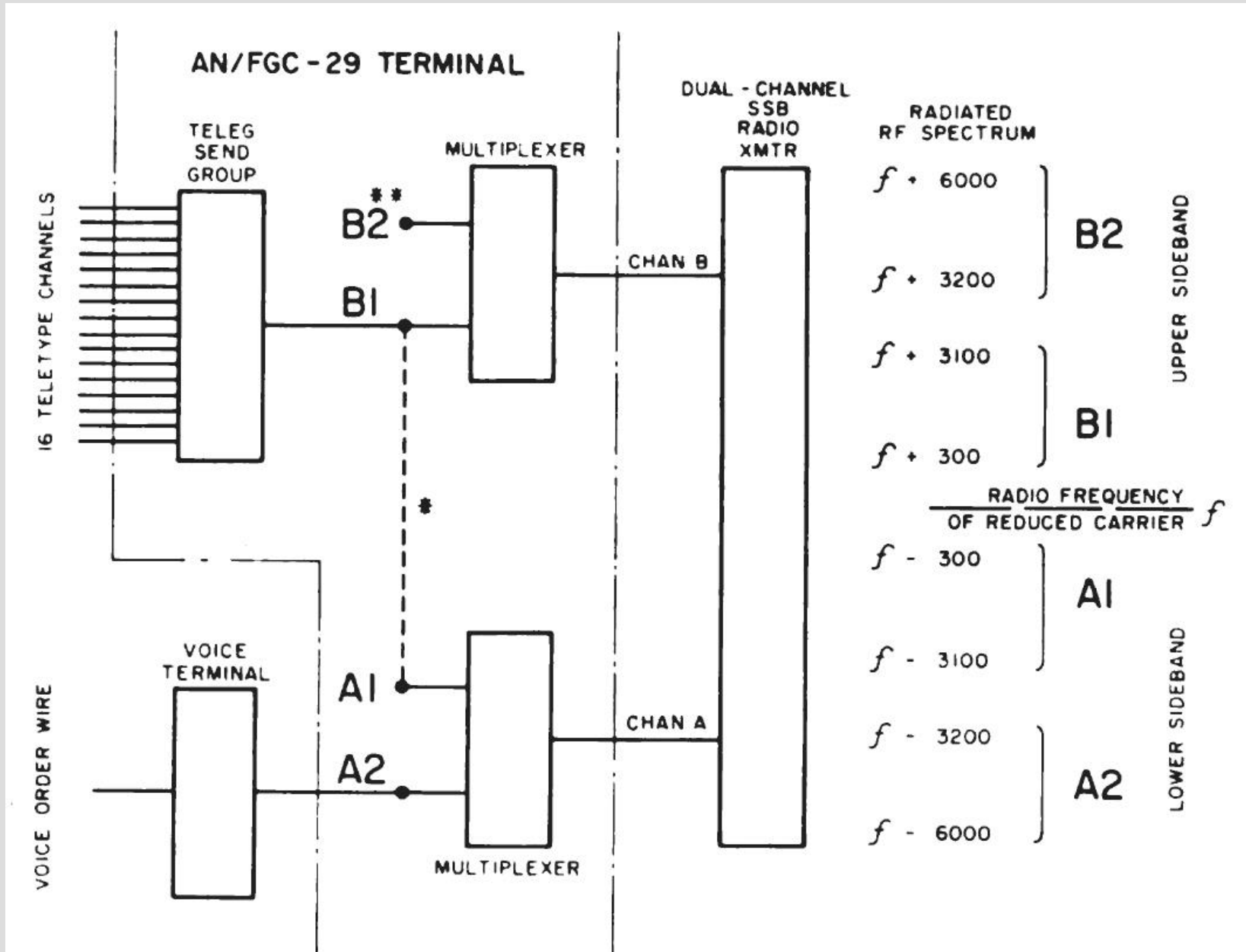


But Wait, There's More...



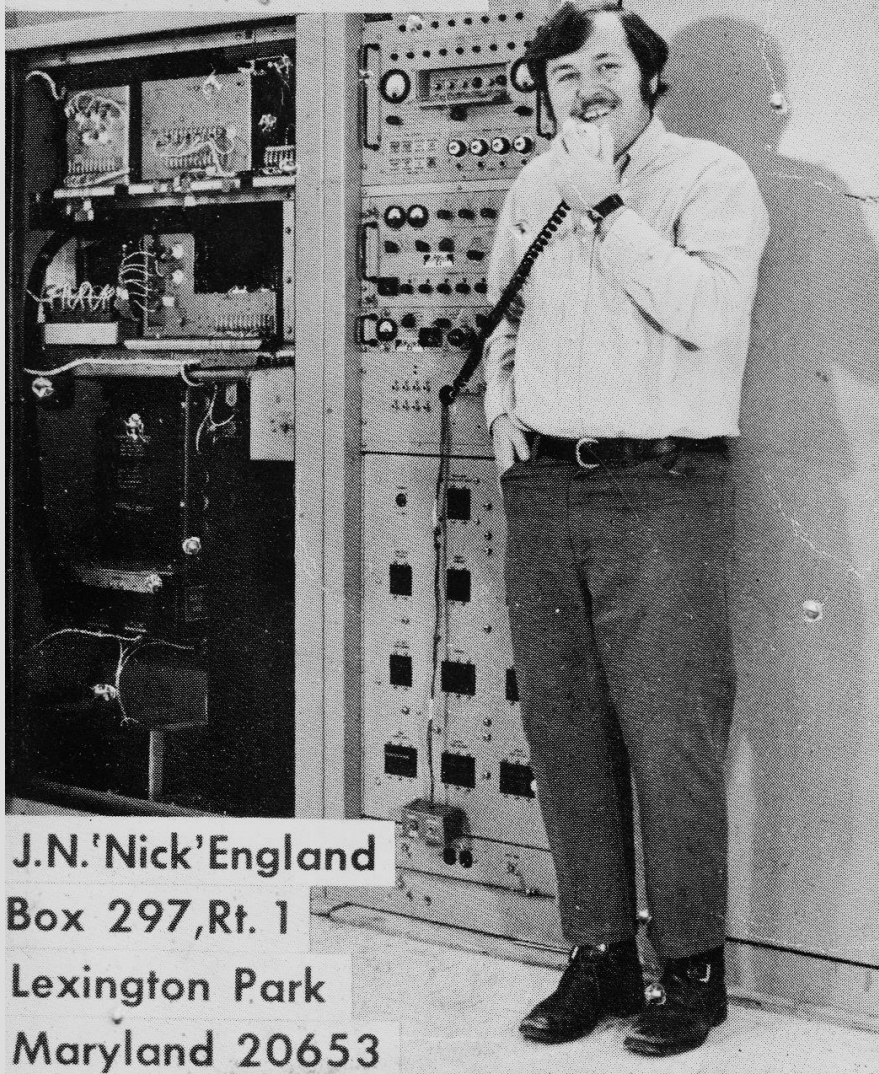
4 Sidebands, 64 RATT Channels
Single XMTR/RCVR Diversity

4ISB Diversity



WA3OCX

The Rig Here Is Homebrew, OM

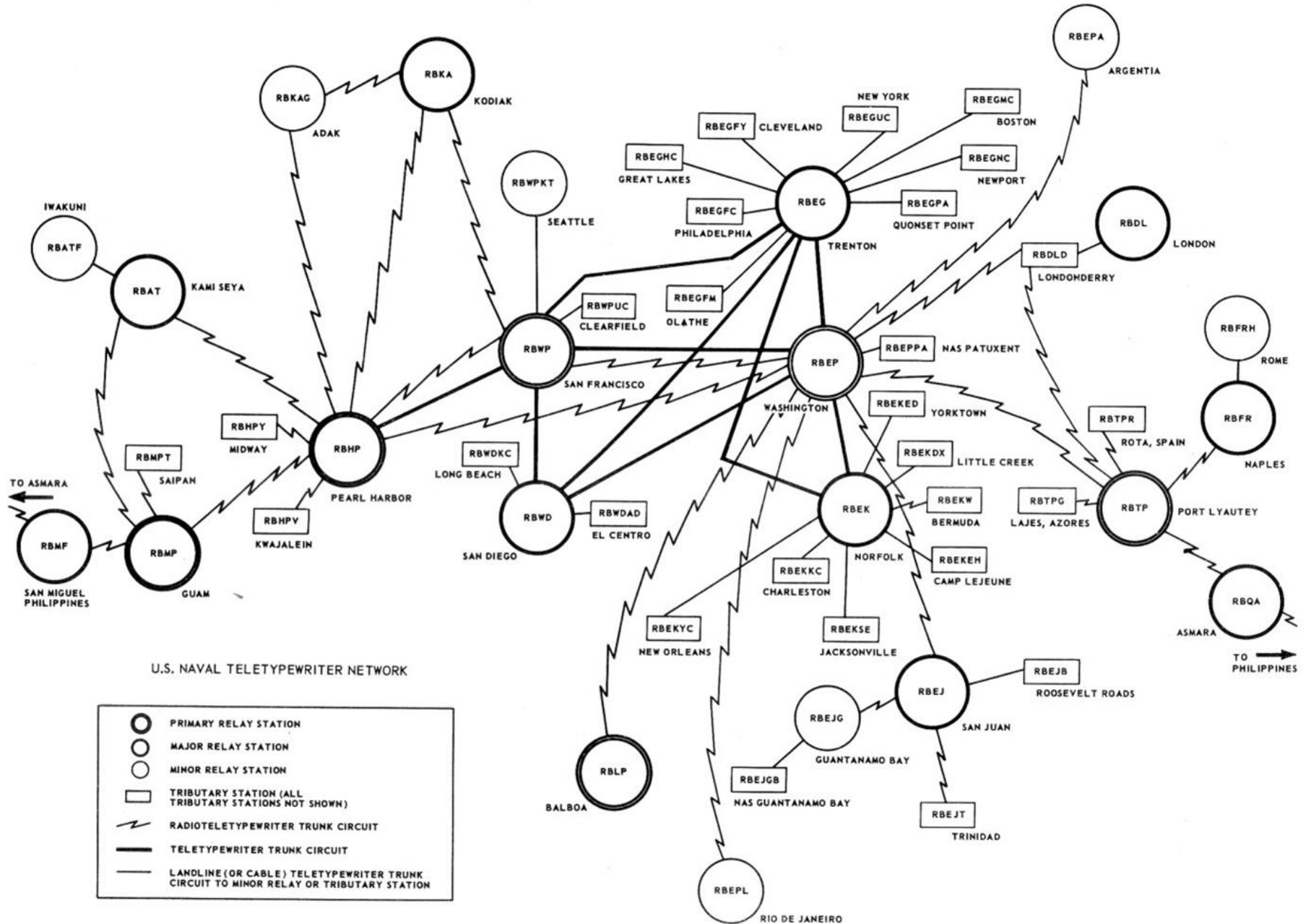


J.N. 'Nick' England
Box 297, Rt. 1
Lexington Park
Maryland 20653

4ISB 40KW
AN/FRT-85

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