Loran Planning Procedures; Loran Construction Planning Document

Five Encls:
1. WING CHAIN (SECRET)
2. WELD CHAIN (SECRET)
3. PACE CHAIN (SECRET)
4. KEEL CHAIN (SECRET)
5. LORAN INSTALLATION PLAN, 1961 (SECRET)

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>NAME</th>
<th>DATE</th>
<th>ACTIVITY</th>
<th>NAME</th>
<th>DATE</th>
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<td>E</td>
<td>J. Keith</td>
<td>11/16/62</td>
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<td>J. Emonton</td>
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</tbody>
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141
TO: Chief of Staff
Via: Chief, Office of Engineering

FROM: Chief, Office of Operations

DATE: Nov 7, 1962

SUBJECT: Loran Planning Procedures; Loran Construction Planning Document

Ref: (a) CCS Memo 25 September 1962 Ser 00272 (SECRET)

1. In accordance with reference (a) basic operational assumptions and pertinent amplifications that have a direct bearing on LORAN-C planning procedures are enclosed.

2. The operational assumptions are predicated on the requirements established by the JCS LORAN INSTALLATION PLAN, 1961 which indicates the coverage both descriptively and in order of priority. The accuracy requirements are 1/4 mile or better.

R. D. SCHMIDTMAN

Encl: (1) WING CHAIN (SECRET) - SCP-4
(2) WIRED CHAIN (SECRET) - SCP-4
(3) FACE CHAIN (SECRET) - SCP-4
(4) KEEH CHAIN (SECRET) - SCP-4
(5) LORAN INSTALLATION PLAN, 1961 (SECRET) (PART II, III and PRIORITIES) - SCP-3

DECLASSIFIED

Authority 9782 15

DOD DIR 5200.10

SECRET
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WING CHAIN

1. The requirement is to be met by the construction of stations and monitors as indicated, and that have been approved, for the following locations:

<table>
<thead>
<tr>
<th>Station Location</th>
<th>Target on-air date</th>
<th>Required by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tokachibuto, Hokkaido, Japan (WING I)</td>
<td>1 July 1963</td>
<td>1 March 1963</td>
</tr>
<tr>
<td>Iwo Jima (WING II)</td>
<td>1 July 1963</td>
<td>1 March 1963</td>
</tr>
<tr>
<td>Marcus Island (WING III)</td>
<td>1 July 1963</td>
<td>1 March 1963</td>
</tr>
<tr>
<td>Gesashi, Okinawa (WING IV) (PACE I)</td>
<td>1 October 1963</td>
<td>1 January 1964</td>
</tr>
<tr>
<td>O'Shima (WING V) Area Monitor</td>
<td>1 July 1963</td>
<td>1 March 1963</td>
</tr>
<tr>
<td>WING IV area monitor (unknown)</td>
<td>1 October 1963</td>
<td>1 October 1963</td>
</tr>
</tbody>
</table>

2. Support facilities required for WING are:

   a. One C-130 aircraft

   b. Modifications to Guam, Air Detachment due to (a) above

   c. Secondary Radio Station at Yokosuka, Japan

   d. Relocation of FESEC

3. Approval of the Site Survey Reports indicated that the following was required:

   a. Air support for WING II and III will be from Guam. One operational C-130 aircraft will be required. Air support of WING II is to be by existing U. S. Military aircraft from Japan and Coast Guard C-130 aircraft from Guam.

   b. For planning purposes WING I should be provided with offshore tanker fuel delivery connections.

   c. All stations should be isolated.

   d. The air navigation facility (radiobeacon) at WING III is an ICAO requirement. The weather facility is a SAC and ICAO requirement. Operation and funding have not been resolved.

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DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

ENCLOSURE (1)
c. WING I & IV are to have helicopter pads consistent with requirements of the supporting agency.

f. WING III will be fueled by offshore tanker.

g. All stations should have barracks space 25% in excess of the authorized personnel.

h. WING IV will be an A/C station with 2 LORAN-C rates (WING IV, PACE 1) and three LORAN-A rates (from Okinawa to Nomaike, to Iwo Jima, to Miyako Jima).

i. WING II will be a LORAN A/C station.

j. Use of land at WING I, by local Japanese, was to be permitted to extent possible. Processing acquisition of land is under the Japanese Land Procurement Agency at no cost to the U. S.

k. Marcus Island has not officially been acquired from the Air Force even though recognition of the transfer has been received.

l. Station design is to proceed prior to land acquisition or frequency authorization in order to expedite station construction. Basic assumptions for station design are based on the Site Survey Reports and related correspondence. Maintenance of an air strip, weather station, and a small harbor facility at WING III must be considered. A WING III/Guan radio circuit for weather messages is required. Additional equipment and personnel at both sites are necessary.

m. Construction should be as rapid as possible to meet the present target on-air dates. The beneficial occupancy dates of the transmitter and signal and power building should be such that these dates may be met.

n. In order to meet target on-air dates it is now expected to air ship some of the electronic equipment from the East Coast U. S. to the sites wherever feasible. KUKUI will deliver much of the remainder in WESTPAC.

o. Testing and calibration must proceed as rapidly as possible. As a 4 months slippage has already occurred for WING I, II, and III the required on-air date of 1 March 1963 cannot be met, for WING IV the operational on-air date of 1 January 1964 must be met.

p. LORAN-C and associated equipment should be funded for under OE for future replacement and maintenance.

q. WING I support will be by military non-Coast Guard units and commercial means.
4. The administration of the WING CHAIN must consider the following:

   a. Selection and acquisition of suitable aircraft for logistic support of WING III. A C-130 type aircraft has been selected.

   b. Modifications are to be made to Coast Guard Air Detachment, Guam and to Secondary Radio Station, Guam including addition of personnel.

   c. Increase in COMSEC to handle additional work load.

   d. Secondary radio station at Yokosuka, Japan.

   e. Increase in Headquarters (AC&I & CE personnel strength).

   f. Increase of personnel at the District (AC&I & CE billets).

   g. Increase in Groton LORAN-C training capabilities.

   h. Air support for WING II, III is predicated on supplying all items but fuel and major heavy equipment. Additionally, past policy on support has been based on visiting the stations at least every two weeks.

   j. Costs for clearing the frequency band 90-110 kc/s of existing communications should be included. These costs, besides estimating conversion costs of equipment should also include travel expenses pertinent to these actions. Cost estimates are very indefinite and could range to as high as $1.0 million/chain. The Japanese Regulatory Board has authorized use of 90-110 kc/s for LORAN-C.

   k. The entire Command and Logistic organization of this area is under review.

   l. Site Survey approvals provide the necessary personnel figures for this chain.
1. The requirement is to be met by the construction and/or modification of stations and monitor as indicated, and that have been approved, for the following locations:

<table>
<thead>
<tr>
<th>Station Location</th>
<th>Target on-air date</th>
<th>Required by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandur, Iceland (WELD I)</td>
<td>1 October 1963</td>
<td>1 January 1964</td>
</tr>
<tr>
<td>(Modify existing station)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angissok, Greenland (WELD II)</td>
<td>1 October 1963</td>
<td>1 January 1964</td>
</tr>
<tr>
<td>Ejde, Faeroes (WELD III)</td>
<td>1 October 1963</td>
<td>1 January 1964</td>
</tr>
<tr>
<td>(Modify existing station)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area monitor (WELD V) site not selected</td>
<td>1 October 1963</td>
<td>1 January 1964</td>
</tr>
<tr>
<td>but presumably in area of Vik, Iceland</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. In addition to these stations Cape Race, Newfoundland (WELD IV) has been tentatively selected for the last station of this complex. The area monitor (WELD VI) and station have a target on-air date of 1 October 1964 and the station is required to be operational by 1 January 1965. Site surveys for these sites have still to be accomplished. Diplomatic negotiations are still delayed by SecDef gold outflow study.

3. An additional requirement imposed is that single rate fix capability in the entire area is a necessity.

4. Support facilities required for WELD will only be necessitated if WELD IV and WELD VI are Coast Guard manned and would include a minimum buildup at Coast Guard Air Detachment, Argentia. However, no decision can be made at this time. When the site for WELD IV has been selected then a determination will have to be made as to what support, if any, is required.

5. Approval of the site surveys indicated that the following was required:

   a. WELD I land adjacent to the Sandur LORAN A/C is required and has been surveyed. No additional land is required for WELD III. Land for WELD II has been acquired.

   b. Station designs will conform to host nation requirements in all stations. Only a Coast Guard Liaison Officer will be permitted at WELD II, and only the existing Liaison staff at WELD I and III. No plans have been developed for WELD IV, however, it is expected that it will be manned by the host nation. All planning in relation to station design and construction are contingent on results of each site survey.
SECRET

c. Construction should be so timed as to permit installation of equipment to meet target on-air dates.

d. Testing and calibration should be completed prior to the required operational on-air dates.

e. Refer to pertinent site survey reports as approved.

6. The administration of the WEILD CHAIN must consider the following:

a. Increase of personnel for CGLONE.

b. Increase of AC&I and OE billets at Headquarters is as yet undetermined.

c. Increase of Liaison staffs if necessary and permitted at WEILD I and III (BT's), creation of billet for 1 Liaison Officer at WEILD II, and necessary equipment installation teams.

d. No increase in District billets is being considered.

e. Costs incurred due to frequency allocation problems must be considered.

f. Host nation technicians and engineers must be trained by the Coast Guard.

g. Site Survey approvals have indicated personnel required for this chain.
PACE CHAIN

1. The requirement is to be met by the construction of stations and monitors at locations tentatively selected as:

<table>
<thead>
<tr>
<th>Station Location</th>
<th>Target on-air date</th>
<th>Required by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catanduanes, R.P.I. (PACE II)</td>
<td>1 October 1964</td>
<td>1 January 1965</td>
</tr>
<tr>
<td>Yap Island (PACE III)</td>
<td>1 October 1964</td>
<td>1 January 1965</td>
</tr>
<tr>
<td>Tarumpitao (PACE IV)</td>
<td>1 October 1964</td>
<td>1 January 1965</td>
</tr>
<tr>
<td>Batan, Monitor (PACE V)</td>
<td>1 October 1964</td>
<td>1 October 1964</td>
</tr>
<tr>
<td>Area monitor (PACE VI)</td>
<td>1 October 1964</td>
<td>1 October 1964</td>
</tr>
</tbody>
</table>

and by the approved site at:

Gesashi, Okinawa (WING IV–PACE I) 1 October 1964 1 January 1965

2. Collocation of existing LCRAN-A stations at Catanduanes and Tarumpitao with the LCRAN-C stations should be accomplished.

3. Preliminary and final site surveys are yet to be conducted.

4. Additional considerations for the PACE CHAIN are:

   a. Siting requirements for PACE II and IV will consider, to the extent possible, use of land within metes and bounds descriptions of the LCRAN-A stations presently at the proposed sites. If additional land is required, or an alternate site selected, purchase and/or rental fees must be estimated. Obtaining use of enlarged or new sites should not be difficult if land is leased rather than purchased.

   b. Station designs must be consistent with the operational requirement of continuous LCRAN-C watches and to provide adequate and comfortable messing, berthing and recreational spaces for approximately 2 officers and 30 enlisted men.

   c. Delivery of equipment to site must be accomplished in sufficient time to meet target on-air dates of 1 October 1964.

   d. Testing and calibration must be completed prior to 1 January 1965.

5. Logistic and administrative items will be generated by the additional support required in this area, the District, and Headquarters. Outcome of Command and Logistic Study presently being conducted will influence entire support complex in the western Pacific. Those recognized items at present are:

   a. An increase in aircraft (one C-130) as well as Air Detachment equipment and personnel caused by the need for air support at PACE II, III & IV.

   b. An increase in personnel at MARSEC, PHILSEC and PBSEC.
c. A decrease in logistic support units (OGC NETLIB) in view of
f. below.

d. An increase in costs which may be incurred to clear 90-110 kc/s
for LORAN-C.

e. An increase in billets at District, Headquarters, Groton, HBS,
Wildwood, (both AC&I and OE).

f. Modification of KUKUI as a partial ACG.

g. An increase of RM billets and equipment at Secondary Radio Station,
Sangley Point.
KEEL CHAIN

1. Loran requirements through 1966 must take into account the Panama, Caribbean LORAN A/C coverage required by the DOD as listed in the Loran Installation Plan, 1961. Present plans in relation to this program (KEEL) envision three new LORAN A/C stations and the addition of either a second LORAN-C rate at Jupiter Inlet LORAN-C station or another station on the west coast of Florida. Based on meeting the requirement in 1966, the present plans are:

   KEEL I - Puerto Cabezas, Nicaragua (LORAN A/C)
   KEEL II - Jackson Bay, Jamaica (LORAN A/C)
   KEEL III - Unknown (LORAN A/C)
   KEEL IV - Unknown (monitor)
   KEEL V - Florida (LORAN-C)

2. Two sites have been acquired; that at Puerto Cabezas, Nicaragua is only large enough for a LORAN-A station and that at Jackson Bay, Jamaica is marginal for LORAN A/C (136 acres). Support of these stations will be from Puerto Rico and the San Juan Air Detachment. One operational (one support) C-123 has already been authorized for the air support. One ATF which was formerly a requirement has been cancelled. The stations will be Coast Guard manned and the Greater Antilles Section must be provided with adequate operational and engineering personnel to administer these stations.

* From observations during flight, present Nicaragua site might be enlarged by considerable filling of gullies. Areas south of Puerto Cabezas more suitable but wrong direction geographically. Other sitting possibilities off Venezuelan coast for other legs, Columbia. T.B. Duncan 12-4-62
The United States Navy (USN) has additional Loran requirements in the areas as listed below:

**Priority 1 - Bering Sea, Loran-C**

The area bounded by the East Coast of the Kamchatka Peninsula eastward to 163° West, between 58° North and 50° North. The area of emphasis is the northern half.

**Priority 2 - North Sea, Loran-C**

The area in the North Sea north of 60° North not presently covered by Northern European Loran-C chain. Required by June 1962. This facility is required by the United States Air Force (USAF) for the Astric program by January 1962.

**Priority 3 - North West Pacific, Loran-C**

The area bounded by a line drawn from Marcus Island to Tokyo, to Okhotsk, USSR, to Adak and back to Marcus Island. The areas of emphasis are described by two curves on an 030° - 210° axis, the larger is centered at approximately 35° North, 150° East, and is approximately 1500 miles long and 660 miles wide, that area in most need is described by a smaller curve centered at approximately 35° North, 145° East and is approximately 1300 miles long by 360 miles wide. Required in March 1963.

**Priority 4 - North Central Atlantic - Loran-C**

The area bounded by a closed curve centered at 54° North, 26° West, on an 330° - 150° axis, approximately 2000 miles long 1200 miles wide. The area of emphasis is the area bounded by a curve centered at 58° North, 26° West, on a Northwest - Southeast axis, approximately 1000 miles long by 700 miles wide with primary emphasis for the North-eastern quarter of the area. Required in January 1964.
Priority 5 - Southeast Asia - LORAN-C

The area bounded by a line drawn from Hong Kong to Tokyo, to Marcus Island to Pelelius Island and back to Hong Kong. The area of emphasis is the Philippine Sea and within this an ellipse on an ENE-WSW axis centered at 21° North, 129° East, approximately 1200 miles long by 600 miles wide. This requirement will also answer the requirement for navigational accuracy LORAN-C for the area from Hong Kong to Shanghai along the coast to 100 miles offshore and to include all of the Bashi Channel. Required in January 1965.

Priority 6 - Caribbean - LORAN A/C

The Caribbean Sea area, with the area of emphasis for LORAN-A the eastern approaches to the Panama Canal. Required in 1966.
FIRST ENDORSEMENT on OAN memo Ser:00912 of 7 November 1962

From: Chief, Office of Engineering
To : Chief of Staff

Subj: Loran Planning Procedures; Loran Construction Planning Document

1. The following comments are made relative to each chain as indicated below:

   a. WELD Chain

      (1) Keflavik should be considered as a possible site for the area monitor. This area will be investigated on a forthcoming calibration trip (January) for adequacy of signal/noise conditions. This location as compared to the VIK location, would reduce logistics problems.

      (2) Single-rate fix capability will be provided by the use of a three-slave chain, retaining the Faeroes in the final configuration of Cape Race, Greenland (Master), Iceland and Faeroes.

      (3) Host nation training must be carefully coordinated so that the technicians presently on site can be rotated to Groton for training. This problem has been the subject of a memorandum from EEE to PTP.

      (4) Under Loran-Priorities, Priority 2 - North Sea, Loran-C. The date of January 1962 is listed for the Astrec Program. It is believed the date should be 1963.

   b. PACE Chain

      (1) If the Formosa Straits coverage requirement is dropped, Catanduanes and Tarumpitao and one area monitor can be cancelled.
FIRST ENDORSEMENT on OAN memo Ser.00912 of 7 Nov 1962 (Cont)

2. After the WING Loran-C chain has been stabilized, calibrated and settled into routine operation (about a six month's period), the manning requirements for the secondary radio station at Yokosuka, Japan should be reviewed. It is felt that a continuous watch will not be required, for the following reasons:

   a. The additional communications requirement imposed upon Far East Section of the WING chain operation can be handled amply by a day time schedule since Loran-C system operation is controlled by the Master station (Iwo Jima) with the two system area monitors assisting.

   b. Marcus Island need be in the FESEC only for Loran-C operations, having direct communications with Guam for other traffic.

   c. Communications outside FESEC are handled over other military facilities.

   d. The Loran-A stations have adequate communications facilities and do not need the close control required of the Loran-C system. Also, they will eventually be transferred to the Japanese.

   J. J. FABIK

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