UNITED STATES COAST GUARD

ADDRESS REPLY TO
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CONFIDENTIAL

From: Commandant, U. S. Coast Guard
To : Commanding General, Air Force Missile Test Center, Patrick Air Force Base, Florida

Subj : Loran-C Station, Jupiter, Florida; change in status[1]

1. This letter reviews and confirms conferences of Coast Guard and Atlantic Missile Range personnel. The first conference was held at Patrick Air Force Base on 24-25 August 1960 with LT COL WHITMIRE, Range Development Officer, and others representing AMR. The second was at the Pentagon, Office of the Secretary of Defense, on 31 August 1960, and was attended by Mr. Richard E. JONES of AMR.

2. The conference discussed existing and possible future problems in connection with Coast Guard and Atlantic Missile Range installations in the Jupiter area, particularly the Loran-C signal pickup in the AMR cable which has a repeater station at Jupiter. Pertinent facets of the problem are as follows:

a. The Coast Guard has occupied the Jupiter Inlet Lighthouse reservation since 1860. The property, consisting of about 122 acres of land, has been held and earmarked for expansion to the aids to navigation installations, and particularly in late years, for the installation of Loran. The property was utilized as a Directional Finding Station during World War II. The Light and Radiobeacon now located on the property have been operational for many years.

b. In response to a request, the Coast Guard in May 1951 granted the Air Force a permit, revocable on 30 days notice, to utilize a large portion of the property for AMR Facilities. In the past, various tracking and communications facilities have been installed and, for the most part, removed. At present the AMR installations consist of the repeater station for the cable, and a Lorac[2] installation now being built. It is understood that the latter is for use in the Pershing program, and its estimated duration is two years. It is understood that the Air Force is currently planning to return to the Coats Guard approximately one-half of the property covered by the permit

[1] Transcribed from original located at NARA, Washington, D.C.

[2] LORAC-A (Long Range Accuracy, Version A)-LORAC-A is a local radio navigation system operated by the Eastern Space and Missile Center (ESMC). The LORAC-A system was originally installed in 1961 to support Pershing missile launches. The system is based on continuous wave (COO) phase comparison and has a reported accuracy of 15 meters within the STS 51-L search areas. Contact positions identified using LORAC-A navigation were relocated during classification and salvage phases of the salvage operation using GPS/LORAN-C systems, thereby validating the accuracy of the LORAN-A system. During STS 51-L search and salvage operations the USAF range boat (LCU) utilized LORAC-A.

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c. During 1956, the Department of the Navy requested the Coast Guard to install an experimental Loran-C system along the East Coast. Propagation and geometric considerations dictate a southern site for this system in the vicinity of Jupiter. In view of the considerable AMR installations at Jupiter Inlet at that time, and because the Loran-C installation was experimental and in temporary building, the Coast Guard located the station in Jonathan Dickson Park about three miles from Jupiter Inlet, on land obtained on a short term lease from the State of Florida.

d. In December 1957, the Joint Chiefs of Staff revised the Loran Installation Plan of 1955. This revision included a permanent requirement for the East Coast Loran-C System. Funds are being made available to the Coast Guard during fiscal year 1961 to permanentize the system

e. When the Jupiter Loran-C station became operational, it was evident that the amount of Loran-C signal picked up by the AMR communications cable was higher then desirable. The pickup is in the vicinity of 100 kcs, and limits the usefulness of channels in this portion of the spectrum. The problem is complicated by the fact that these channels are used up-range. As Jupiter is the up-range termination of the longest hop between repeaters on the cable, the receive signals are at a very low level. Loran-C pickup at this point is therefore particularly harmful. Attempts by AMR to alleviate the condition have not been satisfactory to date.

f. During World War II, the Coast Guard installed a Loran-A station at Hobe Sound, about nine miles North of Jupiter Inlet. This station is located on the beach in exclusive residential area, and its ground area is very limited. Because of beach erosion, it appears probable that the station will have to be relocated within the next few years

3. The Coast Guard desires to relocate the Jupiter Loran-C station to the Jupiter Inlet site. Of the few sites possible from economic and Loran-C system engineering considerations, this one is preferred. It offers further advantages in that:

a. It will meet the requirements for a Loran-A station in the Jupiter vicinity, possible sites for which are even more limited than in Loran-C because of the high overland attenuation of Loran-A signals.

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b. It would permit the consolidation of the Lighthouse, Radiobeacon, Loran-A and Loran-C facilities at one site, with resulting large economics in cost over the period of years which these facilities can be expected to be in operation. In short, many of the original considerations which led to acquisition of the Jupiter Inlet property for aids to navigation are equally applicable with the newer systems, and the site appears the best and only possible one for a consolidated Aids to Navigation facility in the area.

4. It is requested that the Atlantic Missile Range study the cable interference situation and take such steps as required for a satisfactory solution. It should also be noted that new Loran-C equipment which will be installed in the area will radiate at a level of at least 4 to 7 db above the level of the present station. This will, in any case, further deteriorate an unsatisfactory condition. It appears, therefore, that some change is mandatory, and it is strongly recommended that the solution be as all-inclusive as practicable in order to avoid future difficulties. In this connection there appear to be the following possibilities:

a. Development of a refined "bucking" system similar to that previously built by Western Electric for AMR. This system, though not satisfactory at present would seem to merit further consideration.

b. Increase shielding of cable facilities. This would probably entail additional shielding of repeater units as well as better shielded cable in the shallow water areas near Jupiter.

c. Installation of bi-directional underwater repeaters as discussed by AMR and Coast Guard personnel. This solution would appear to be the most clear-cut insofar as minimizing and stabilizing pickup in the system.

5. Although the Loran-C ground system is necessarily quite extensive, it does not rule out co-locating other facilities on this site provided they are electronically compatible with the Loran.

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6. For planning proposes the Coast Guard desires to ascertain by 1 November 1960 to what extent it can anticipate being able to implement the permanent consolidated installation on the Jupiter Inlet reservation. Your early consideration and comments on this problem are therefore requested.

A. C. RICHMOND

Copy to:
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