

DECLASSIFIED
COS MEMO OF
4-16-63

WELD IV

PRELIMINARY
SITE SELECTION SURVEY

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Newfoundland LORAN-C Station
Preliminary Site Survey Report INDEX

The task of Subject's selection team was to determine if a Page LORAN-C station with 150' tower could be located on the East Coast of the
General Peninsula, Newfoundland. Previous limitations, St. John's airspace and protection of the Cape Race coastal radio station, restricted the area
Site Selection (Civil Engineering Considerations) to areas (47°-55'N) westward
Electronics Considerations 10-12
Monitoring Information (Table I) selected from aerial photographs, 13
Frequencies Cape Race-St. Johns (Table II) observations in the field, 14
Canadian Frequencies in and adjacent to 90-110KC/S (Table III) 15
Chain Configuration Diagram (Fig.1) preliminary step towards final 16
Predicted and Measured Hoise (Fig.2) by DOT (Real Estate) to the Newfoundland 17
Signal Display 70-130 KCS Band Office to obtain permission from the Pro- 18
Conclusions and Recommendations vide and measurements on the six 19
considered desirable by the team. The six desirable areas are also discussed

Addenda including

- (a) Canadian Survey Map (Ferryland)
 - (b) "General" site area (Renews) latitude miles from St. John's, New-
 - (c) Panarama Photographs as far as Bay Bulls (25 miles), provides
 Sites 2a, 8, 15, and 16 in terminal and capital city of Newfoundland.
 - (d) Photograph Site 2 with Site 2b in background
 - (e) Miscellaneous Photographs of bridges and harbors
- Access to various roads can be obtained to the Department of Highways. Access to family housing and St. John's also will be kept open by that Department. The railway is completely abandoned, and tracks and ties have been removed. Since an excellent air terminal at St. John's and a good road to the site area link it to any point, an air strip will not be required. Construction force can work out of St. John's or be housed locally in the several small communities in the siting area. Fuel can also be delivered by truck. Several large fuel contractors are available. Night watch supply on station is recommended. Alternative support by sea was investigated. No suitable port facilities exist except possibly at Bay Bulls, but several beaches were found in the area which, it appears, could accept either an LST type operation or unloading off and landing supplies and materials by smaller landing craft, loaded for roll-off unloading. These areas could also receive a tanker and fuel could be pumped ashore to tanks, as an alternative to trucking in fuel from St. John's. In order of desirability, harbors and beaches are:

- (1) Calvert (47°-03'N/52°-55'W) a little road required
- (2) Ferryland (47°-01.5'N/52°-53'W) a little road required, also beach area is fenced. Best harbor
- (3) Cape Droyls (47°-05.5'N/52°-57.5'W). Some road required, also wire drag of approaches to beach

Canadian chart #4575, Cape Arçyle Harbor to Kennebec Harbor, depicts the entire portion of this coast very well. Canadian Mines & Surveys Maps #2 N/2

CONFIDENTIALNewfoundland LORAN-C Station
Preliminary Site Survey Report - General

West half (Ferryland) and #1 N/2 West half (Renews) 1:50,000 show topography also very well. Geological information is available in printed form.

The task of the site selection team was to determine if a high-powered LORAN-C station with 1350' tower could be located on the East Coast of the Avalon Peninsula, Newfoundland. Previous limitations, St. John's airspace and protection of the Cape Race coastal radio station, narrowed the area of search to the stretch of coast between Cape Nedick (47-09'N) southward, to Renums (46-55'N).

The lines largely parallel the road. The Avalon Telephone Co. (ATC) operates the telephone system, which is not carrier type. Since

Fourteen (14) sites were preselected from aerial photographs, and four (4) more tentatively selected from observations in the field. Of these eighteen (18) sites, all but six (6) were rejected for various reasons, briefly reported hereafter. As a preliminary step towards final site acquisition, a letter has been written by DOT (Real Estate) to the Newfoundland Provincial Crown Lands and Surveys Office to obtain permission from the Provincial Government to conduct surveys and measurements on the six (6) sites considered desirable by the team. The six desirable areas are also discussed hereafter.

The general site area is about 45 statute miles from St. John's, Newfoundland. A good road (Rt 5), paved as far as Bay Bulls (25 miles), provides connection to this major sea port, air terminal and capital city of Newfoundland. Support is therefore recommended to be by road from St. John's. The road and bridge are maintained by the Newfoundland Department of Highways. Snow clearance of station roads can be contracted to the Department of Highways. Access to family housing and St. John's also will be kept open by that Department. The railway is completely abandoned, and tracks and ties have been removed. Since an excellent air terminal at St. John's and a good road to the site area link it to any point, an air strip will not be required. Construction force can work out of St. John's or be boarded locally in the several small communities in the siting area. Fuel can also be delivered by truck. Several large fuel contractors are available. Eight months supply on station is recommended. Alternative support by sea was investigated. No suitable port facilities exist except possibly at Bay Bulls, but several beaches were found in the area which, it appears, could accept either an LST type operation or anchoring off and landing supplies and materials by smaller landing craft, loaded for roll-off unloading. These areas could also receive a tanker and fuel could be pumped ashore to tanks, as an alternative to trucking in fuel from St. John's. In order of desirability, harbors and beaches are:

- DOT plan to provide as much of the station complement as possible in this area.
- Security:
- (1) Calvert (47-03'N/52-55'W) a little road required
 - (2) Ferryland (47-01'N/52-53'W) a little road required, also beach area is fenced. Best harbor.
 - (3) Cape Broyle (47-05'N/52-57'W). Some road required, also wire drag of approaches to beach

Canadian chart #4575, Cape Broyle Harbor to Renums Harbor, depicts the marine portion of this coast very well. Canadian Mines & Surveys Maps #1 N/2

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West half (Ferryland) and #1 K/15 West half (Renews) 1:50,000 show topography also very well. Geological information is available in printed DOT publications. General climatology and hydrography are reported in the Canadian Newfoundland Coast Pilot. A special tower icing study is being prepared by DOT and will be forwarded separately.

Commercial power and telephone service are available in the site area, and power and telephone lines largely parallel the road. The Avalon Telephone Co. (Bell) operates the telephone system, which is not carrier type. Since DOT has already established the precedent in court action, the Newfoundland Light and Power Co., will be required to clear up any interference their power lines may cause to the proposed facility. DOT will investigate the desirability of commercial power with standby-nobreak at the station as well as station-generated power. Budgeting figure used by DOT for the cutoff between commercial and generated power is \$0.05 (Can.) per kilowatt hour. Since the rate in this area is reported to be from .07 to .10 /kw-hr at first glance it appears that power will be generated at the station. Fuel costs will naturally be considered in this DOT study.

Electronic monitoring was accomplished with a Stoddart NM-10A and results are reported in succeeding paragraphs. In general, operations found were those anticipated based on information collected in Ottawa in the week of 10 June 1963. While several problems exist, GCS-3 has advised that these can be overcome.

Canadian (DOT) manning is presently envisioned, and this would be considered a desirable family station. Should Coast Guard manning become necessary, it is recommended that this be a family station.

Excellent medical facilities exist at St. John's, and the well-developed Public Health system in Newfoundland precludes any serious consideration of endemic diseases normally reported by site survey teams.

Housing is not currently available. DOT at present plans to investigate purchase of town lots in a desirable community near the site selected. If this is impossible, the alternative is family housing at the site. Schooling with bus service is available at Ferryland, where the parish priest (RC) is very receptive to an influx of newcomers. Schools at Renews (small but good) and Cape Broyle (combined grades) are also available.

DOT plans to recruit as much of the station complement as possible in this area, thereby probably ensuring personnel stability.

Security can be provided by RCMP (Ferryland).

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The preliminary site survey team concludes that a high-powered LORAN-C station with 1350' tower which meets the operational requirement can be built and supported in this area. Specific sites, in order of priority of desirability, are discussed in succeeding subparagraphs. These are, in order of priority:

- | | | |
|----|----------------------|-------------------|
| 2A | approximate position | 47-04.7N |
| 8 | approximate position | 46-56.5N |
| 2 | approximate position | 47-04.8N |
| 2B | approximate position | vicinity 2 and 2A |
| 16 | approximate position | 47-09.5N |
| 15 | approximate position | 47-01.1N |

A schedule for completion of this project to meet a target on-air date of 1 October 1964 and an operational date of 1 January 1965 is appended. An optimum starting date for the final site survey is on or about 1 July 1963. If this schedule is not followed quite closely, the project may slip about one year, since the construction season in Newfoundland is short, from May to September, with chances of work in October considered to be very slight.

SELECTED SITES

1. Site number 2A.

- a. This area varies in elevation from 300 to 425 feet. The site has a percent grade of about 4%. Contours within the area are regular and gradually sloping. No irregularities exist in the area.
- b. The highest terrain in the immediate area consists of a 425 foot peak to the southward.
- c. Vegetation in the area consists mainly of small brush and scrub (2000). Tree cover is considered moderate with heights varying from 3 feet to 18 feet. Trees of the latter height are sparse.
- d. Drainage in the area is good, however, some marsh areas exist at the southwest sector.
- e. Soil bearing characteristics appear good with the topsoil cover underlain with conglomerate. Soil brings no special requirements.

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SITE SELECTION - WELD IV

Aerial photogrammetric pairs were analyzed jointly by the Department of Transport Staff and U. S. Coast Guard representatives in Ottawa, Canada, prior to the joint preliminary survey. At that time a total of fourteen (14) sites were considered as feasible. Four (4) sites were subsequently eliminated after review of the photographs, with sites 5 and 13 evaluated as excellent and sites 3, 6 and 12 evaluated as good.

The individual factors considered in arriving at the evaluation rating were:

- a. Topography
- b. Tree cover
- c. Water availability
- d. Access
- e. Proximity to habitation
- f. Area available for ground system

The preliminary survey team considered the above factors during on-site visits to the area. Such other factors as soil bearing, proximity of telephone lines, etc., were also considered. Four additional sites were examined for possible construction, namely sites 2a, 2b, 15 and 16. The following sites have been evaluated as suitable for construction by an on-site analysis. Sites are listed in order of acceptable priority and are as shown on Canada Mines and Technical Survey Maps "Ferryland" and "Renews".

SELECTED SITES

1. Site number 2a.

a. This area varies in elevation from 500 to 425 feet. The site has a percent grade of about 4%. Contours within the area are regular and gradually sloping. No irregularities exist in the area.

b. The highest terrain in the immediate area consists of a 625 foot peak to the southward. Few trees are in the area, these of limited growth.

c. Vegetation in the area consists mainly of small brush and spruce trees. Tree cover is considered moderate with heights varying from 3 feet to 18 feet. Trees of the latter height are sparse.

d. Drainage in the area is good, however, some marsh area exists at the northwest sector.

e. Soil bearing characteristics appear good with the topsoil cover underlain with conglomerate. Soil borings, however, will be required.

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The marsh area was hand probed and revealed good bearing strata at depths varying from 1½ feet to 5 feet. Site 2 & 3 are located along route 5. The power transmission system presently. A telephone communications tower is proposed for establishment near the numeral five shown on the road to the eastward. Refer to the electronics portion of the report for a discussion of the tower.

g. Both high voltage lines (12.5 KVA) (4600 V) and telephone lines are located along the western side of the road about 1100 yards from the site center. The power distribution system is four wire Y.

h. Water is available about ¾ mile from the site, however, a well source is indicated as feasible.

i. Access to the site is excellent, requiring a road from route 5 about 1100 yards in length.

2. Site number 8

within the 500 foot contour line is marsh. Hand probes of the area indicate a bearing strata 1½ to 5 feet in depth.

a. The area varies in elevation from 200 to 100 feet. Percent grade of the site is about 3%. Contours within the area are irregular with several 25 to 50 foot mounds in the site. These irregularities would not affect construction or tower erection.

b. The highest terrain in the vicinity is a 353 foot peak to the NW by W of the site.

c. An unused road (i.e. passage consists of foot travelers, horses or cattle and possibly two vehicles per year) passes through the area. The roadway although unimproved remains in the road system. Inquiries to the Highway Department indicate that a 66 foot right-of-way would be reserved from the road centerline (i.e. 33 feet to either side). Antenna guys may pass over the road provided an overhead clearance of 15 feet is maintained.

d. The other considerations affecting Site 3 and Site 2 apply to this site. Vegetation consists mainly of Arctic like vegetation (i.e. moss, sparse wild grass and brush). Few trees are in the area, these of stunted growth.

e. Drainage in the area is good.

f. Soil bearing characteristics appear good. Numerous rock outcroppings are prevalent. The area appears to be on a conglomerate strata. Soil borings are required.

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g. The power transmission and telephone lines discussed under Site 2 b are located along route 5. The power transmission system presently terminates at Renew's.

h. Water is available 3/4 mile to the northward, however, a well source is indicated as feasible.

i. Access to the site is excellent. Construction of a half mile access road from route 5 should be provided in order to eliminate access traffic through Renew's along the undeveloped road.

3. Site 2 for confirmation.

a. The area is located on a flat plateau 500 feet in elevation.

b. Vegetation consists solely of marsh grass with the 500 foot contour line fringed with small spruce tree growth.

c. The area within the 500 foot contour line is marsh. Hand probings of the area indicate a bearing strata 1 1/2 to 5 feet in depth. Soil borings are required and this site although excellent visually cannot be classified finally until after soil exploration findings.

d. The same other considerations relative to Site 2 a apply also to site 2. An access road about one mile long would be required.

4. Site 2 b.

a. This area varies in elevation from 450 to 500 feet. Percent grade varies from 3 to 7 percent.

b. The eastern sector of this site is the marsh area of Site 2.

c. An access road about 1 1/2 miles long would be required.

d. The other considerations affecting Site 2 and Site 2 a apply to this site.

e. Soil bearing is indicated as good except for the marsh area. Borings would be required.

5. Site 16

a. This area varies in elevation from 350 to 450 feet. Percent grade is about 3 1/2%. Contours within the area are gentle and gradually sloping. No terrain irregularities exist.

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Site 16- continued

b. The highest terrain in the immediate area consists of a 822 foot peak to the westward.

c. Vegetation is moderate consisting of brush and spruce trees. Tree heights varies from 3 to 18 feet. This site is more extensively covered with tree growth than the other sites under consideration.

d. Drainage in the area is good except for the western sector which consists of scattered marsh areas.

e. Soil bearing characteristics appear good, however, borings are required for confirmation.

f. Telephone lines and a high voltage power transmission line run along the western side of the roadway about 1000 yards from the center of the site.

g. Water is available within 1500 feet from the site center.

h. Access to the site is excellent, requiring a halfmile road from route 5.

i. This site is located at the southern extremity of the Torbay Aircraft control sector and may not be suitable for that reason. Clearance would be required.

6. Site 15

a. The area varies in elevation from 250 to 350 feet. Percent grade varies considerably, however, the antenna pier location would be on a flat plateau area. The terrain is irregular and from visual appearances and rough cross sectioning of the area would require placement of some top loading anchors (1350 feet from tower) in the sharply graded ridge to the northward.

b. The highest terrain in the vicinity is a 625 foot peak to the NW and a 564 foot peak to the NE, 3 1/2 miles distant.

c. Vegetation in the area is moderate consisting predominately of brush. Trees are sparse with maximum height of about 15 feet.

d. Drainage in the area is good.

e. Soil bearing characteristics appear good. Presumably the topsoil cover is underlain with conglomerate. Soil borings are required.

Site 14- Irregular terrain

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In view of the target on-air date for this station and a construction season stated by local representatives to be about October (5 months), the desirability of site development this current construction is indicated. The following f. Telephone lines and power transmission lines run along the roadway.

g. Water is available to the site $1\frac{1}{2}$ miles away. Development of a well source is indicated.

h. Access to the site is excellent requiring a road to route 5, 400 yards long.

In order to permit accomplishment of items 2 and 3 these phases should be completed prior to the start of the technical site evaluation. Early completion of these items will enable

The following sites were evaluated and considered unsuitable for reasons shown: to proceed orderly and without delay upon official project approval.

Site 1 - Signs of ownership were noted including a recently erected fence. Availability of water was not apparent.

Site 3 - Access poor and area in bog. Completion of the facility by the specified target date.

Site 5 - Access poor and area in bog.

Site 4 - Heavily wooded, poor terrain, and ownership indicated. Survey team vacated area to insure no conflict with a bull released in a pasture area.

Site 6 - Site was not investigated, since access was an obvious problem and since other suitable sites were available.

Site 7 - Heavily wooded, very poor access, terrain very irregular.

Site 9 - Terrain irregular with definite signs of ownership.

Site 10 - Not evaluated because of obvious poor access and availability of other sites.

Site 11 - Heavily wooded and irregular terrain.

Site 12 - Not evaluated because of obvious poor access, availability of other sites and bog indications similar to sites 3 and 5.

Site 13 - Extensive peat bog deposits in area.

Site 14 - Irregular terrain

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In view of the target on-air date for this station and a construction season stated by local representatives to be about from 15 May to 15 October (5 month), the desirability of site development of this current construction is indicated. The following general schedule is recommended to permit completion of the project.

1. Preliminary survey - Complete.
2. Civil Engineering Construction Survey - Commence on or about 1 July 1963.
3. Soil exploration - Commence on or about 1 July 1963.
 - a. In order to permit accomplishment of items 2 and 3 those phases should be considered as a continuation of the technical site evaluation. Early completion of those items will enable the subsequent design, tower procurement and preliminary site development phases to proceed orderly and without delay upon official project approval.
4. The Design phase and Procurement phases, namely for transformers, generators, and tower should commence during August 1963.
5. A preliminary construction phase this current season would insure completion of the facility by the specified target date.

Climatology is not included in this report, however, the Department of Transport has obtained some data and is presently obtaining additional data. Local personnel (St. Johns) employed by the United Towns Electric Company, Ltd., have stated that icing in a ten year period on a number 2 wire feeding power was observed to be seventeen (17) inches in circumference or about 5.5 inches in diameter.

Photographs of the various selected sites are shown in the addenda. See Figure 1.

Predicted Noise

Noise as predicted by the curves appearing in CUR 65 is shown in Figure 2. On the same figure actual noise measured at the site is indicated by asterisks.

Predicted Signal Strength

The predicted strength of the received signal from the master station at Anglesoy is 96 db above 1 microvolt per meter at the 30 microsecond sampling point. This is based on a radiated power of 250 megawatts peak at Anglesoy (150 kilowatts at the sampling point).

Electronic Considerations

General

All of the sites selected as possible locations were satisfactory from an electronics standpoint. These sites include 2A, 8, 2, 2B, 16 and 15 as previously reported. Each of the sites selected were near telephone, telegraph, teletype and power lines since these lines run adjacent to the main road along the coast. Several of the sites rejected as being inaccessible, heavily wooded, or not level would have gained a distance from the lines of not more than two miles. While having a site adjacent to the lines is not desirable it is felt that no serious interference problems will result. More information on this subject is included under "Interference Considerations".

A site near the north limit for site selection was preferred to reduce the possibility of interference to the radio station at Cape Race. The north limit for site selection was approximately 30 miles from Cape Race, the south limit was approximately 20 miles from Cape Race. Site 2A, which has been selected as the best site of those selected, is at the north limit for site selection. The following paragraphs apply to site 2A specifically.

Paired Station

The Newfoundland Loren Station will form part of the North Atlantic Loren-C network with the master station at Angissoq, Greenland. Distance to the master station is approximately 830 miles, bearing 017 degrees true. The Newfoundland station will have high power Loren equipment (3.6 megawatts peak) and a high tower of 1350 feet.

Synchronization of the Angissoq and Cart I leg of the chain will probably be accomplished by using the Newfoundland station as a control. See Figure 1.

Predicted Noise

Noise as predicted by the curves appearing in CCIR 65 is shown in Figure 2. On the same figure actual noise measured at the site is indicated by asterisks.

Predicted Signal Strength

The predicted strength of the received signal from the master station at Angissoq is 56 db above one microvolt per meter at the 30 microsecond sampling point. This is based on a radiated power of 3.6 megawatts peak at Angissoq (750 kilowatts at the sampling point).

Propagation Considerations

The propagation path between site 2A and the master station at Angissog is mainly seawater. The site is located at a height of approximately 450 feet above sea level with a clear take off path to Angissog. On a bearing of East the site is 2.5 miles from the ocean. Most land areas to the seaward side of the site are at a lower altitude except for one knoll which rises to approximately 560 feet.

Interference Considerations

The Stoddard Radio Frequency Interference Receiver, Type MM-10A (300 cps bandwidth) was used to determine the frequency, type, bearing and amplitude of the signals in the 70-130 kcs band. The results of 12 hours of monitoring are shown in Table I and Figure 3.

The Avalon Telephone Company has open wire telephone lines passing within a half mile of the site. The telephone system is of the hand magneto or battery type with no carrier used. The possibility of interference to telephone systems by Loran-C is greatest to open wire carrier type systems. Since this system does not use a carrier, there should be little or no interference problem especially if the telephone system is properly balanced.

Canadian National teletype and telegraph lines are located along the road within a half mile of the site. Open wire power lines are also nearby. The power lines have reportedly been a source of noise to electronic installations in Newfoundland in the past. The usual cause is arcing across old insulators or insulators that are salt coated. Although monitoring did not indicate excessive noise of this type, it may be present at a later time. The Newfoundland Power and Light Company will be required to clean up any noise from this source.

A 200 foot microwave relay tower is being constructed within a half mile of the site. The tower will be supported by three levels of guys with three guys space 120 degrees apart at each level. Triangular construction will be used with approximately 20 inches on a side. The first leg of the microwave system will be from Kenmount Hill in St. Johns and has a 24 channel capacity at a frequency of 450 megacycles. The second leg is from the tower near the site to Trepassey and consists of 6 channels at 150 megacycles. Lenkurt 71A and Lenkurt 71E equipment will be used with an output of 20 watts. There is no interference expected to or from this tower.

Cape Race Radio Station is approximately 30 miles to the south of the site and St. Johns Radio Station is approximately 40 miles to the north of the site. Table II is a list of frequencies used at these stations. The stations have no frequencies in use in or adjacent to the Loran-C band. Both stations use 500 kc and it is obvious that no interference to this frequency can be tolerated.

A list of Canadian frequencies in and adjacent to the frequency band 90-110 kcs is included in Table III. Steps are presently being taken to eliminate any problems in this list.

The two communication facilities at the Naval Air Station at Argentia were visited and a copy of frequencies used there obtained. No interference problems with the Air Station facilities are expected.

Communication Facilities

73.1 It is recommended that the station be connected to the Avalon Telephone system. It is recommended that the standard communication equipment for a Loran-C station be provided. This would include single sideband and tele-type equipment.

Monitor Site

A possible site for a monitor station would be at the Loran-A station at Battle Harbor, Labrador, or such other sites as meet with the Canadian Department of Transportation approval.

Trans-Atlantic Cables

Interference to trans-atlantic cables is not expected. The nearest cable to the site is at St. Johns, Newfoundland.

Frequency	Mode	Angle	Distance	Notes
73.1				
76.5		270°	20	
75		333°	120	
81.5				
82.5				
86				
87.2	CW	333°	310	
87.6	CW	334°	35	
88.5	NOISE		10	7.5
100	LOAN-C	230°	50	16
101.2	RMTT	357°	90	
103.9	RMTT	340°	120	50
104.9	RMTT	213°	80	
112.5	DECCA	295°	500	
115	CW	285°	600	120
115	CW	330°	200	20
110.5	RMTT	335°	30	
109	CW	307°	300	
107	DECCA	351°	200	90

TABLE I

Compiled Monitoring Information
June 21-22 1963

Freq Kcs	Type	Brng True	Observed Signal Strengths uv/meter	
			Day	Night
70.2	DECCA	253°	300	900
73.1	RATT	353°		1100
73.5	RATT	333°	150	1200
76.8	CW	278°	20	
78	CW	333°		120
81.5	RATT	233°	200	400
82.5	NOISE			12
84	DECCA	228°	110	250
86	NOISE		8	
87.2	CW	333°		310
87.6	CW	334°		35
88.5	NOISE		7.5	10
100	LORAN-C	230°	16	50
101.2	RATT	357°		90
103.9	RATT	348°	50	120
104.9	RATT	213°		80
112.5	DECCA	293°		500
115	CW	283°	120	600
115	CW	330°	20	200
118.5	RATT	333°	30	
125	CW	305°		300
127	DECCA	351°	90	200

Ships and aircraft are authorized to use 475 Kcs to 535 Kcs as a calling frequency

TABLE II

Frequencies Used at Cape Race and St. John's Radio Stations

<u>Freq. No/s</u>	<u>Location</u>	<u>Class</u>	<u>Power</u>
52	Not presently	CAPE RACE	
	<u>Freq kcs</u>	<u>Type</u>	
102			
104.0	179 St. John's, Nfld.	CW FX Radio Beacon	10 KW
109.7	310 420 Archie, Nfld.	CW FX CW	5 KW
110.7 ⁵	500 2134 2182 Cape, Nfld.	RT FX RT FX	3 KW
111.5	2206 2582 Cape, Nfld.	RT FX RT	10 KW
112.15	Planned, Nfld. area	FX	5 KW
	ST. JOHN'S		
	<u>Freq kcs</u>	<u>Type</u>	
	179	CW	
	260	Radio Beacon	
	478	CW	
	500	CW	
	1792	RT	
	2118	RT	
	2134	RT	
	2182	RT	
	2192	RT	
	2206	RT	
	2514	RT	
	2582	RT	
	2612	CW	
	5425	CW	

Ships and aircraft are authorized to use 405 kcs to 535 kcs as a calling frequency

TABLE III

CANADIAN FREQUENCIES IN AND ADJACENT TO THE FREQUENCY BAND 90-110 KC/S.

<u>Freq. Kc/s</u>	<u>Location</u>	<u>Class</u>	<u>Power</u>
92	Not presently Active		
102	Not presently Active		
104.8	Stephenville, Nfld.	FX	10 KW
109.7	Argentia, Nfld.	FX	5 KW
110.75*	Ottawa, Ont.	FX	33 KW
111.5	Goose, Nfld.	FX	10 KW
112.15	Planned, Nfld. area	FX	5 KW

*Received in Debart, N.S.

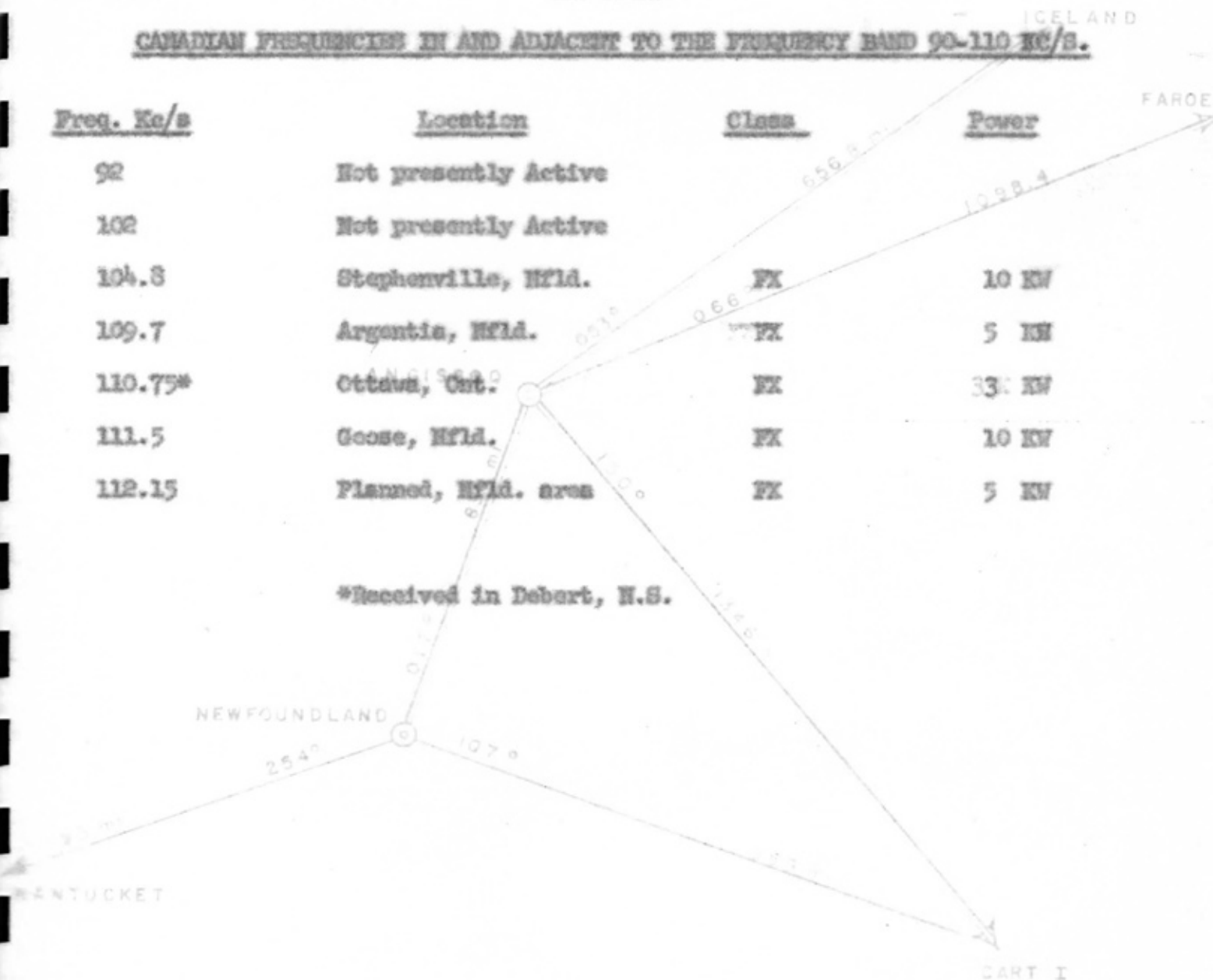


Figure 1

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6/28/53

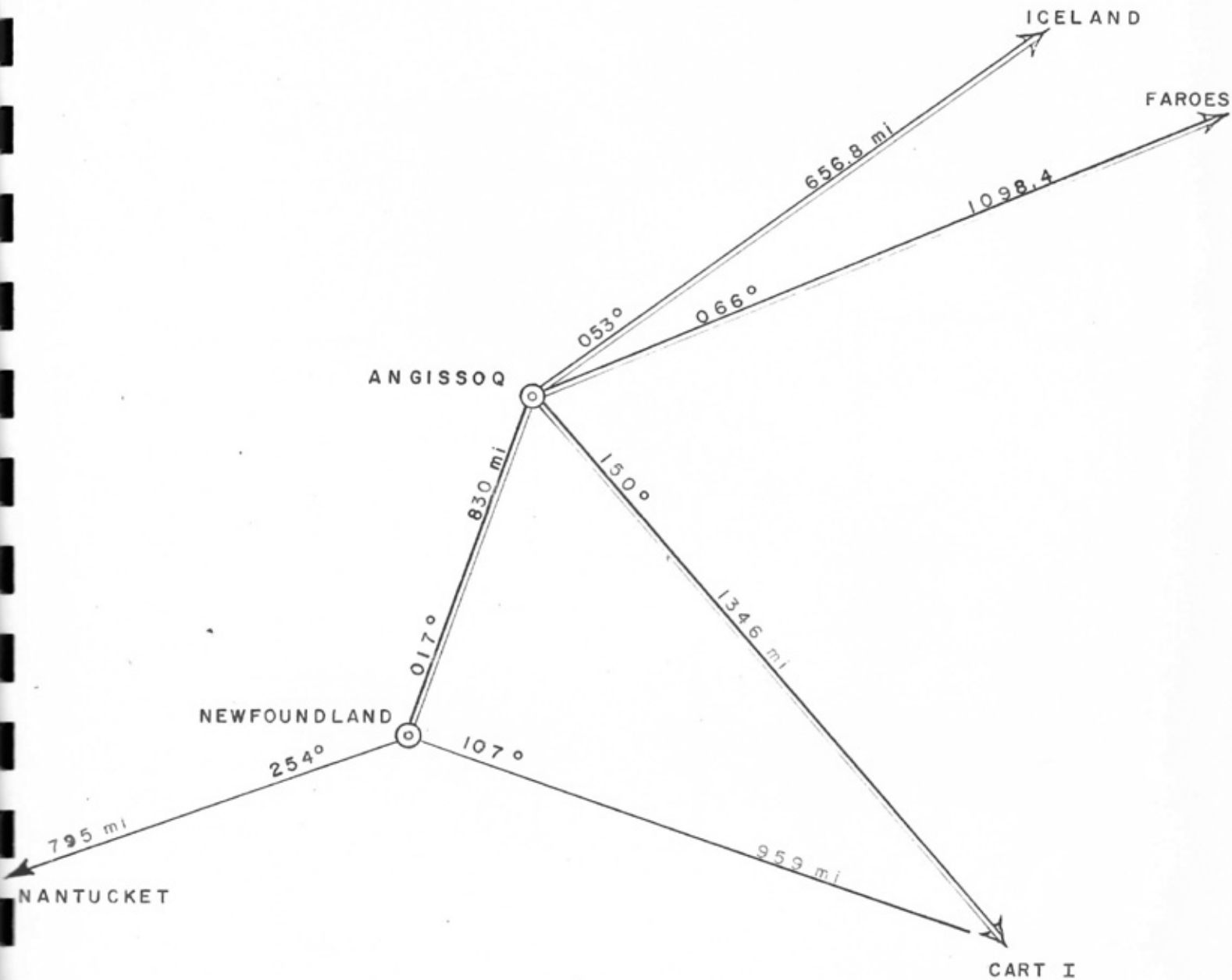


Figure 1

Predicted Noise & Measured Noise

for
25KC BANDWIDTH @ 100 KCS

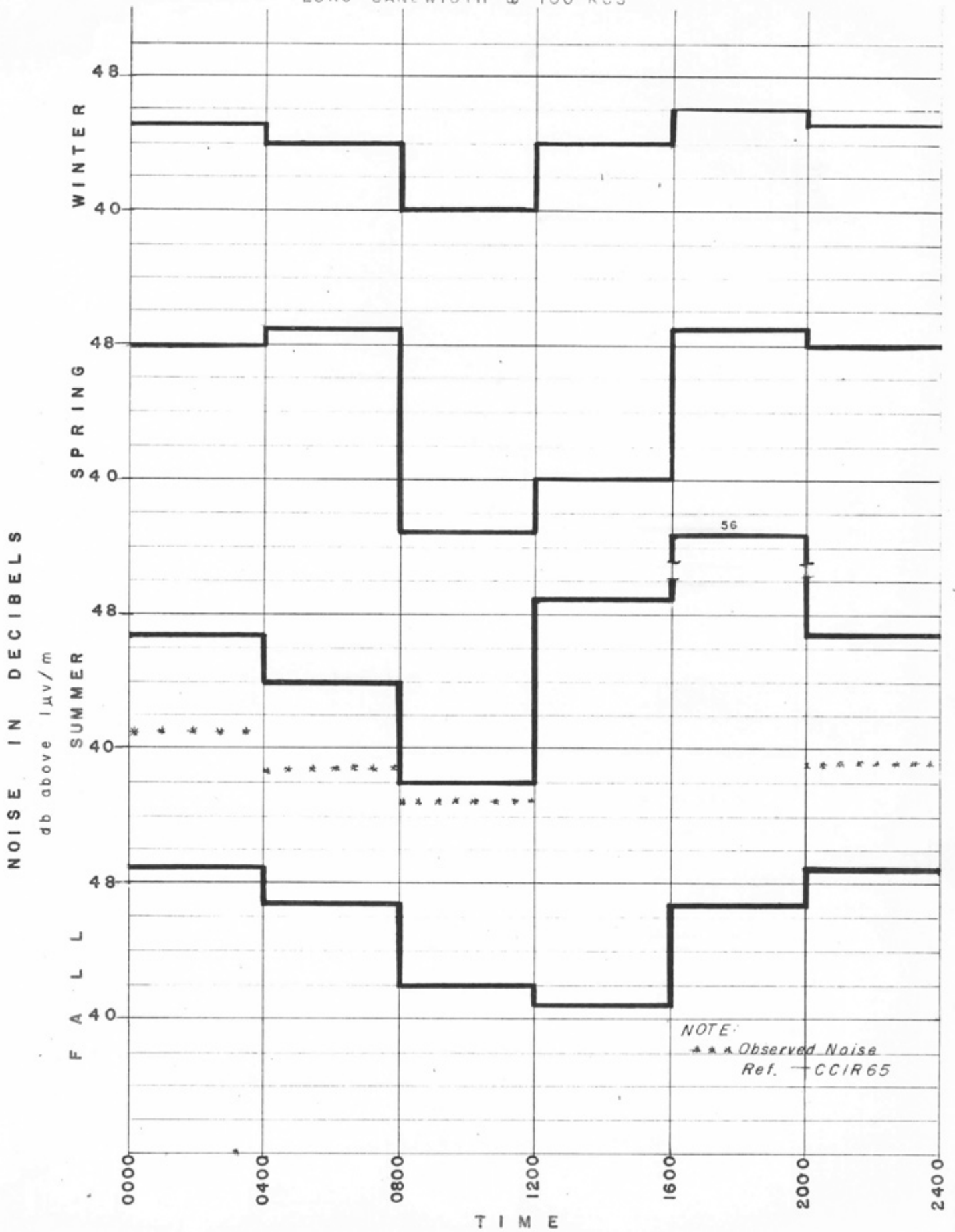
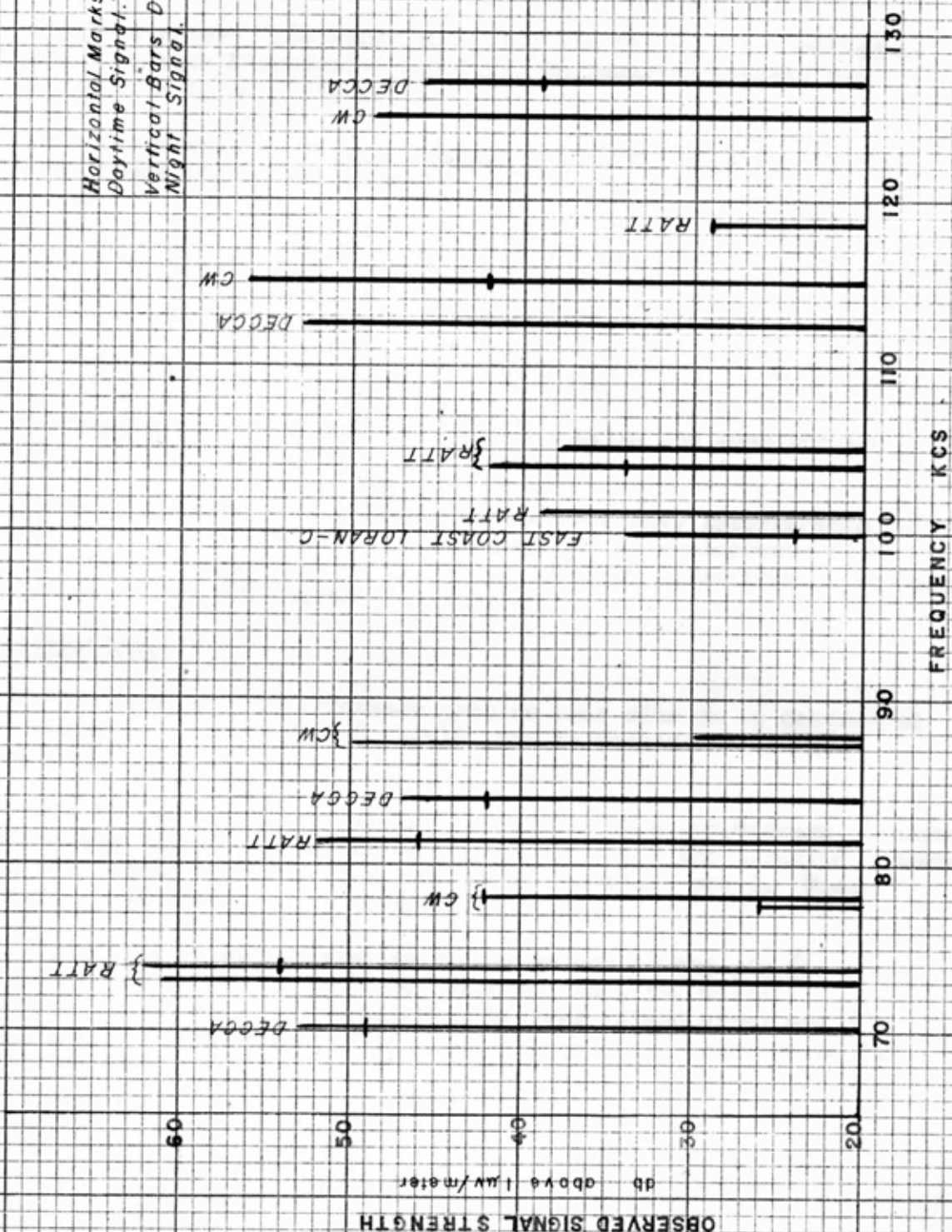


Figure 2

Display of Signal in 70-130 kes Bands

RECEIVER NM-10A BANDWIDTH 300 kcs



Horizontal Marks Indicate Strongest Daytime Signal.
Vertical Bars Denote Strongest Night Signal.

Figure 3

CONCLUSIONS AND RECOMMENDATIONS:

Conclusions

Of the eighteen (18) sites analyzed, six (6) were determined to be suitable from both Electronics and Civil Engineering aspects for establishment of a Loran C Station.

From the viewpoint of construction and Electronics feasibility, the sites in order of suitability are:

- (1) 2a
- (2) 8
- (3) 2
- (4) 2b
- (5) 16
- (6) 15

Borings at all sites must be made to confirm the construction evaluation.

Recent verbal reports indicate that a frequency interference problem may result from the proposed construction of a microwave relay tower near site 2a. This problem is currently under investigation between U. S. Coast Guard and DOT representatives.

Recommendations

If the frequency interference problem near site 2a is determined to be of a serious nature, site 8 should then be considered as the preferred site.

Since all of the six sites are classified as above average, latitude relative to specific siting should be permitted, since the Canadian Government also has siting problems (i.e. schooling, housing, etc.). These latter factors may become those controlling siting.

If problems arise restricting siting at one of the six (6) sites, then as a compromise, a site could be selected about 5-7 miles inland from the road. Such sites are available, however, inland sites would not be optimum from the aspect of access, since housing could be as far as 10-15 miles away.