

1.4238

RE 277/49

1-4

SECRET

ADEN W/T STATION

REPORT

SECRET

H.M.S. COLLINGWOOD

FAREHAM

HANTS

5th Jan. 1950

The Secretary of the Admiralty
London, S.W.1

Copies to:-

The Commander-in-Chief East Indies Station
The Flag Officer Malayan Area
The Commanding Officer H.M.S. Mercury II
The Resident Naval Officer Aden
The Director of Radio Equipment Admiralty

Reference:- R.E. 277/49 dated 14th March 1949

Sir,

I have the honour to submit the following reply to Admiralty
Questionnaire R.E. 277/49 dated 14th March 1949.

I have the honour to be Sir,

Your obedient servant

Wm. Parkin

C.E. O. (R) R.N.

ANSWERS TO AN IRALTY QUESTIONNAIRE R.E. 277/49

AND CITATION REPORT ON ADEN W/T STATION

R.E. 277/49 SECTION A. TRANSMITTING STATION

QUES. 1. Transmitters completely installed?

Type.	R.N. No.	SERIAL No.	State of maintenance
SWB 11E	89	Tx: 233503 Rect: 245836 Abs: 244011	Main Transformer and Grid supply transformers unservicable (Low insulation resistance). Otherwise working.
SWB 8E	126	Tx: 259419 Rect: 251773	In working order
SWB 8E	124	Tx: 258163 Rect: 251773	In working order.
SWB 8E	Zb	Tx: 155924 Rect: 153107	In working order.
T1190 RC Unit	---	3628 Tx. 6316	In working order.
T1190 RC Unit	---	2196 Tx. 5650	In working order.

QUES. 2. Transmitters partially installed?

Type.	R.N. No.	Serial No.	Work To Be Done	Time to Complete
R20A	13S	---	Tone Generators to be wired	1 Day
R20A	71S	---	Tone Generators to be wired	1 Day
T1190	---	4445	To be secured and wired. Temporary wiring has been run for maintenance purposes.	2 Days
T1190	---	5165	Ditto.	2 Days
SWB 11E	659	Tx: 172148 Rect: 170333 Abs: 201884	Set placed on site, but all other work remains to be done	2 Weeks
22C	---	---	Most of the wiring has been installed, but none is completed. This set is deteriorating rapidly due to damp.	2 Months

QUES. 3. Is all the equipment available locally. If not, what is deficient to complete QUES. 2 above?

Equipment is available for all sets except Type 22C, which has the following deficiencies:-

Item No.	Item Description
44	Air distributing Box
45	Spark Gap
37	Condenser; oil filled; .0022; 15,000v test; adjustable.
45	Tray for above.
28	Insulators porcelain; 4" x 2 $\frac{1}{2}$ "; 4 in No.
55	Handle extension.
34	Flexible coupling; A.P. 1770
N.B.:-	Nos. 44&45 above, are fitted in the interior of the cage. The remaining items are fitted in the Amp. Panel. Item Nos. are taken from the specification for Type 22C.

In addition to the above, the Rectifying Filament Transformer is listed in the Specification as - 400v/30v 9KVA: the transformer actually fitted is marked - 400v/15v 9KVA.

Of the three very large oscillatory circuit condensers, two are empty, and the third is leaking very slightly.

QUES. 4. Transmitters in store (See 7)?

Type	R.N. No.	Serial No.	Deficiencies.
T1190	---	6937	NIL. Crated up.
T1190	---	4473	NIL.
T1190 RC Unit	---	2967) 1858)	Inter-connecting leads and Microphone adaptor type 15.
G12K	36R	---	NIL. Crated up.
4T	---	A654	No. 7 Range Unit. (Type 60D)
4T	---	A762	NIL. (Type 60D)
52	---	---	Batteries.
52	---	---	Batteries.
TCC 150	---	---	Valves. (Italian set).

QUES. 5. Are there any deficiencies in QUES. 4. above (See 7)?

Answer to this question is included in the answer to QUES. 4. above.

Rectifier Unit Design 37, A.P.No. 53876, supplying Isolating Units Design A A.P. No. W9089A. (Isolating Units are fitted).

QUES. 7. If contents of cases in store are unknown, state case numbers and any other markings which will help in identifying the contents.

The contents of all packing cases in store are known, and a complete list of all important stores available is given as Appendix 1 to this report.

QUES. 8. What is the maximum power available from Aden Electricity Co.?

The following information was obtained on this subject, after a conference with the Aden Electricity Department.

It appears that the Department wrote R.N.O. Aden (14-8-48), asking what power would be required for future commitments. R.N.O. Aden replied to the effect that the matter was under discussion, but as far as was known, 150KVA on full load and 100KVA on normal load, would be required.

Since writing that letter, other users' demands have increased to such an extent, that the Aden Electricity Department state they can at the moment only supply 100KVA during the Winter months, October to April, and that during the Summer months April to October, they are unable to supply power except for purely domestic needs. The reason given is, insufficient boilers. (They have three turbo Generators, but only four boilers to supply them).

By 1953, they anticipate being able to supply as much power as can be used. (They have now and additional equipment on order).

In a few months time, they expect to be able to supply the 150KVA asked for, as the result of the following additional generating equipment coming into use and thus relieving the load:-

- (i) Under-ground plant (2x Admiralty) - 200KVA - ready within one month.
 - (ii) Sheikothman Sub Station - 200KVA - ready in the next few months.
 - (iii) Crossways - 150KVA - being erected by the R.A.F - date of completion not known.
-

QUES. 9. What are the Emergency Power arrangements?

The following is a review of the entire Power Supply situation at Istithas W/T Station Aden, including the Emergency Power Supply arrangements.

300KVA SUPPLY. The Transformer for this supply was housed in No. 1 Transformer House (App. 3 Fig. 1). All wiring is complete.

The transformer itself, is completely unserviceable as the result of a burn out in at least two primary windings. (It is thought that molten copper has probably impregnated the remaining windings). The repair of this transformer is beyond local resources, and I am advised by A.M.G.W.D (RAF) that its repair is a matter for the makers.

This transformer has been removed from No.1 Transformer House to S.C.E's yard, where it awaits forwarding instructions.

In place of the burnt out 300KVA transformer, A.M.G.W.D (RAF), have installed a 30KVA transformer to supply their domestic needs, the 600' Towers obstruction lights, and the sewage pump. Of this 30KVA, some 12KVA are available, and this power has been used by the visiting party for testing sets, one at a time, on low power.

The following recent signals on this subject refer:-

C in C E.I.	061135EF	Oct 1949	
Admiralty	271650A	Oct 1949	
C in C E.I.	051046EF	Nov 1949	
Admiralty	260952Z	Nov 1949	(Refers to 150KVA supply)
R.N.O Aden	??????	Nov 1949	" " " "

150KVA SUPPLY. The Transformer for this supply, was intended to be fitted in No.2 Transformer House, but although some work has been done (Wiring), there is no transformer or switch gear fitted. The Power Cable has been run to within 150 yards of the power house (Information from Aden Electricity department).

From Admiralty 271650A Oct 1949 and 260952Z Nov 1949, it is apparent that Admiralty are under the impression that this transformer and its associated equipment is fitted. The following facts have come to light as the result of investigations into this matter:-

- (i) The transformer in question was originally fitted in the old W/T station at Khornaksa.
- (ii) The Aden Electricity Department state that it was not the property of the Admiralty, but was owned by them.
- (iii) The Aden Electricity Department re-claimed it when Khornaksa W/T closed down, and are now using it on another circuit.

N.B:- The Aden Electricity Department are unable to state with certainty which exact transformer was fitted at Khornaksa W/T, as they have a number of similar transformers; they state however, that they can prove ownership of all transformers in their possession (This information was obtained on the "Old Boy" basis).

EMERGENCY POWER SUPPLY. One 150KVA Blackstone Diesel Generator is fitted in the Tunnel attached to Isthmus W/T; its history is as follows:-

- (i) It was fitted originally at the old W/T Station Khornaksa.
- (ii) Messers Luke Thomas were contracted to shift it to its new quarters at Isthmus W/T, and to fit it.
- (iii) They shifted and fitted it, but it did not pass the trials imposed by the A.M.G.W.D (RAF). It was out of alignment, causing bearings to run hot.
- (iv) For the last two years, S.C.E's department have been worrying Messers Luke Thomas to complete its installation. Messers Luke Thomas are the only engineering firm in Aden capable of under-taking the work, and they seem hard pressed by shipping firms.

(v) After negotiations, Messers Luke Thomas agreed to supply skilled labour, if we, the visiting party, could supply the knowledge. This was done; the C.E.R.A, loaned from Ceylon North W/T Station for the purpose, supplied the knowledge and the machine is now running, although the following observations are made regarding it:-

(a) Ventilation of the Tunnel is very poor. Although the machine was run for four hours on a load test at 200 amps, and the Tunnel air remained breathable, it is felt that in Summer temperatures, with the machine running, the Tunnel would be untenable.

(b) The water supply to the Diesel for cooling purposes is inadequate. To run the machine for the four hours mentioned above, special arrangements had to be made. S.C.M's department are endeavouring to overcome this defect.

Notes on tests made. After completely re-aligning the diesel, a test run was made on no load, and everything seemed satisfactory. A further short run on load, using brine tanks, disclosed the inadequacy of the water supply. When this had been over-come, another run was made, taking the load gradually up to 200 amps, at which figure the machine was behaving extremely well. A.M.G.W.D (RAF) were not satisfied with this run, as the governor lost control above 205 amps (Full load should be 275 amps). It was discovered that the governor was fitted with the wrong type of springs, and towards the end of the run, the water pump failed (Due to exursion). These defects were made good and it is felt that the machine is now capable of doing all we are likely to require of it. A.M.G.W.D (RAF) are still working to improve it.

QUES. 10. What R/C Cables exist between Transmitting Station and Naval H.Q?

One 38 pair Cable exists. The Army are at present using it on the "Old Boy" basis.

As this cable was completely unserviceable until the Army repaired it, it seemed in our best interests that this arrangement continue, and I have advised R.N.O Aden accordingly.

The Army have agreed to fully maintain the cable, and have further agreed to junction box the cable inside the W/T Station, in such a manner that it will be a matter of a few minutes work for us to re-claim any pairs we might need (By looping across). The work of junction boxing the cable was practically complete when I left Aden.

The use of this cable by the Army, is being put on a more official basis by R.N.O. Aden.

QUES. 11. What aeriels are rigged or are available for rigging?

No aeriels are rigged, but six Vertically folded Terminated dipoles, frequency ranges unknown, are available for fitting.

Adequate supplies of wire, insulators and general rigging apparatus are available on the Station.

All masts are erected (See App. 3 Fig. 1) and are being kept in an excellent state of preservation by S.C.M's department.

Most Feeder line posts are in place (There appear to be a few deficiencies here and there), but metal fittings on the posts are in a poor state.

A few feeder lines are run for some distances, but it would be as well to consider them non-existent.

QUES. 12. Condition of aerials and feeders?

Answered in the answer to QUES. 11. The six V.F.T.Ds mentioned, appear to be in reasonable condition, although the wire is heavily oxidised.

As explained in the answer to QUES 11, the feeders are not run, but adequate supplies of wire are available.

QUES. 13. Are there any restrictions on fresh water supply for cooling transmitters etc.?

No restrictions up to 30,000 gallons per day. Water supply comes from Sheik Otman, where it is pumped from deep wells (These pumps are one of the biggest loads on the Aden Electricity Supply System).

Distilled water can be purchased locally, its price depending on the degree of pollution permissible.

The answer to this question was obtained from the Aden Water Supply department.

QUES. 14. Is accommodation for personnel adequate?

Yes. The following accommodation exists:-

(i) House for Officer-in-Charge, with accommodation for Cook and Steward.

(ii) Europeans Building. Designed to accommodate C & P.O's in their own mess at one end, and other ranks at the other end of the building. C & P.O's have cabins, and other ranks have dormitories.

Adequate ablution, lounge and recreational facilities exist.

(iii) Native quarters. There are five buildings for housing native married families, and two buildings for single natives

(iv) Contractors families. Three buildings.

(v) Offices. The Guard House contains ample office space. There is an air conditioned office for the Officer-in-Charge in NO. 1 Transmitting building.

(See App. 3 Fig. 1)

QUES. 15. Any other remarks re transmitting station?

Other remarks:-

(a) Handbooks, specifications etc. available on the Station, see Appendix 1a to this report.

(b) TUNNEL. There are no transmitters installed in the tunnel although concrete bases have been prepared to receive them.

(c) Missing Transmitters. The following sites are available in No. 1 Transmitting building, and concrete bases, wiring trenches etc., have been prepared to receive the sets:-

(i) SWB&K. Set not available locally.

(ii) SWB11. Set not available locally.

(iii) G12. Set available.

There are no transmitters available locally for fitting in the Tunnel.

(d) Naval H.Q. The following equipment exists at N.H.Q:-

(1) Type T1190 Ser. No. 4429

(ii) Navemeter outfit G61-35-62, respective ser. Nos. A1123-A820-Mc1078. Racked but not wired. No power pack fitted.

(e) MAINTENANCE. The R.A.F are having considerable difficulty in maintaining our equipment - they lack skilled personnel. In March 1949 they wrote stating their inability to maintain the equipment at all, and in point of fact, the equipment was not looked at until the visiting party arrived in October 1949. The climate is such, that wireless equipment, left unattended, deteriorates rapidly. I feel that it would be in the very best interests of the Service, if a Radio Electrician were drafted to the staff of R.N.O Aden and the R.A.F. relieved of the responsibility of maintaining this expensive equipment.

Despite their previous statement to the contrary, the R.A.F have agreed to maintain this equipment. They agreed at a conference held in R.A.F Headquarters Aden, when it was pointed out to them, that they were bound by the terms of their agreement with Admiralty permitting them the use of the Isthmus W/T Station for accommodation purposes, (Clause 3 of this agreement states that they will maintain the wireless sets on the Station) and also when it was pointed out that the maintenance had been cut to a minimum. To get them to agree, it was necessary to cut maintenance to the following:-

(a) Switch on all fitted transmitter filament circuits - to warm sets through and drive out any damp.

(b) Switch on fans and air conditioning plant.

(c) Report defects in a maintenance log.

(d) When situation permits, a fully qualified Radio Mechanic to make good the defects noted in the Maintenance Log. (RAF state that this will not be a very frequent occurrence)

This really is not very satisfactory, but is the best that could be achieved under the circumstances.

The following orders were written for the Maintenance Party to further assist the R.A.F:-

INSTRUCTIONS FOR MAINTENANCE PARTY

1. C.E.R.A (R.N.O's Staff) to start 150 KVA diesel in Tunnel.
2. A.M.G.W.D (RAF) to put Emergency Supply to No. 1 Transmitting building.
3. A.M.G.W.D to change over to Emergency Supply in No.1 Transmitting building. SWITCH ON
4. A.M.G.W.D to fans and air conditioning plant.
5. Radio Mechanic to make all switches on the switch board marked with RED PAINTED SWITCH KNOBS

6. Radio Mechanic to make all RED PAINTED switches on the following wireless sets:-

A.....SWB11.....RN 89.
B.....SWB8.....RN 126.
C.....SWB8.....RN 124.
D1....T1190.
D2....T1190.
I1....T1190.
I2....T1190.
H.....SWB8.....RN Zb.

This lights the filaments of all valves in the above sets.

7. Radio Mechanic to DIAL ON on both the Dialing devices to be found in the Control Room. This lights the filaments of all valves in the following sets:-

F.....R20A.....RN 71S.
M.....R20A.....RN 13S.

8. After running as above for one hour, Radio Mechanic to break all switches (Marked with RED PAINT) on wireless sets A,B,C,D1,D2,I1,I2 and H. Also to break all switches previously made in para.5 above.
9. A.M.G.V.D to revert to normal working for power.
C.E.R.A to switch off 150KVA Diesel Generator.
10. ALL defects to be noted in the MAINTENANCE LOG by all departments concerned. Date and time of carrying out the above procedure to be noted in the LOG on every occasion.

(f) Air Conditioning Plant. The parts of this apparatus in contact with the air outside the buildings, corrode very rapidly. It was found necessary to scrape and re-paint practically all metal parts - it is thought that the advance of the corrosion has been stopped.

(i) No. 1 Transmitting Room air conditioning plant is now in full working order. It had several faults, mainly electrical.

(ii) No. 2 Transmitting Room air conditioning plant is now in full working order. Apart from corrosion to external metal surfaces, this plant was in working order when the visiting party arrived in Aden.

(g) Transmitting Sets. As the sets had received no maintenance since March 1949, they were in fairly bad shape when the visiting party arrived in October 1949. Every set had at least one snag on it, and most had more than one. All snags have been removed, and nearly all sets can now be put onto a dummy load for testing purposes. There is only one set, a SWB11E, in No. 1 Transmitting Room, which cannot be switched on by the maintenance mechanic (RAF) for warming through; no wiring at all is in place for this set. The object of the maintenance procedure detailed in (e) above, was to ensure that the sets were warmed through once a week and it is hoped that with the fans and air conditioning plant running, any dampness will be driven out. It was considered impossible to allow the type of mechanic that the RAF can spare for this duty, to put sets on load: However, when the RAF can spare a skilled mechanic, they intend sending him to test all sets on load, and to make good any noticed defects, including those noticed in the Maintenance Log.

SITE OF PROPOSED RECEIVING STATION

(SEE ADEN 1/90,000 and Appendix 3 Figure 3. Square between 102 - 65 and 103 - 66)

QUES. 1 Is site technically suitable for a receiving station?

Yes. The site for the most part is barren desert, with, in the northern section, a little desert grass.

Reference to App. 3 Fig. 3 will show that a property, belonging to the R.A.F, forms the Western boundary of the site (This property is derelict).

Water at the most, is a few feet down, so earthing conditions should be admirable. Actual readings, taken at the "Old H/F D/F Site", about 1,000 yds. to the South of the Centre of the proposed receiving site, gave the following result:-

1.2 ohms per 50 ft. at a depth of 2.5 ft.

This figure was the average of eight readings, each of which was corrected for instrumental error

QUES. 2 Approximate area available?

The area of the square 102 -65 : 103 - 66 minus the small strip in the RAF adjoining property - approximately 1,122,000 sq. yds or 234 acres.

QUES. 3 Are there any existing buildings which could be used?

No buildings exist on the proposed site. The buildings in the adjoining property, which at one time was a R.A.F communications centre, appear to be derelict.

QUES. 4 Distance from R.A.F Station?

The following distances are given for the sake of completeness:-

Khormaksa (R.A.F).....	4 miles
Khormaksa (R.A.F W/T Station).....	2.25 miles
Lake Lines (R.A.F Aden Protectorate Levies).....	1.5 miles
Isthmus (R.N W/T Station).....	5.5 miles

QUES. 5 Nearest power supply?

The Power Supply Cables (Over-head) run along the road bounding the Southwest corner of the adjoining R.A.F property.

In the Southwest corner of the adjoining R.A.F property, near to the roadway, is a Sub-station (150KVA), at present supplying the domestic needs of Lake Lines.

The Aden Electricity Department state that the Line is over loaded, but that some 50KVA could probably be made available.

Distance of nearest power supply from centre of proposed receiving

site is 2,400 yards.

QUES. 6 Nearest water supply?

2,400 yards. The water supply and the electrical power supply run alongside one another. No restrictions on the use of water.

QUES. 7 Nearest cable for R/C?

No known cables exist that would be of assistance. Our own cable between Isthmus W/T and NHQ, would appear to be the nearest; this cable has 38 pairs, of which, in the event of opening up, Isthmus W/T would probably require about 20 pairs. The Army are at present using about 10 pairs of this cable, but in such a manner that it is a simple matter to loop across to any pairs we might require.

QUES. 8 What roads would require to be laid?

ALL. The site is barren desert, and no road runs through or to it.

On the map, App.3 fig.3, to the South of the proposed receiving site, is a "Motorable Track" - in this area, water is very close to the surface: the track is NOT repeat NOT motorable. I tried it in a JEEP and was bogged down for five hours; it eventually took five R.A.F 3 ton lorries to drag the jeep out.

However, the terrain of the proposed receiving site is better, but S.C.E department assure me it would be a costly business to lay the necessary roads.

QUES. 9 Is there any accommodation near?

NO. Lake Lines (R.A.F Aden Protectorate Levies) might be able to accommodate a few people; this is the nearest possible accommodation and even that is 1.5 miles from the centre of the proposed receiving site.

Nearest Naval accommodation is Isthmus W/T, at which ample accommodation exists for the station staff, and it could probably be stretched to accommodate for a few more, but the distance, 5.5 miles seems prohibitive.

REMARKS

The adjoining R.A.F property, which, although derelict, has quite a lot of conveniences, would seem a much better proposition than the proposed receiving site. It has roads already laid, and is bounded on one side by an ordinary metal road. It has easy access to power and water supplies. In addition, there are many buildings, which although at present derelict, appear to have perfectly sound foundations. As it was a communications centre and Wireless station, it probably has other conveniences of which I am not aware. No advances were made regarding the possibility of our using this property, and this is merely mentioned as being a much easier solution than building a receiving station on the proposed site.

R. E. 277/49 SECTION C

H/F D/F SITE AT ADEN

QUES. 1 Is the old H/F D/F site in position 12°52' 15" North 45°01' 15" East suitable for fitting a modern H/F D/F set of ABE or AH6 type?

The position of this site was fixed with reasonable accuracy from three cross bearings. There is no visual evidence that any structure has ever stood there, or anywhere in the immediate vicinity. Water is only a few inches below the surface of the sand; a few yards away is where the jeep, previously mentioned, bogged down: further, S.C.E Department assure me it would be most impracticable to build on the site.

From all other points of view, it is an ideal site, and although the answer to this question would appear to be NO, the following figures are included as being of possible future use; they were actually taken on the site:-

OBSTRUCTIONS

NAME	BEARING	DISTANCE	ELEVATION
R.N. W/T Masts (Isthmus)	169°	5.5 miles	01° 20'
Sham San Hill	184°	6.5 miles	2° 50'
RAF W/T Masts (Khornaaksa)	132°	2.3 miles	0° 28'

N.B:- SHAM SAN is the highest peak (1,800 feet) of the range of hills surrounding Aden proper (Crater).

NATURE OF TERRAIN

Flat moist sand. The whole area is extremely flat, and there are no buildings or obstructions of any sort within hundreds of yards.

EARTH CONDUCTIVITY

The earth resistance is 1.182 ohms per 50 feet. This figure is the average of eight readings taken on the Cardinal and Sub- Cardinal points of the compass, with the site as centre and a circle radius of 50 feet. The depth of penetration of the earth rods was 2.5 feet.

The position of this site is shown in App. 3 Fig. 3 of this report.

QUES. 2 Are there any suitable adjacent sites, spaced at least half a mile from each other, to provide a group H/F D/F station of up to four sites?

Assuming that the "Old Site" was impracticable, the following information was obtained.

The motorable track, running through Khormaksa W/T (RAF), is really motorable (See App. 3 Fig. 3). It runs along a ridge of high sand above the surrounding plains; the sand is dry and reasonably firm. A group of four H/F D/F stations could be spaced out along this road, with the advantage of running parallel to the sea shore; the road itself would be of great advantage in bringing up building materials etc. There are no buildings or other obstructions in the vicinity.

Four such stations are shown positioned in App. 3 Fig. 3 of this report, and the following figures were taken at these sites in case of future use:-

SITE H1 Bearing of Right-hand Windmill (App. 3 Fig. 3)..... $244\frac{1}{2}^{\circ}$
 " " Left-hand " " " " $211\frac{1}{2}^{\circ}$

Elevations:-RAF W/T Masts Khormaksa..... $0^{\circ} 52'$
 Sham San Hill..... $2^{\circ} 46'$
 RN W/T Masts Istmass..... $1^{\circ} 35'$ (Approx)

TERRAIN. Dry sand and shell; reasonably flat and firm.

EARTH RESISTANCE. 501 ohms per 50 feet at depth of penetration of 2.5 Feet

SITE H2 Bearing of Right-hand Windmill (App. 3 Fig. 3)..... 234°
 " " Left-hand " " " " 210°

Elevations:-No further readings of elevation of possible obstructions were made, as the only possible obstructions (See site H1 above), become progressively smaller in elevation as one proceeds North.

Terrain. Dry sand and shell; reasonably firm and flat.

Earth Resistance. 182 ohms per 50 ft. at depth of penetration $2\frac{1}{2}$ ft.

SITE H3 Bearing of Right-hand Windmill (App. 3 Fig. 3)..... 229°
 " " Left-hand " " " " $208\frac{1}{2}^{\circ}$

Terrain. Dry sand and shell; reasonably firm and flat.

Earth Resistance. 1716 ohms per 50 ft. at depth of $2\frac{1}{2}$ ft.

SITE H4 Bearing of Right-hand Windmill (App. 3 Fig. 3)..... $225\frac{1}{2}^{\circ}$
 " " Left-hand " " " " 208°

Terrain. Dry sand and shell; reasonably firm and flat.

Earth Resistance. 118 ohms per 50 ft. at depth of $2\frac{1}{2}$ ft.

RIDGE The following additional information concerns the ridge on which the above sites were positioned:-

Height of ridge above surrounding plains of very moist sand = 16 ft.
 Width of ridge..... = 375 ft.
 Bearing along which ridge and sea shore run..... = 023°
 Earth Res. per 50 ft. (Depth $2\frac{1}{2}$ ft.) to east of ridge..... = 12 ohms.
 " " " " " " " West " " = 9 ohms.

N.B:- It will be noticed that the Earth Resistance along the top of the ridge in the position of the proposed H/F D/F stations

is rather high; from the information given about the ridge, it will be seen that no great depth is needed to get down to reasonable earth readings. In addition, the terrain at the base of the ridge to the East (Seaboard side), would seem to be alright from a building point of view, and there the earth resistance is very low; however, this would have the disadvantage of having the ridge itself behind the aerials. The ridge is undoubtedly the finest proposition in this area.

SITE POSITIONS.

Site H1	=	105.2	-	64.1
Site H2	=	105.8	-	65.2
Site H3	=	106.1	-	66.0
Site H4	=	106.4	-	66.8

See Aden Plan 50,000/1 and App.3 Fig.3 to this report.

QUES. 3 Any other technically suitable sites in Aden?

Not with the same facilities existing at those mentioned in the answer to Question 2 of this Section.

Anywhere in Aden proper is out of the question owing to the Shaz San Hills.

The vicinity of the Isthmus is impossible due to the R.N. Station 600' steel constructed masts.

To the West of Sheikh Otman involves the possibility of taking bearings across four changes of terrain, i.e., on some arcs, bearings would be taken from land across water - across land again (Isthmus and Aden) - across water again.

It is safe to say that the area selected in the answer to question 2, i.e., to the North of the Salt Pans, is by far the best available technically in the Aden area.

NOTES. Availability. No enquiries have been made concerning the availability of land for these sites, but there are no buildings in the vicinity - just desert - and it is thought there would be little difficulty in obtaining permission on similar lines to those for the proposed receiving station site, i.e., no charge, but land to revert to present authorities when no longer required by Admiralty.

Accommodation. No facilities exist locally, but were the proposed receiving station constructed, it would be within reasonable distance of these proposed H/F D/F sites, although even then, personnel would need transport to relieve watches etc.

NAVAL H.Q.'s

QUES. 1 Is the old receiving station suitable as a Main Signal Office?

Yes. Full facilities and accommodation still in existence.

QUES. 2 Is there sufficient space for A/T equipment?

Yes. Very slight alterations to existing layout may be necessary.

QUES. 3 Do any of the wooden masts erected during the late war in the vicinity of R.N.O Aden's residence and offices at Crescent now remain?

Three only, and they have been dismantled at the request of the Port Trust - they made the Aden frontage unsightly.

The timber for these three masts is stowed in the Tunnel at Isthmus W/T Station. The bases are still in position outside R.N.O's office and their state of preservation is good.

Of the other two masts, no trace has been found; their site is now a football pitch, and even their concrete bases have disappeared.

QUES. 4 Is there any receiving equipment (Naval) now in store at Aden?

Yes. Refer to Appendix 1 to this report for exact details. All available receiving equipment is stored at R.N. W/T Station Isthmus.

ADDITIONAL INFORMATION

Twelve receiving bays are in existence in NHQ receiving room, each equipped with the following apparatus (Still in position):-

1 in No. A.P. W2128A Manual Transmitter Control Unit.
2 in No. A.P. 142 Jack Boxes.
1 in No. A.P. 7681 Morse keys.

In addition there are two bays (Auto) each equipped with the following apparatus (Still in position):-

1 in No. A.P. W2129A Auto Transmitter Control Unit.
1 in No. A.P. 142 Jack Box.
1 in No. A.P. 7681 Morse Key.

Other equipment stored in the Receiving Room at NHJ:-

G61 Ser. No. A1123) This Wave-meter outfit is not wired, and
G35 Ser. No. 820) there is no power pack for it. It is
G62 Ser. No. M1078) fitted in a rack.

1 in No. 80-C-30 Rectifier; not wired.

1 in No. Aerial Exchange (30 aeriads-20 receivers); partially wired.

1 in No. R/C Land Line Terminating Jack Field (60 Jacks). (R/C lines to Isthmus W/T Station).

Air Conditioning. The whole of the ground floor (Receiving Room, Signals office etc.) is air conditioned. This plant is not in working order, but steps are being taken to render it so.

Power Supplies. A somewhat problematical 30KVA could be supplied by the Aden Electricity Department if required. (Dealt with more fully under the power supplies to Isthmus W/T station in section A of this report.)

Emergency Power Supplies. The whole of the ground floor can be supplied from a 15KVA diesel generator, which is in full working order. This includes supplying the air conditioning plant.

State of preservation. The ground floor, housing the Receiving Room and signal offices etc, although locked up, appears to be in a good state of preservation, and could be brought into use very rapidly if required.

Top Floor. The floor above the signal offices etc, at present houses R.N.O's Offices and R.N.O's Staff Mess

APPENDIX TWO

GENERAL REMARKS AND REPORT OF WORK UNDERTAKEN BY VISITING PARTY

1. The visiting party consisted of:-

Mr. W. Parkin C.E.O. (R) R.N.
C.E.R.A. Goodyear
R.El. Robb
L.S.A. Timms

S.C.E Aden provided six local workmen to assist in cleaning, opening and shifting packing cases etc.

2. Time at Aden:-

From 4-10-49 to 4-12-49

3. Air conditioning plants. All exposed metal parts cleaned and painted with anti-corrosion red paint.

Several defects made good, including the changing of one motor (Fan).

150KVA Diesel Generator. Correctly aligned. Various faults made good, including Governor springs, water pump, water supply etc.

Generator put on "Load Test" using brine tanks.

4. Wireless Sets. Every fitted set had some snag or other; all snags removed.

Two T190's were wired up to enable the "RAF Maintenance party" to include them in their maintenance schedule. It was felt these sets would deteriorate if not warmed up with the remaining sets.

The two R201's gave a lot of trouble, one in particular had several crossed wiring snags. Both Dialing and relay systems gave trouble.

5. Stores. Stores were in heaps every-where. All stores were listed, main items in detail minor items briefly

All stores were reasonably stored. Packing cases chalked marked with their contents.

All books, specifications and drawings listed.

6. Remarks.
Aden W/T Istima accommodation. This has been taken over by the RAF and the Europeans Mess is now an RAF Officers Mess. Various other buildings have been taken over by the RAF and an agreement exists.

General Maintenance. S.C.E maintains the buildings and messes, and the RAF maintain most of the remainder, with emphasis on the electrical engineering side. S.C.E has no representative of E.E.M on his staff. The A.M.G.W.D (RAF) act more or less as an agency service for S.C.E in any capacity that S.C.E may require, but of course, their own work comes very much first.