

942
Survey

HOLMES & NARVER, INC.
Engineers - Constructors

408007

TO: E. R. Berrien
ATT: L. S. Hammond

JOB: 942 J/S No. 3467

FROM: C. F. Dunlap

RE: Transmittal of Triangulation Station
Recovery Notes for Eniwetok Atoll

DATE: 14 March 1957

Reference: Ltr. Dunlap to Berrien, "Drawing Transmittal and
Triangulation Recommendations", dtd. 3-1-57.

Transmitted herewith are one print and one reproducible of
28 triangulation station recovery notes for Eniwetok Atoll
primary and secondary triangulation stations.

Also enclosed is one 8 x 10 print of photo W-594-8 showing
the Oscar structure with the new 20' tower which is presently
in place.

REPOSITORY Nevada Operations Office

COLLECTION 326 67 A 1016

BOX No. 223138 or ?

FOLDER Survey: Project Engineering
File

CFD:MPC:hg

Encl: 28 reproducibles & 28
prints of recovery notes.
One 8x10 photo.

cc: H/O Chrono
H/O Central
J/S Chrono
J/S Central
J/S Survey
J/S Engineering
J/S Engr. Reading File

BEST COPY AVAILABLE

~~CONFIDENTIAL USE ONLY~~

**HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942**

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION: Mack	SITE: Mack
ESTABLISHED BY: H&N	YEAR: 1955
RECOVERED BY: E. F. Klanchar	YEAR: 1957
FIELD BOOK NO. 296 PAGE: 26	DATE: 2-2-57

DISTANCES AND DIRECTIONS TO REFERENCE MARKS				
OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		

BRIEF HISTORY OF STATION:

This station was established as a second order station as a part of the Holmes & Narver 1955 Control Survey.

DETAILED DESCRIPTION OF STATION:

This station was destroyed by construction of a generator shed. At present it would be impossible to reestablish it due to the construction done in connection with Operation REDWING.

~~CONFIDENTIAL USE ONLY~~

HOLMES & NARVER, INC
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Parry	SITE Elmer
ESTABLISHED BY H&N	YEAR 1949-50 Parry Island
RECOVERED BY H. C. Dalton	YEAR 1956 Eniwetok Atoll
FIELD BOOK NO. 294 PAGE 2-4	DATE 12-10-56 Marshall Islands

OBJECT	DISTANCES		DIRECTION	ELEVATION
	AND DIRECTIONS TO REFERENCE MARKS			
	DISTANCE			
	FEET	METERS		
Parry	--	--	---	8.656
Japtan	--	--	00 - 00 - 00	--
RM #1	39.68	12.094	13 - 25 - 42	8.356
RM #2	53.51	16.310	100 - 51 - 30	7.814
RM #3	48.94	14.917	193 - 25 - 45	9.011

BRIEF HISTORY OF STATION:

This station is located at the north end of Parry Island 10 ft. east of the road opposite Bldg. 229, a P.I. & S. aluminum building. It is in approximately the same location as U.S.N. steel (1944) which is shown as a tower on H.O. chart #6033. The station, as it now exists, was a principal station in the 1949-50 control survey. It was destroyed in 1951 and replaced from its reference marks. It was used as an azimuth mark for the island traverse orientation in the H&N 1952 expansion of horizontal control.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard embossed Holmes & Narver brass disc 2-5/8" in diameter stamped "Parry". It is set in concrete flush with the ground surface in a depression approximately 1/2 ft. below the surrounding ground surface.

The reference marks listed on page 2, Field Book 122 were not recovered. Three new reference marks were set as a part of the recovery survey.

RM's #1, #2 and #3 are standard 2-5/8" diameter brass discs marked "RM #1 (2 & 3) Parry H&N 1956". They are set in concrete 4" below the ground surface. RM #1

~~OFFICIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Privelege (Eniwetok) SITE Fred
ESTABLISHED BY USN YEAR 1944 Eniwetok Island
RECOVERED BY E. F. Klanchar YEAR 1956 Eniwetok Atoll
FIELD BOOK NO. 285 PAGE 23 DATE 11-28-56 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		DIRECTION	ELEVATION
	DISTANCE			
	FEET	METERS		
Privelege	--	--	--	11.02
Mon. Rose	79.52	24.238	00 - 00 - 00	11.60
RM #1	79.37	24.192	124 - 01 - 58	12.62

BRIEF HISTORY OF STATION:

This station was a primary station in the following surveys: USS Bowditch, 1944; Holmes & Narver, 1949-50; Holmes & Narver Expansion, 1952. In the Holmes & Narver records, it has been called "Eniwetok" to identify the island it is located upon.

DETAILED DESCRIPTION OF STATION:

This station is located at the extreme northerly end of Eniwetok Island. It is approximately 35 ft. north of the north face of Bldg. #1, a structure on a concrete slab.

This station was recovered in good condition. The station mark is a standard embossed USN SURVEY brass disc, 2" in diameter. It is set in an 8" x 8" concrete post, 9" below the ground surface.

RM Rose is in good condition. It is a flat brass disc, 2-1/2" in diameter, stamped "Rose-H&N-53". It is set in a concrete cylinder 16" in diameter, 9" below

~~CONFIDENTIAL USE ONLY~~

PAGE 2 - RECOVERY NOTE - TRIANGULATION STATION
STATION Privelege (Eniwetok) SITE Fred

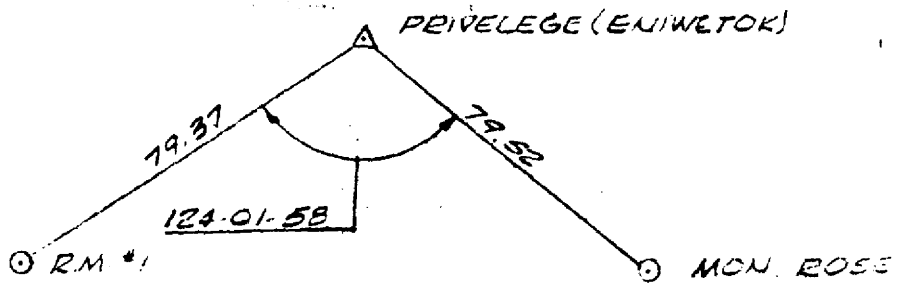
DETAILED DESCRIPTION OF STATION (CONT'D)

the ground surface.

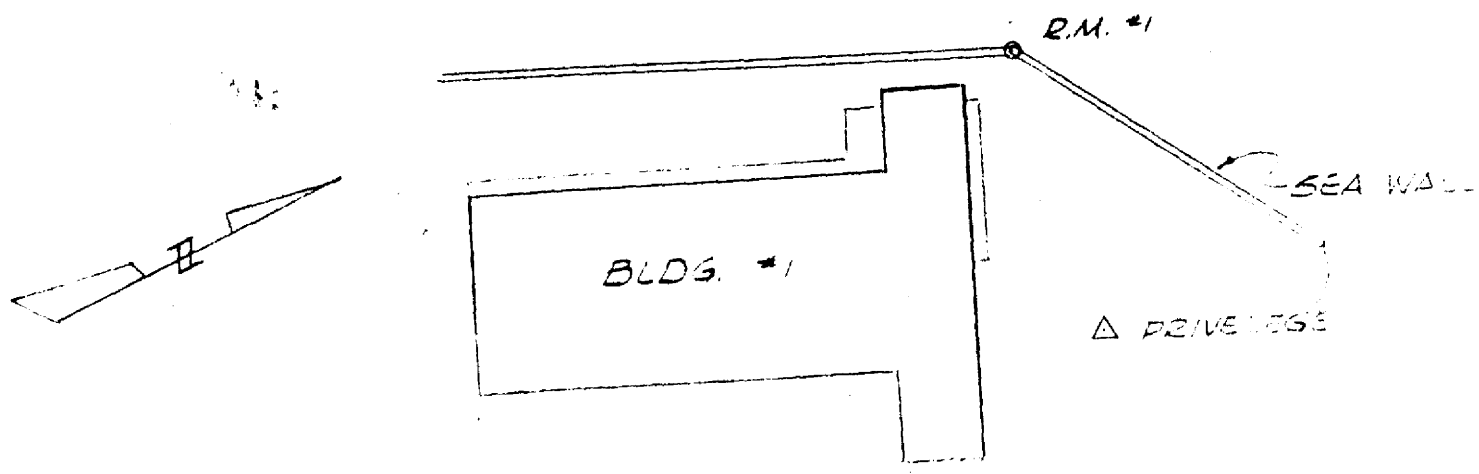
RM #1 was set during the present survey, 28 November 1956. It is a tack set in a lead plug driven into a hole in the top of the concrete sea-wall. It is in the north corner of the section which is a sheet pile cap and projects 3' - 1-1/2" above the greater portion of the Sea-wall. "RM #1" is chiseled in the concrete near the marker.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
174	26	7-3-52
285	23	11-28-56



LOCATION SKETCH:



~~CONFIDENTIAL USE ONLY~~

PAGE 2 - RECOVERY NOTE - TRIANGULATION STATION

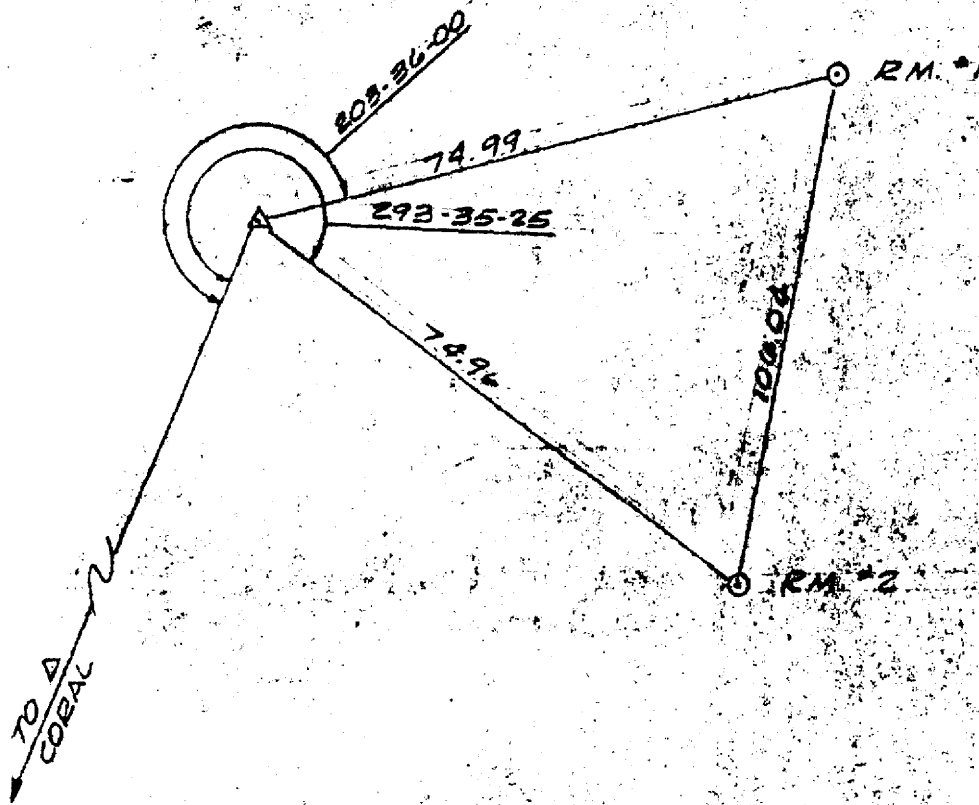
STATION Piiraa1

SITE Wilma

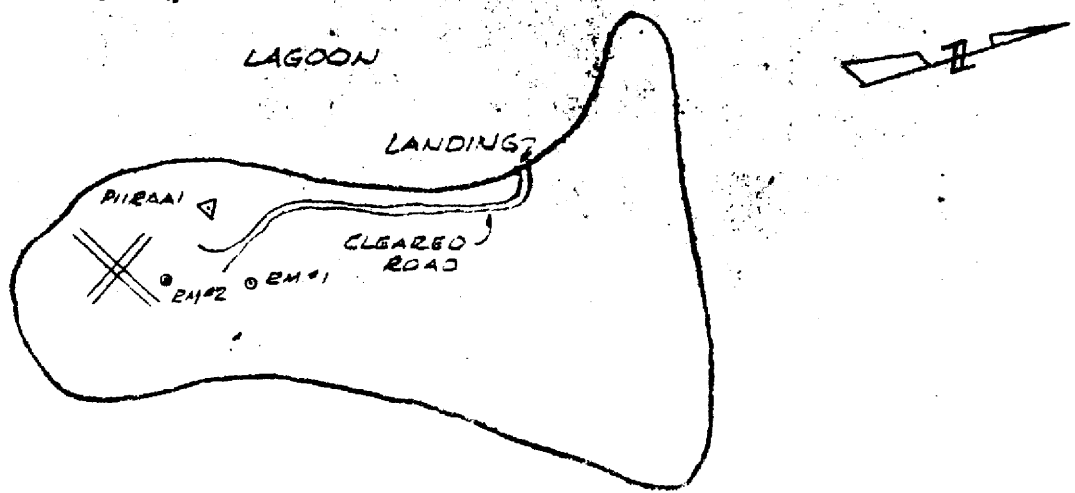
DETAILED DESCRIPTION OF STATION (CONT.)

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
133	18	6-25-51
207	23	11-13-53
230	8	5-12-54
294	29-30	1-4-57



LOCATION SKETCH:



~~OFFICIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Runit SITE: Yvonne
ESTABLISHED BY JTF-7 YEAR 1946 Runit Island
RECOVERED BY H. C. Dalton YEAR 1956 Eniwetok Atoll
FIELD BOOK NO. 294 PAGE 12-14 DATE 12-13-56 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		ELEVATION	
	FEET	METERS		DIRECTION
Runit	--	--	---	8.345
Coral	--	--	00 - 00 - 00	--
RM #1	61.15	18.639	127 - 41 - 30	10.175
RM #2	122.29	37.274	127 - 42 - 10	10.275

BRIEF HISTORY OF STATION:

This station was a primary station in the following surveys: JTF-7, 1947-48; Holmes & Narver, 1949-50; Holmes & Narver Expansion 1952.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard stamped U.S.C. & G.S. brass disc, 3" in diameter, stamped "Runit". It is set in a concrete block 1-1/2 ft. below the ground surface.

RM #1 is in good condition. It is a cross cut in the slab of latrine #76, 8.4 ft. from the west edge of the slab and 7.2 ft. from the north edge.

RM #2 is in good condition. It is a cross cut in the slab of tent #56, 2.1 ft. from the west edge of the slab and 2.2 feet from the north edge.

~~OFFICIAL USE ONLY~~

PAGE 2-RECOVERY NOTE - TRIANGULATION STATION

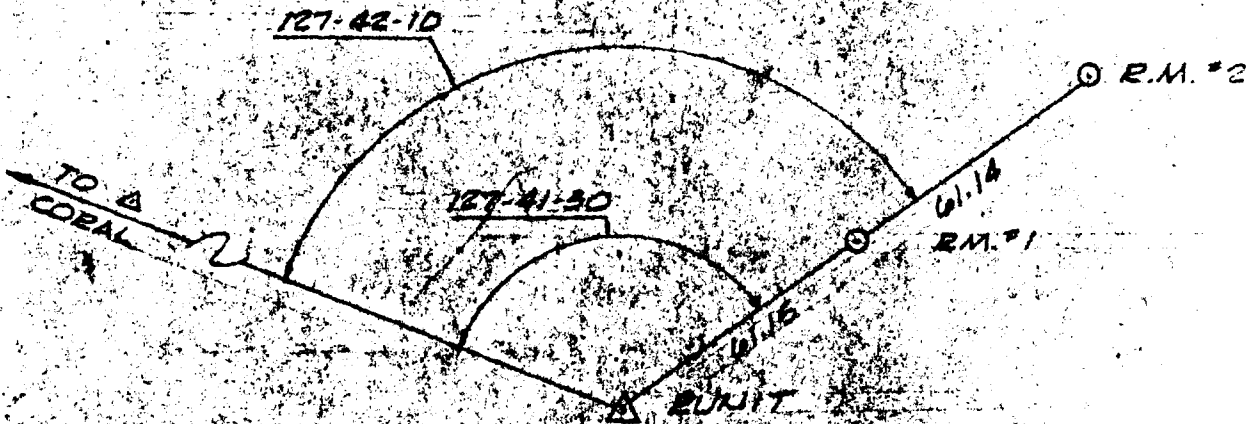
STATION Runit

SITE Yvonne

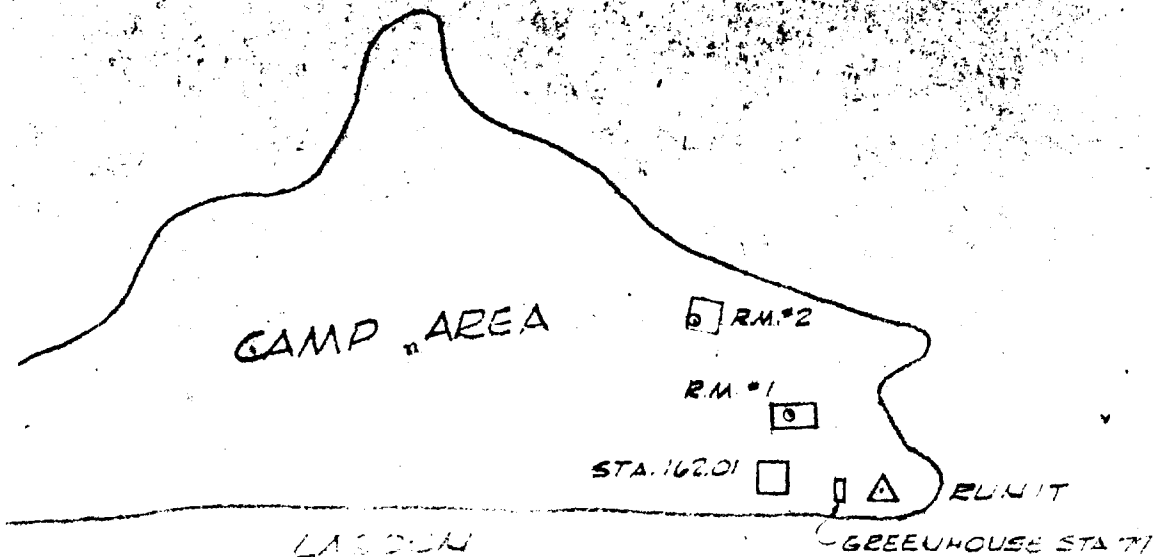
DETAILED DESCRIPTION OF STATION CONT'D

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
135	27	7-9-51
230	2	5-6-54
294	12 - 14	12-13-56



LOCATION SKETCH



~~CONFIDENTIAL USE~~

**HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942**

RECOVERY NOTE - TRIANGULATION STATION

1 NAME OF STATION Sand SITE Uriah
 ESTABLISHED BY USN YEAR 1944 3rd Sand Spit So. of Yvonne
 RECOVERED BY E. F. Klanchar YEAR 1956 Eniwetok Atoll
 FIELD BOOK NO. 294 PAGE 25-26 DATE 12/31/56 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		DIRECTION	ELEVATION
	DISTANCE			
	FEET	METERS		
Sand	--	--	---	10.81
Coral	--	--	00 - 00 - 00	--
RM #1	64.66	19.708	54 - 06 - 25	9.71
RM #2	71.48	21.787	192 - 37 - 05	9.46

BRIEF HISTORY OF STATION:

This station was a primary station in the following surveys: USS Bowditch, 1944; JTF-7, 1947-48; Holmes & Narver, 1949-50; Holmes & Narver 1952 Expansion. U. S. Navy Beacon "G", shown on H.O. chart #6033, was originally erected over this station, but was moved 25.7 feet lagoonward to make room for the erection of an observing platform.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard embossed "USN-SURVEY" disc 2" in diameter. It is set in concrete flush with the ground surface.

RM #1 is in good condition. It is a 2-5/8" diameter flat brass disc stamped "Sand-RM 1 - H&N - 1954". It is set in concrete 1 foot below the ground surface.

RM #2 is in good condition. It is a 2-5/8" diameter flat brass disc stamped "Sand-RM 2 - H&N - 1954". It is set in concrete 1 foot below the ground surface.

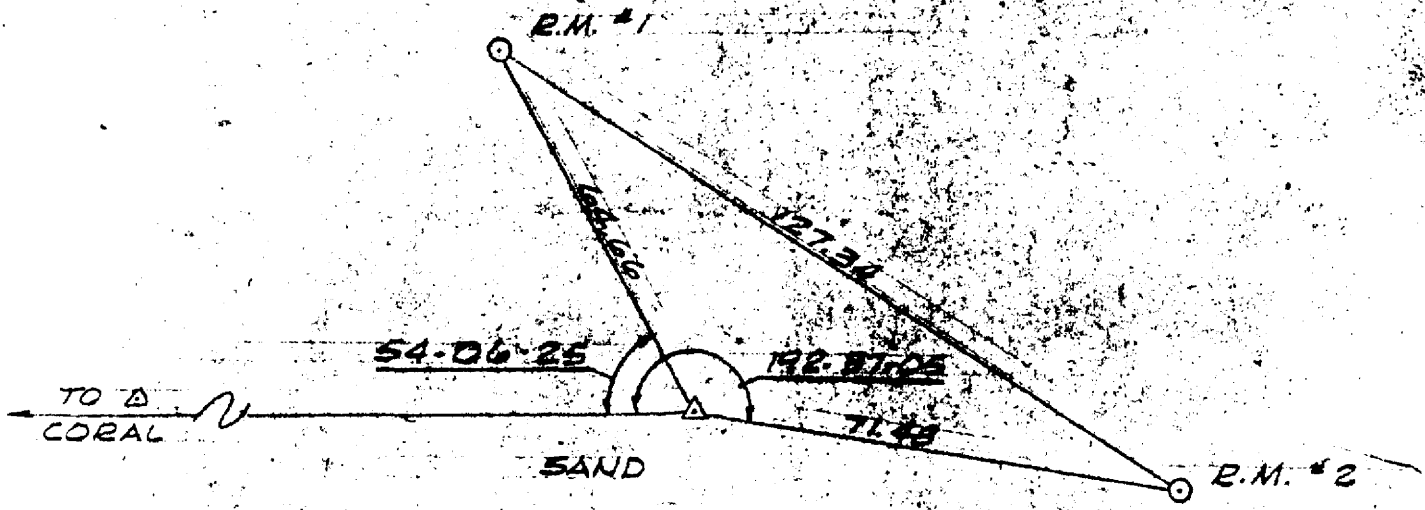
~~CONFIDENTIAL USE ONLY~~

PAGE 2-RECOVERY NOTE - TRIANGULATION STATION

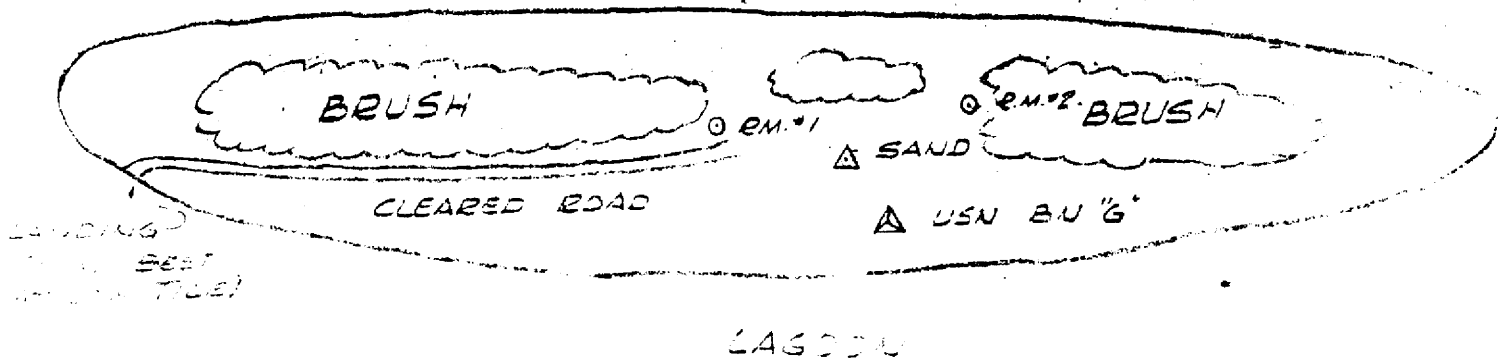
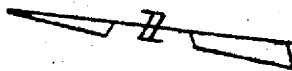
STATION Sand SITE: Uriah, 3rd Sand Spit So. Of Yvonne, Eniwetok Atoll, M.I.
DETAILED DESCRIPTION OF STATION (CONT'D)

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
165	30	4-19-52
172	7	6-6-52
227	15	5-6-54
294	25 & 26	12-31-56



LOCATION SKETCH:



~~CONFIDENTIAL~~

**HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942**

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION: Yvonne	SITE: Yvonne	
ESTABLISHED BY: USN H&N	YEAR 1944 1955	Runit Island
RECOVERED BY: H. C. Dalton	YEAR 1956	Eniwetok Atoll
FIELD BOOK NO. 294 PAGE: 15-16	DATE: 12-14-56	Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS				
OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		

BRIEF HISTORY OF STATION:

This station was a second order station on the following surveys: USN, 1944; JTF-7, 1947-48; Holmes & Narver, 1949-50; Holmes & Narver, 1952 Control Expansion; Holmes & Narver, 1955. It was re-named "Yvonne" for the 1955 triangulation due to the fact that it had been disturbed.

DETAILED DESCRIPTION OF STATION:

This station was recovered but has been disturbed. Since a channel has formed between the main island and the station location making it impractical to use for scientific construction of any kind, the station will not be re-established.

~~OFFICIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Yeiri SITE Nancy
ESTABLISHED BY H&N YEAR 1951 Yeiri Island
RECOVERED BY E. F. Klanchar YEAR 1957 Eniwetok Atoll
FIELD BOOK NO. 296 PAGE 12&13 DATE: 1-10-57 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		DIRECTION	ELEVATION
	DISTANCE			
	FEET	METERS		
Yeiri	--	--	---	9.96
Coral	--	--	00 - 00 - 00	--
RM #1	50.00	15.240	108 - 07 - 30	10.02
RM #2	99.98	30.474	108 - 07 - 30	10.27

BRIEF HISTORY OF STATION.

This station is a third order station in the Atoll control net. It was established as a part of the Holmes & Narver 1952 control expansion by triangulation from Coral and Acmon.

DETAILED DESCRIPTION OF STATION.

This station was recovered in good condition. The station mark is an aluminum pipe capped with an aluminum cap 2" in diameter. It is stamped "Yeiri - H&N" and is set in concrete 8" below the ground surface.

RM #1 is in good condition. It is a steel cap, 2" in diameter stamped "RP-50" set in concrete 8" below the ground surface.

RM #2 is in good condition. It is a steel cap 2" in diameter stamped "RP 100" with a crossed arrow pointing toward the station. It is set in concrete 8" below the ground surface.

PAGE 2-RECOVER NOTE TRIANGULATION STATION

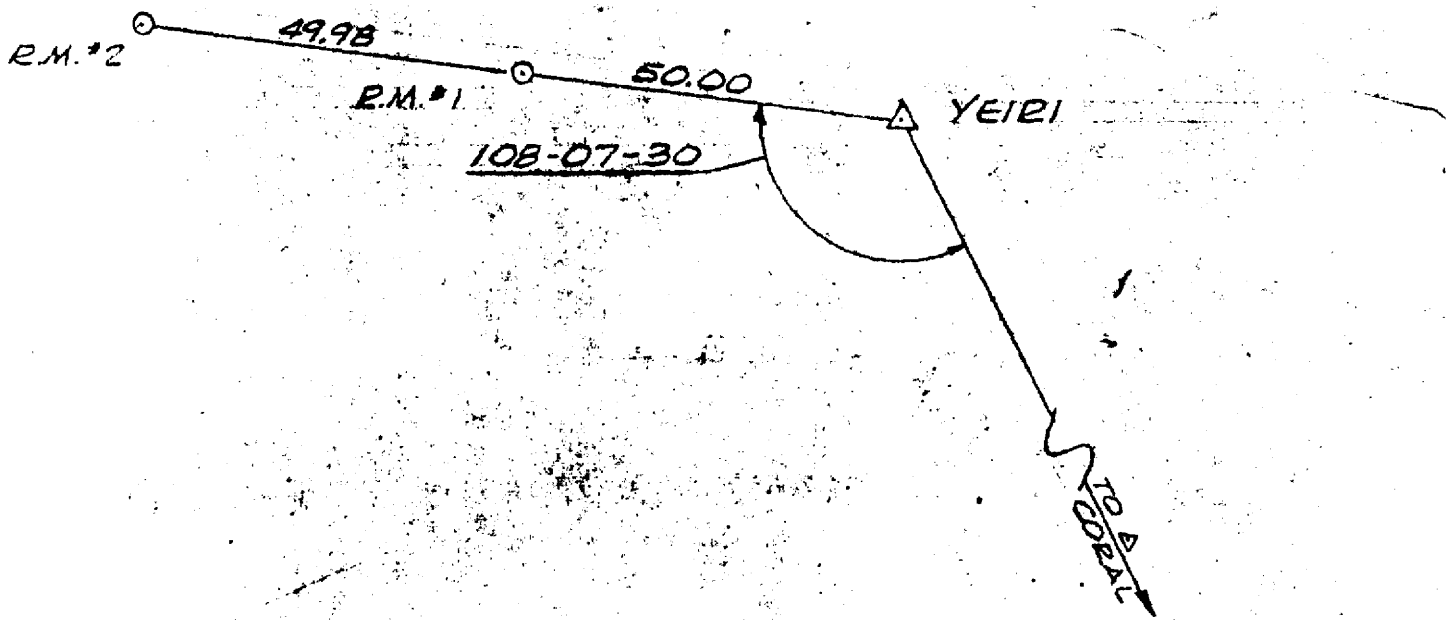
STATION Yeiri Nancy, Nihoa Is., Eniwetok Atoll, M.I.

DETAILED DESCRIPTION OF STATION COORDINATES

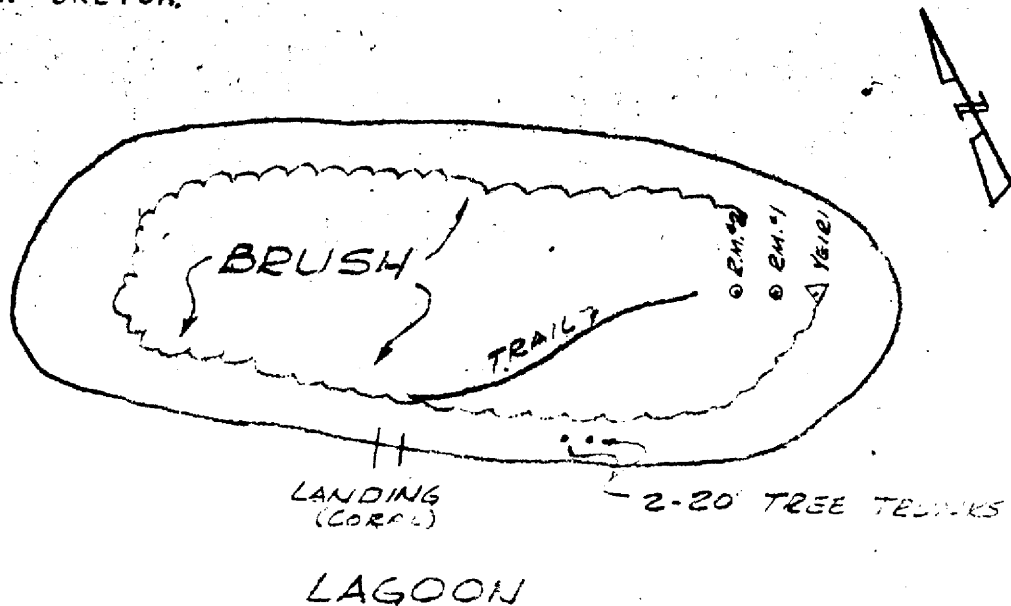
Both steel RM markers are corroded, but can still be read.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
186	13	10-13-52
230	22	6-3-54
296	12 & 13	1-10-57



LOCATION SKETCH:



~~CONFIDENTIAL~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Gene SITE: Gene
ESTABLISHED BY H&N YEAR: 1955 Teiteiripucchi Island
RECOVERED BY YEAR: Eniwetok Atoll
FIELD BOOK NO: PAGE: DATE: Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS				
OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		

BRIEF HISTORY OF STATION:

This station was established as a second order station in the Holmes & Narver 1955 control survey.

DETAILED DESCRIPTION OF STATION:

This station was not recovered due to its location. It is assumed to be destroyed.

~~CONFIDENTIAL~~

HOLMES & NARVER INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION	Elgin (Engebi)	SITE	Janet
ESTABLISHED BY	JTF-7	YEAR	1946
RECOVERED BY	E. F. Klanchar	YEAR	1957
FIELD BOOK NO.	296	PAGE	23-25
		DATE	1-14-57
			Engebi Island
			Eniwetok Island
			Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS			
	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		
Elgin	--	--	---	10.08
Coral	--	--	00 - 00 - 00	--
RM #1	58.68	17.886	45 - 03 - 17	9.46
PI #1	154.93	47.223	60 - 41 - 00	9.69
RM #2	50.01	15.243	105 - 43 - 32	8.72

BRIEF HISTORY OF STATION:

This station was established by JTF-7 in 1946 as one end of the timing line. It has been a primary station in the following surveys since then: Holmes & Narver 1949-50; Holmes & Narver control expansion, 1952; Holmes & Narver Supplemental, 1955. It has been called "Engebi" to designate the island it is located upon.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard stamped USC & GC disc, 3-1/2" in diameter, stamped "Elgin". It is set in an 11" x 11" concrete block, 6" above the ground surface.

RM #1 is in good condition. It is a standard 2-5/8" diameter embossed Holmes & Narver disc unmarked except for a punch mark. It is set in concrete 6" below the ground surface.

RM #2 is in good condition. It is a standard 2-5/8" diameter embossed Holmes & Narver disc marked only with a crossed arrow pointing toward the station. It

PAGE 2-RECORDARY NOTE - TRIANGULATION STATION

STATION Elgin (Engabi) E E Janet

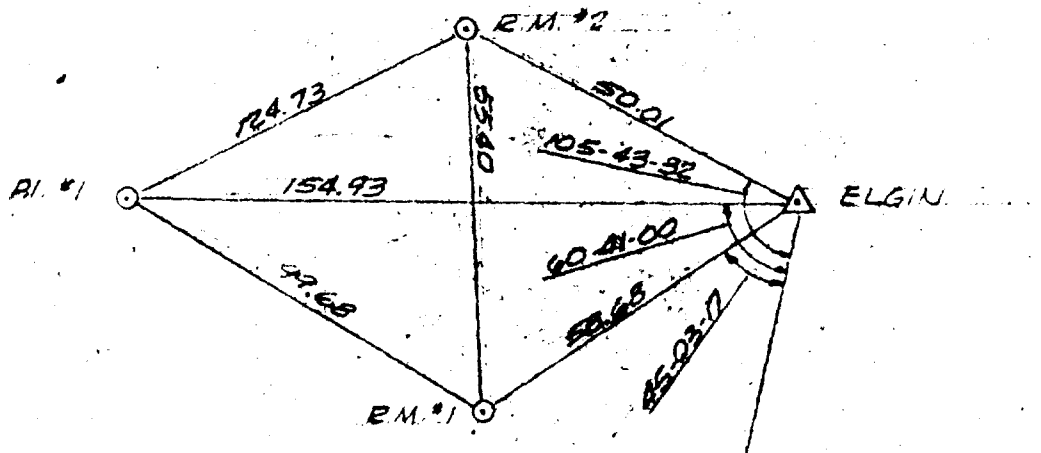
DETAILED DESCRIPTION OF STATION (CONT'D)

is set in concrete 18" below the ground surface.

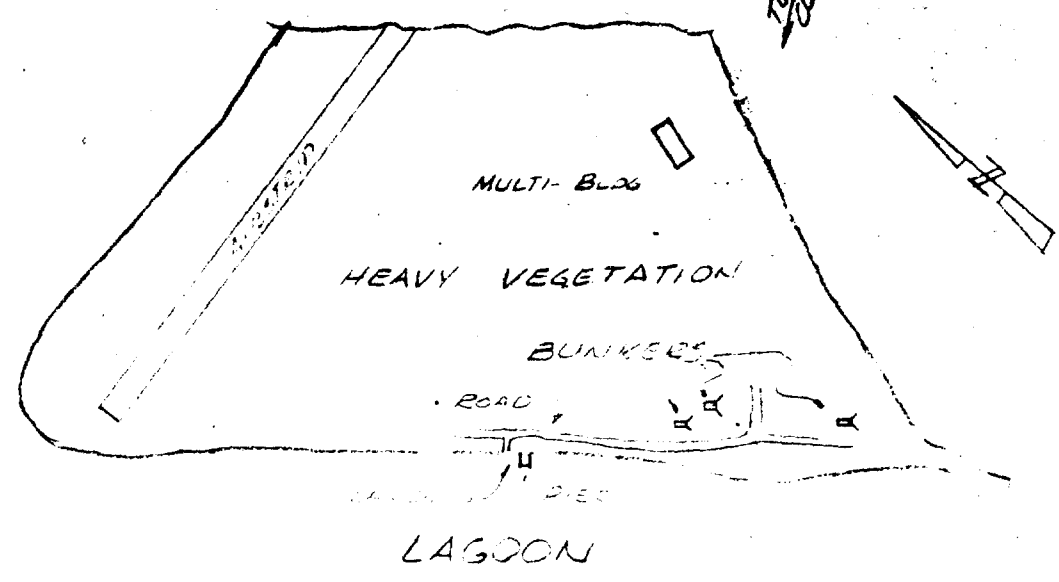
PI #1 is in good condition. It is a spike embedded in a concrete block with the point protruding 1/2". The spike is rusty, but still in identifiable condition.

Reference:

Field Book	Page	Date
120	6	3-9-51
248	29	6-11-55
296	23-25	1-14-57



LOCATION SKETCH:



~~OFFICIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Ivy	YEAR 1952	SITE Elmer
ESTABLISHED BY H&N	YEAR 1956	Parry Island
RECOVERED BY E. F. Klanchar	YEAR 1956	Eniwetok Atoll
FIELD BOOK NO. 285 PAGE 20-21	DATE 11-26-56	Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE		MARKS
	DISTANCE		ELEVATION
	FEET	METERS	
Ivy	--	--	24.96
Coral	--	--	--
RM #1	44.18	13.466	24.955
RM #2	78.67	23.979	17.835

BRIEF HISTORY OF STATION:

This station is located on a concrete slab in the camp area near the northwest corner of the intersection of Sandstone Ave. and Hanford Road. In the 1952 Expansion of Horizontal Control this station was a second order control point. Observations were made from, and lights observed on an elevated point in Building #310, a 40 ft. wooden tower on the northerly end of the slab. The structure was subsequently removed. There are no structures on the slab at present. The slab is cracked in many places and pieces have been broken off the west edge.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a brass screw with a cross chiseled in its top, set in a lead plug in the concrete slab.

RM #1 is in fair condition. It is a brass screw with a cross chiseled in its top set in a lead plug in the concrete slab. The plug is loose. "R.P. 1" is chiseled in the concrete slab near the mark.

RM #2 is in good condition. It is a brass pipe cap, 2-3/4" in diameter, set in a 12" x 12" concrete block flush with the ground surface. This mark is in good condition. It is stamped "H&N - RM 2".

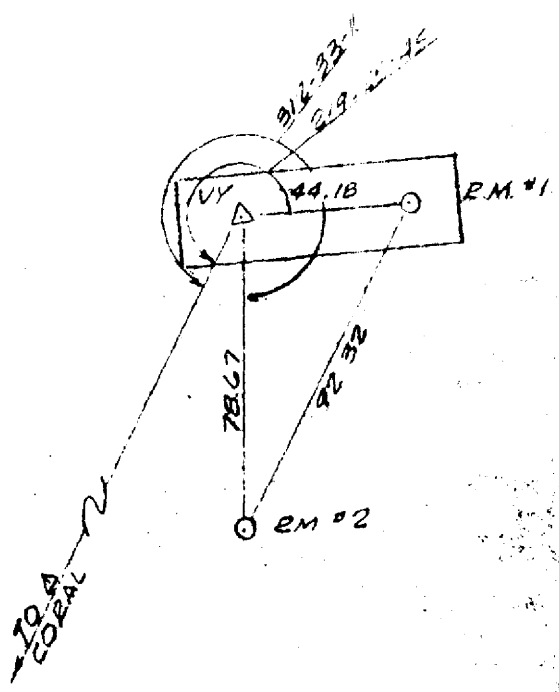
PAGE 2-RECOVERED TRAIL STATION

STATION Ivy

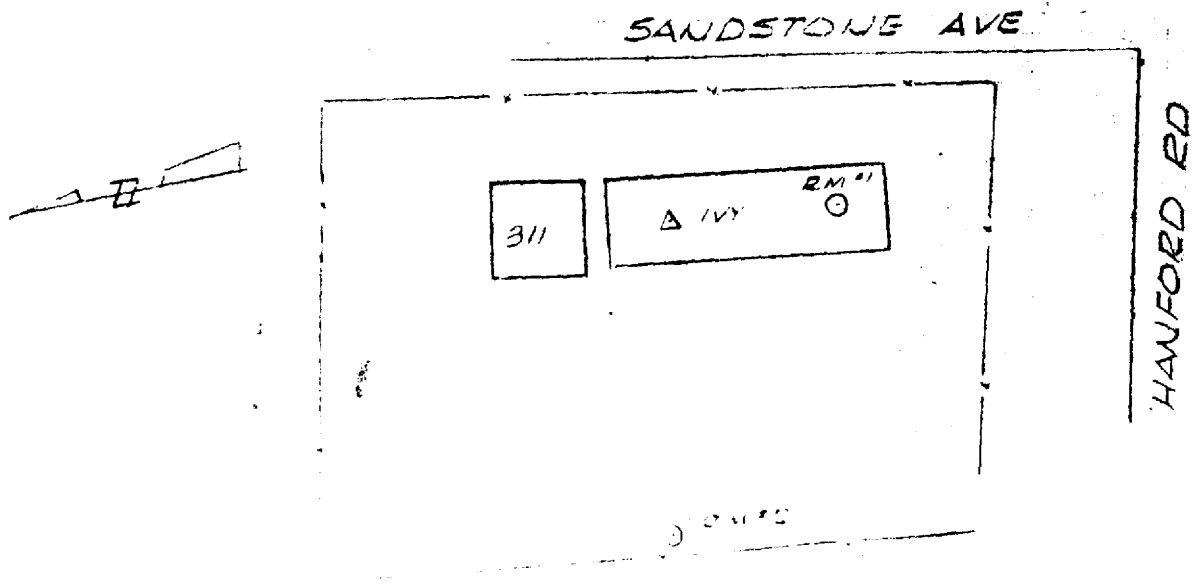
DETAILED DESCRIPTION

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
148	30	7-12-52
173	11 & 12	6-14-52
226	29	5-4-54
227	9	4-21-54
229	12	10-27-54
285	20 & 21	11-26-56



LOCATION SKETCH:



~~CONFIDENTIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Aster (Kirinian) SITE Lucy
ESTABLISHED BY USN YEAR: 1944 Kirinian Island
RECOVERED BY E. F. Klanchar YEAR: 1957 Eniwetok Atoll
FIELD BOOK NO. 296 PAGE: 14-16 DATE: 1-10-57 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		ELEVATION	
	DISTANCE			DIRECTION
	FEET	METERS		
Aster	--	--	8.60	
Alice	--	--	--	
RM #1	52.28	15.935	7.11	
RM #2	102.68	31.297	6.72	

BRIEF HISTORY OF STATION:

This station was a primary station in the USS Bowditch Survey, 1944. It is shown on USN H.O chart 6033 as Beacon "M". It was a secondary station in the Holmes & Narver 1949-50 survey. It is a third order station in the Holmes & Narver 1952 Control Expansion Survey and has been called "Kirinian" to designate the island it is located upon.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard embossed USN SURVEY disc, 2" in diameter. It is set in an 8" x 8" concrete post 6" above the ground surface.

RM #1 is in good condition. It is a standard 2-5/8" diameter embossed Holmes & Narver disc, unmarked except for a punch mark. It is set in concrete 6" below the ground surface.

RM #2 is in good condition. It is a standard 2-5/8" diameter embossed Holmes &

~~CONFIDENTIAL USE ONLY~~

PAGE 2-RECOVERY NOTE - TRIANGLE ISLAND STATION

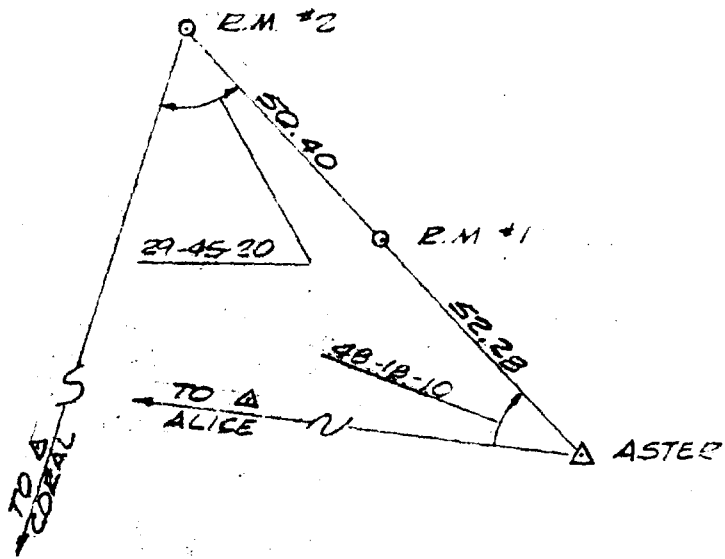
STATION Aster (Kirinian) SITE Lucy

DETAILED DESCRIPTION OF STATION COORDINATES

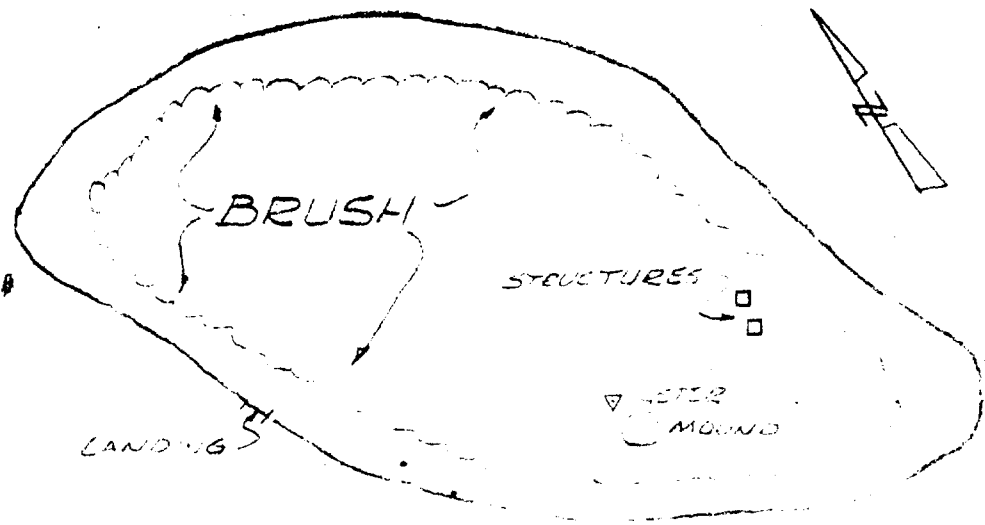
Narver disc, unmarked except for a punch mark. It is set in concrete 8" below the ground surface.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
37	7	4-12-50
142	2	6-14-51
230	3	5-8-54
296	14 - 16	1-10-56



LOCATION SKETCH:



LA5004

~~OFFICIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Lilac	SITE: Rex
ESTABLISHED BY USN	YEAR: 1944 Jieroru Island
RECOVERED BY: E. E. Snyder	YEAR: 1956 Eniwetok Atoll
FIELD BOOK NO. 294 PAGE: 5-7	DATE: 12-12-56 Marshall Islands

OBJECT	DISTANCES		DIRECTION	ELEVATION
	AND DIRECTIONS TO REFERENCE MARKS			
	FEET	METERS		
Lilac	--	--		20.12
Japtan	--	--	00 - 00 - 00	--
RM #1	80.24	24.457	111 - 44 - 15	14.25
RM #4	39.37	12.000	257 - 04 - 35	19.05
RM #5	61.70	18.806	39 - 32 - 55	18.79

BRIEF HISTORY OF STATION:

This station was a secondary station in the USS Bowditch Survey, 1944. It was included as a third order station in the present Atoll control net in 1952. This is shown on USN Hydrographic chart 6033 as Beacon "D".

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is standard embossed "USN SURVEY" disc 2" in diameter. It is set in a 6" x 6" concrete post, flush with the ground surface.

RM #1 is in good condition. It is a 2-5/8" diameter flat brass disc stamped "RM 1 - H&N - 1954". It is set in concrete flush with the ground surface.

RM's #2 and #3 were destroyed by the construction of a road to the dynamite cap storage building, RM's #4 and #5 were set as a part of the recovery program. They are .30 caliber cartridge case set in concrete 2" above the ground surface.



PAGE 2 - RECOVERY NOTE - TRIANGULATION STATION

STATION Lilac

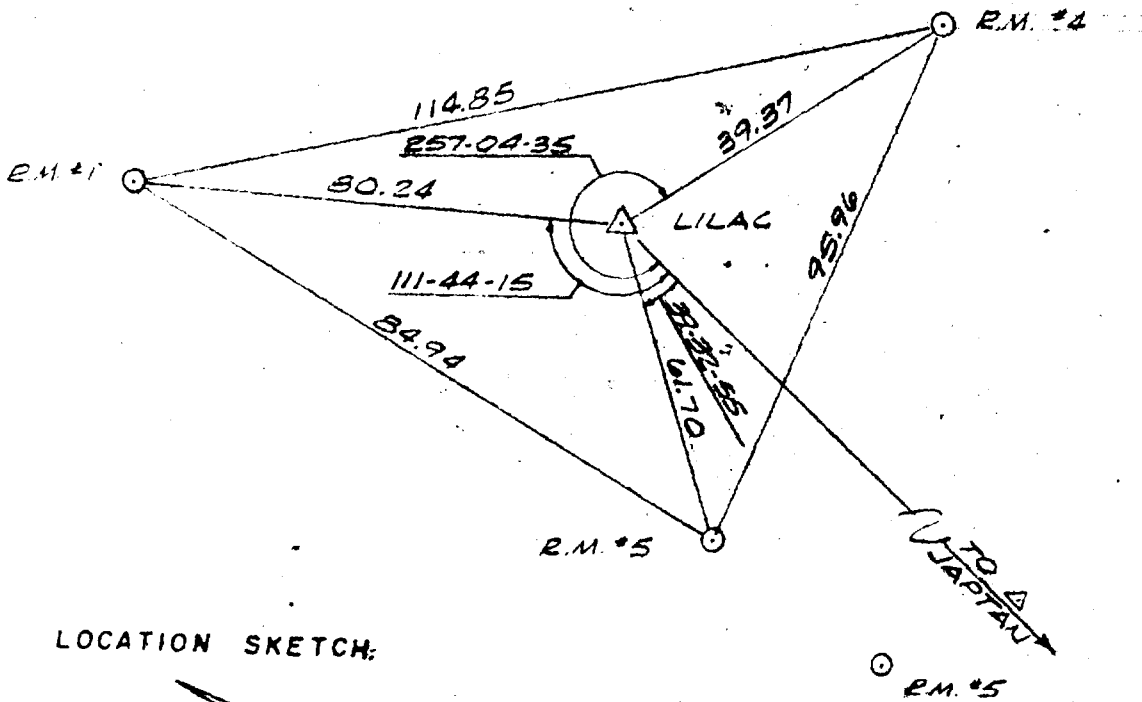
SITE: Rex

DETAILED DESCRIPTION OF STATION (CONT'D)

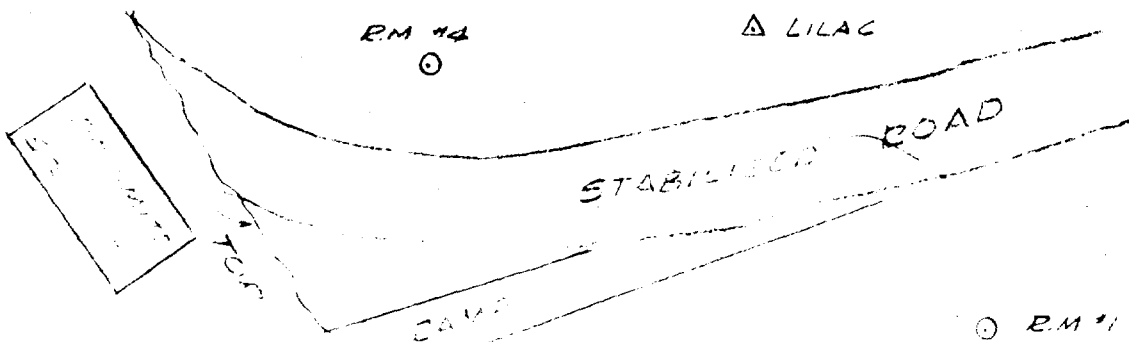
RM #4 bears the Ordnance marks "U-42-1" around its rim. RM #5 bears the Ordnance marks "U-4-2" around its rim.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
227	10	4-24-54
294	5-7	12-12-56



LOCATION SKETCH:



HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Lucy SITE Vera
ESTABLISHED BY H&N YEAR 1951 Aaraanbiru Island
RECOVERED BY E. F. Klanchar YEAR 1957 Eniwetok Atoll
FIELD BOOK NO. 296 PAGE 2-4 DATE 1-4-57 Marshall Islands

OBJECT	DISTANCES		DIRECTION	ELEVATION
	AND DIRECTIONS TO REFERENCE MARKS			
	FEET	METERS		
Lucy	--	--	--	8.44
Coral	--	--	00 - 00 - 00	--
RM #1	142.51	43.437	239 - 46 - 00	11.62
RM #2	90.19	27.490	03 - 19 - 32	3.31
RM #3	65.84	20.068	96 - 55 - 18	2.68

BRIEF HISTORY OF STATION:

This station was established and triangulated as a part of the Operation GREENHOUSE "V" zero development. It is a third order station in the Atoll control net.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard embossed Holmes & Narver disc 2-5/8" in diameter stamped "Lucy" with a cross for the station mark. It is set in concrete flush with the ground surface.

RM #1 is in good condition. It is a cross cut in the concrete roof of GREENHOUSE station 75. The cross is located at the approximate center of the roof.

RM #2 was set as a part of the recovery survey. It is a brass tack driven into a 1-1/2" square lead plug driven into a hole in the lagoonside reef, approximately 2 feet north of the Lucy - Coral line. The lead plug is stamped "RM 2 - Lucy -

PAGE 2 - RECOVERY NOTE - TRIANGULATION STATION

STATION Lucy SITE Vera

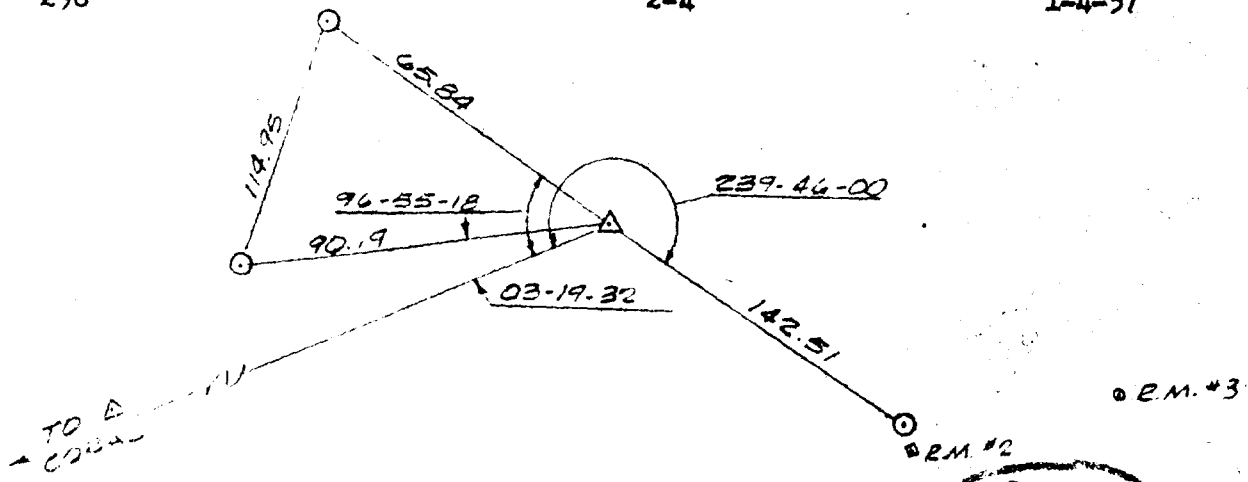
DETAILED DESCRIPTION OF STATION (CONT)

H&N - 1951".

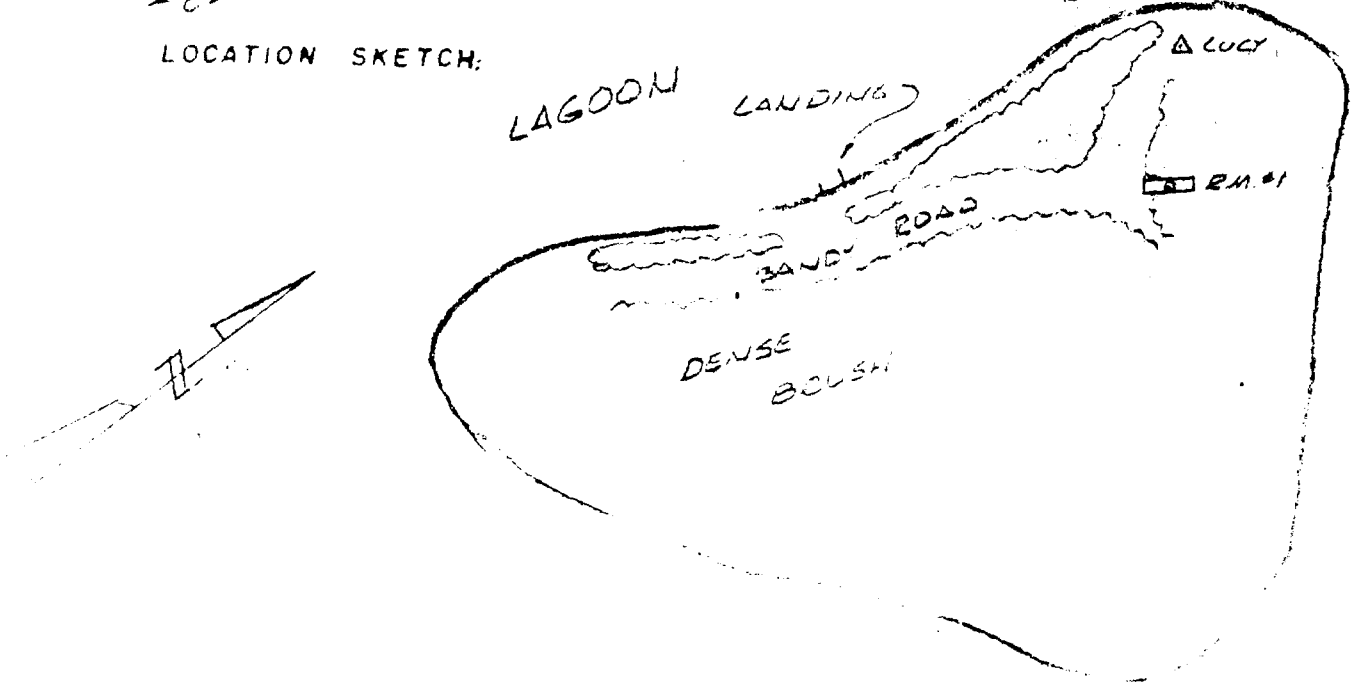
RM #3 was set as a part of the recovery survey. It is a brass tack driven into a 1-1/2" diameter Circular lead plug driven into a hole in the lagoonside reef. The lead plug is stamped "RM 3 - Lucy - H&N - 1951".

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
52	7-30	7-18-50 - 7-20-50
133	17	6-25-51
215	13	12-2-53
230	4	5-8-54
296	2-4	1-4-57



LOCATION SKETCH:



PAGE 2-RECOVERY NOTE - TRIANGULATION STATION

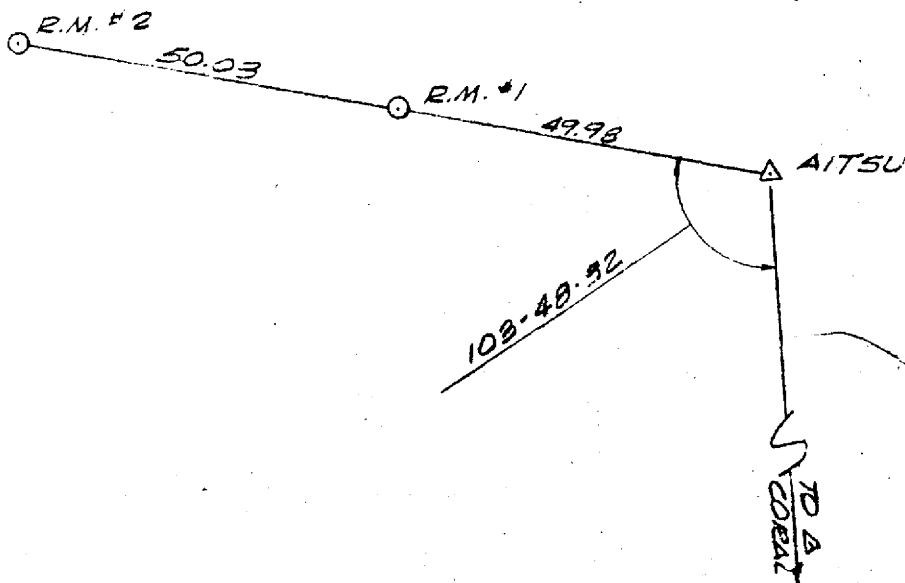
STATION Aitsu

SITE Olive

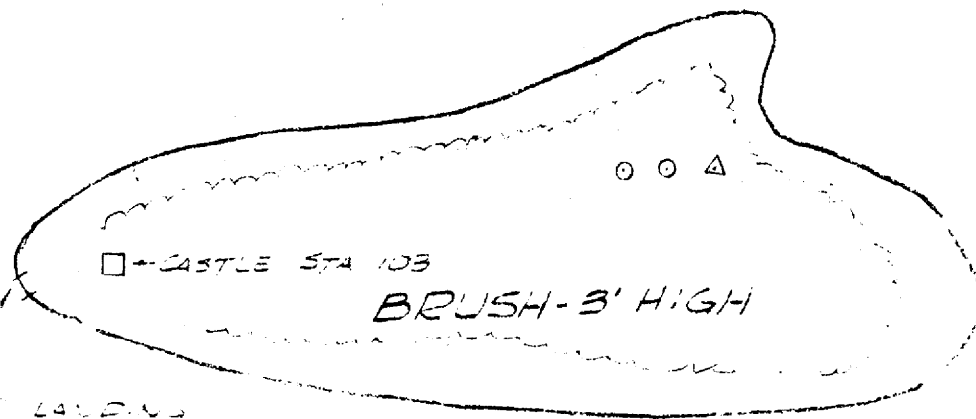
DETAILED DESCRIPTION OF STATION (CONT'D)

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
186	14	10-13-52
227	14	4-22-54
296	8 & 9	1-8-57



LOCATION SKETCH:



HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Japtan SITE 'David
ESTABLISHED BY H&N YEAR 1951 Japtan Island
RECOVERED BY E. E. Snyder YEAR 1956 Eniwetok Atoll
FIELD BOOK NO. 263 PAGE 29-30 DATE 12-8-56 Marshall Islands

OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		
Japtan	--	--	---	8.12
Lilac	--	--	00 - 00 - 00	--
RM #1	45.58	13.892	101 - 54 - 05	8.195
RM #2	50.21	15.304	208 - 00 - 15	10.095
RM #3	26.46	8.065	258 - 20 - 52.5	8.025

BRIEF HISTORY OF STATION:

This station was included in the 1952 Expansion as a third Order Station.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is an aluminum pipe capped with an aluminum cap 2-1/2" in diameter, stamped "Japtan, H&N, 1954". It is set in a concrete monument flush with the ground surface in a 20' diameter depression in the ground.

Reference markers #1, #2 and #3 were all recovered undisturbed in the locations given in F.B. 227, pages 7 and 8. They are standard 2-5/8" diameter brass discs, set in concrete, marked "RM 1 (2 & 3)-H&N-1954".

RM #1 is 1-1/2 ft. below the surface of the ground.

PAGE 2-RECOVERY NOTE TRAIN STATION

STATION Japtan S. Dav

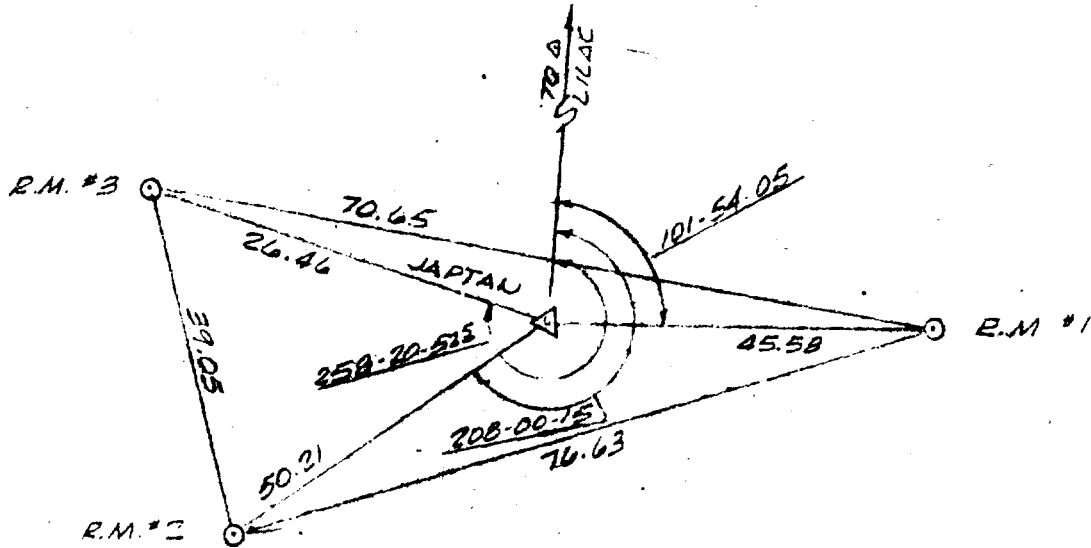
DETAILED DESCRIPTION OF STATION

RM #2 is flush with the surface of the ground

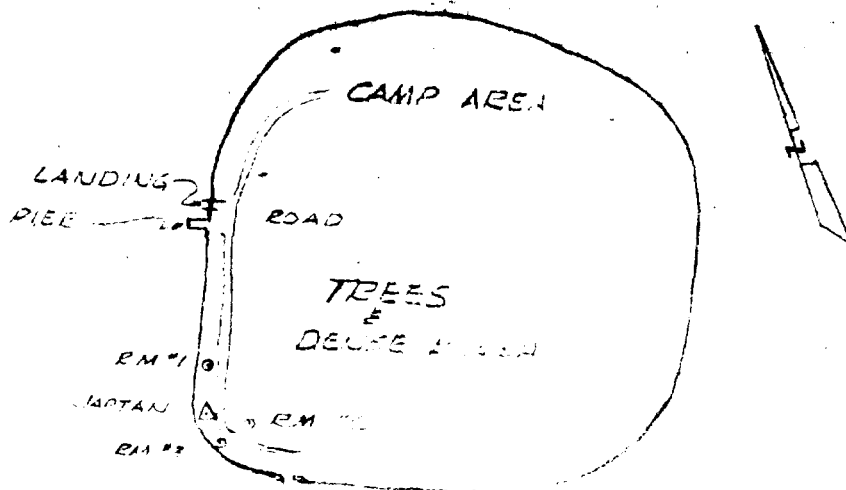
RM #3 is 6" below the surface of the ground and covered with approximately 2-1/2 ft. of rubble.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
201	13-31	8-11-52 - 8-14-52
227	7-8	4-21-54
263	29-30	12-8-54



LOCATION SKETCH:



~~CONFIDENTIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION	Alice	SITE	Alice
ESTABLISHED BY	H&N	YEAR	1955
RECOVERED BY		YEAR	
FIELD BOOK NO.	PAGE	DATE	
			Bogallua Island
			Eniwetok Atoll
			Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		ELEVATION	
	DISTANCE			DIRECTION
	FEET	METERS		
Alice	--	--	39.14	
RM #1	18.455	5.625		
RM #2	18.615	5.674		

BRIEF HISTORY OF STATION:

This station was established as a second order station in the 1955 Holmes & Narver Survey.

DETAILED DESCRIPTION OF STATION:

This station was not recovered. Due to its isolated and protected location it is assumed to be undisturbed. The station mark is a lead and tack at the approximate working point of Ivy station 300, a 3 story concrete building. It is located 5 feet back from the forward edge of the station on the center axis of the station on the highest portion of the station roof.

Reference marks #1 and #2 are lead and tacks at the two rear corners of the highest portion of the station roof.

HOLMES & NARVER, NC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Kodak (Aniyaanii) SITE Bruce
ESTABLISHED BY JTF-7 YEAR 1947 Aniyaanii Island
RECOVERED BY E. F. Klanchar YEAR 1956 Eniwetok Atoll
FIELD BOOK NO: 294 PAGE: 22-24 DATE: 12-31-56 Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS				
OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		
Kodak	--	--	---	9.60
Coral	--	--	00 - 00 - 00	--
RM #1	57.40	17.496	113 - 03 - 35	10.395
RM #3	95.40	29.078	222 - 05 - 18	10.905

BRIEF HISTORY OF STATION:

This station has been a primary station in the following surveys: Joint Task Force Seven, 1947-48; Holmes & Narver, 1949-50; Holmes & Narver 1952 Expansion. In the Holmes & Narver Surveys it was renamed "Aniyaanii" to designate the name of the island on which it is located. The station was disturbed by construction operations in 1951, but was reestablished from RM's using the same brass marker.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard USC & GS brass marker 3-1/2" in diameter stamped "Kodak". It is set in concrete 1-1/2 ft. below the ground surface.

RM #1 is in good condition. It is a 3-1/2" USC & GS brass marker stamped "RM-1-KODAK" with a crossed arrow pointing toward the station. It is set in concrete flush with the ground surface.

RM #2 was not recovered. Digging at the recorded angle and distance unearthed 2 signal cables so it is assumed that RM #2 was destroyed by ditching. RM #3

PAGE 2-RECOVERY NOTE TRIANGULATION STATION

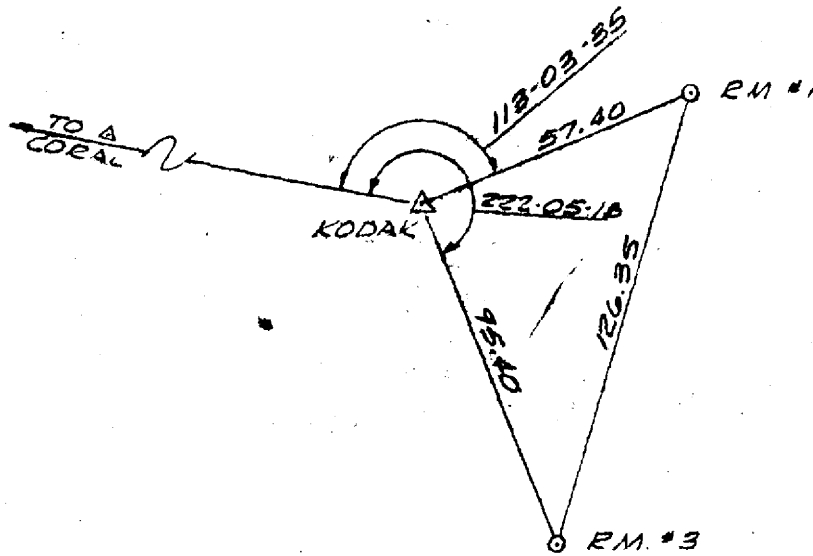
STATION Kodak (Aniyaanii) SITE Bruce

DETAILED DESCRIPTION OF STATION (CONT'D)

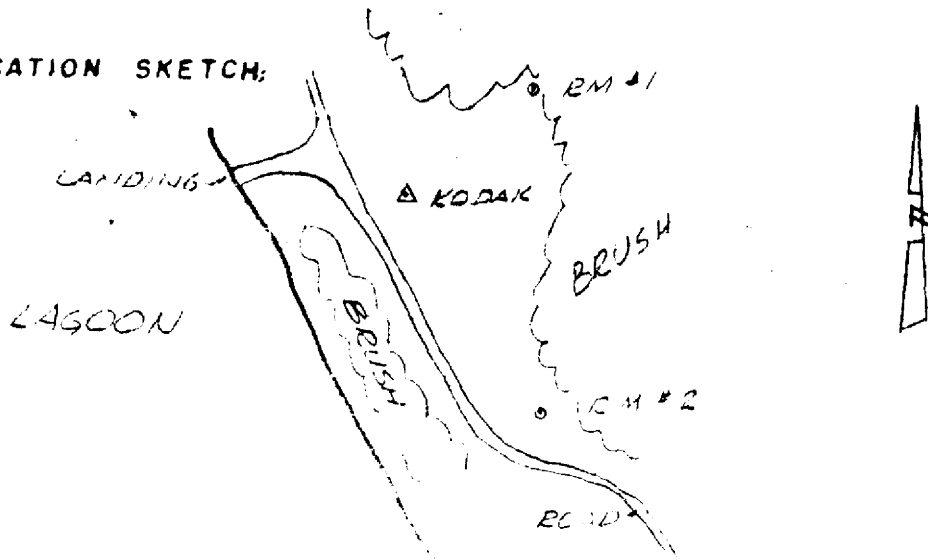
was set as a part of the recovery survey. It is a brass marker 2" in diameter stamped "RM #3 - KODAK - USC & GC - 1947" set in concrete 4" below the ground surface.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
141	30	6-7-51
165	14	4-17-52
227	11	4-24-54
294	22-24	12-31-56



LOCATION SKETCH:



HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION	Islet	SITE	Sam
ESTABLISHED BY	H&N	YEAR	1949
RECOVERED BY	E. F. Klanchar	YEAR	1956
FIELD BOOK NO.	294	DATE	12-31-56
PAGE	27-28		
			1st Sand Spit South of Yvonne Eniwetok Atoll Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS				
OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		
Islet	--	--	---	11.09
Coral	--	--	00 - 00 - 00	--
RM #1	82.45	25.131	148 - 19 - 48	6.49
RM #2	119.06	36.290	193 - 20 - 22	5.71

BRIEF HISTORY OF STATION:

This station was a part of the following surveys: Holmes & Narver, 1949-50; Holmes & Narver Expansion, 1952.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard embossed Holmes & Narver disc 2-5/8" in diameter stamped only with the station point. It is set in concrete 1 foot above the ground surface.

RM #1 is in good condition. It is a transit tack driven into a triangular lead plug driven into a hole in a prominent coral ledge on the ocean reef, directly opposite the station.

RM #2 is in good condition. It is a transit tack driven into a circular lead plug driven into a hole in the ocean reef opposite the south end of the sand spit.

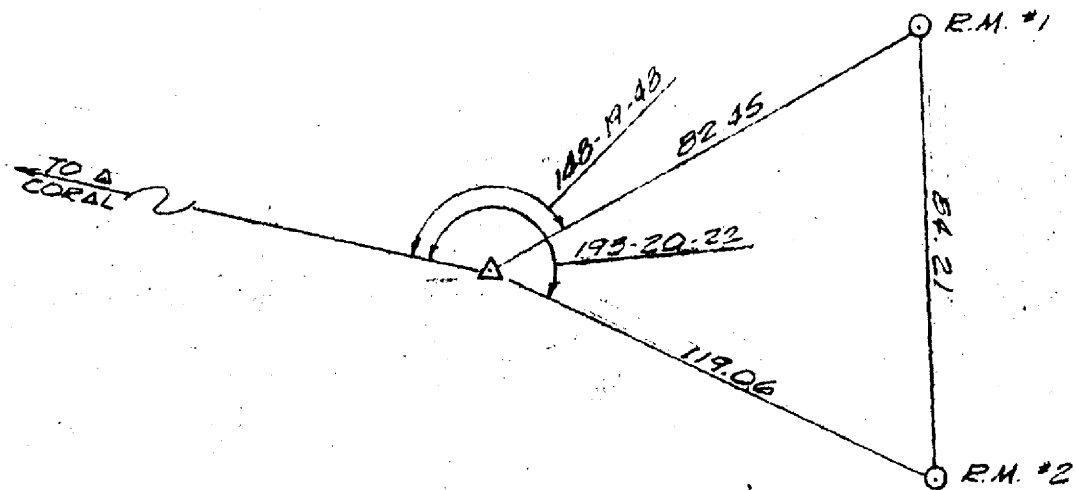
PAGE 2-RECOVERY NOTE STATION

STATION Islet SITE

DETAILED DESCRIPTION OF STATION

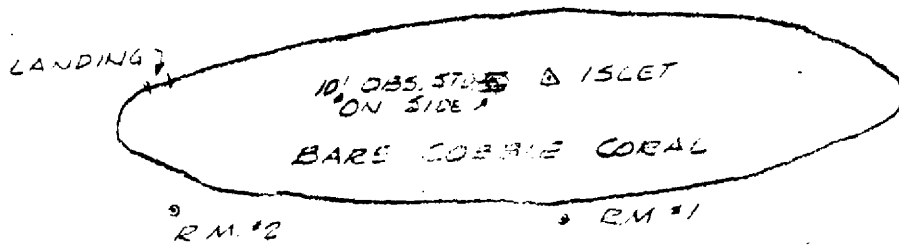
References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
165	30	4-19-52
230	9	5-12-54
294	27 & 28	12-31-56



LOCATION SKETCH:

LAGOON



HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION	Rigili #2	SITE	Leroy
ESTABLISHED BY	H&N	YEAR	1952
RECOVERED BY	E. F. Klanchar	YEAR	1957
FIELD BOOK NO.	296	PAGE	20-22
		DATE	1/12/57
			Rigili Island
			Eniwetok Atoll
			Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		ELEVATION	
	DISTANCE			DIRECTION
	FEET	METERS		
Rigili	--	--	---	8.32
Photo	--	--	00 - 00 - 00	--
RM #1	31.40	9.571	164 - 05 - 55	7.57
RM #2	30.01	9.147	Not Visible See P. 2	7.57
RM #3	08.35	20.833	50 - 39 - 17	6.37

BRIEF HISTORY OF STATION:

This station was a third order station in the 1949-50 Holmes & Narver Survey. It was known as 11 + 50 and Rigili #1. It was destroyed and later replaced and re-triangulated as a second order station as a part of the 1952 Holmes & Narver Control Expansion.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a .50 caliber machine gun cartridge set in concrete flush with the ground surface.

RM #1 is in good condition. It is a spike embedded in a concrete block, 6" below the ground surface.

RM #2 is in good condition. It is a spike embedded in a concrete block 3" below the ground surface.

RM #3 was set as a part of the recovery survey. It is a brass disc 2" in diameter stamped "RM #3-Rigili-H&N 1952". It is set in concrete 6" below the ground

PAGE 2-RECOVER. WIRE TRANSMISSION STATION

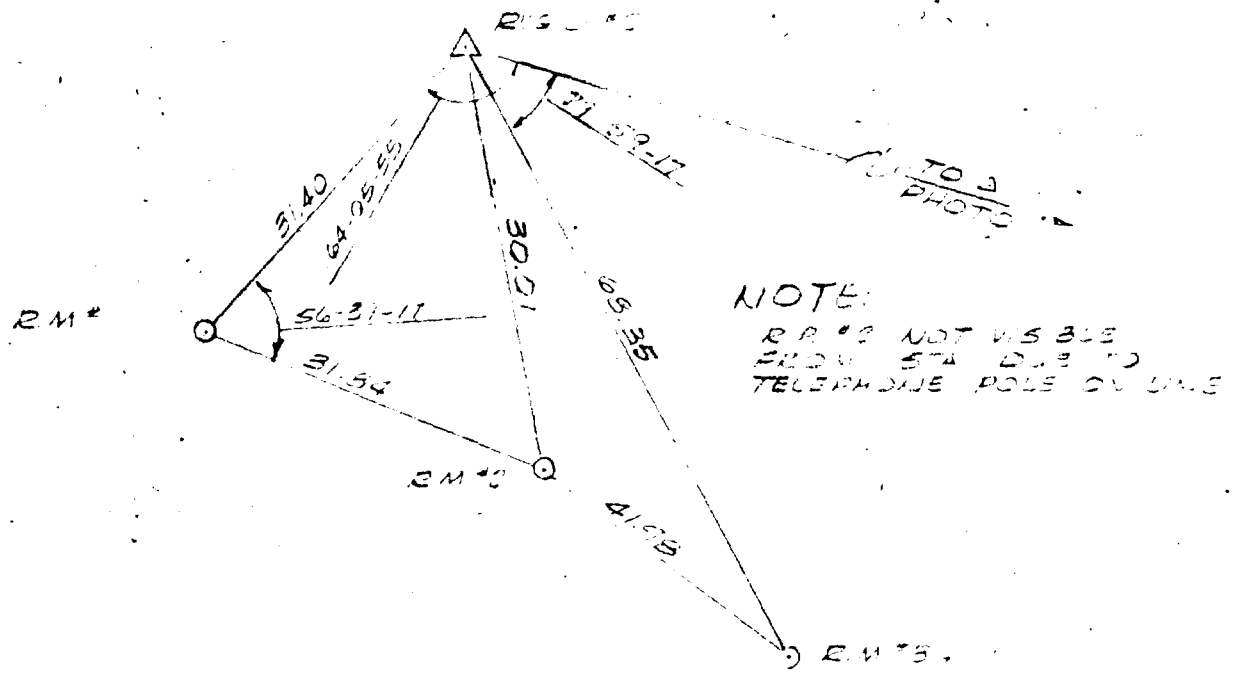
STATION Rigili #2 Leroy

DETAILED DESCRIPTION

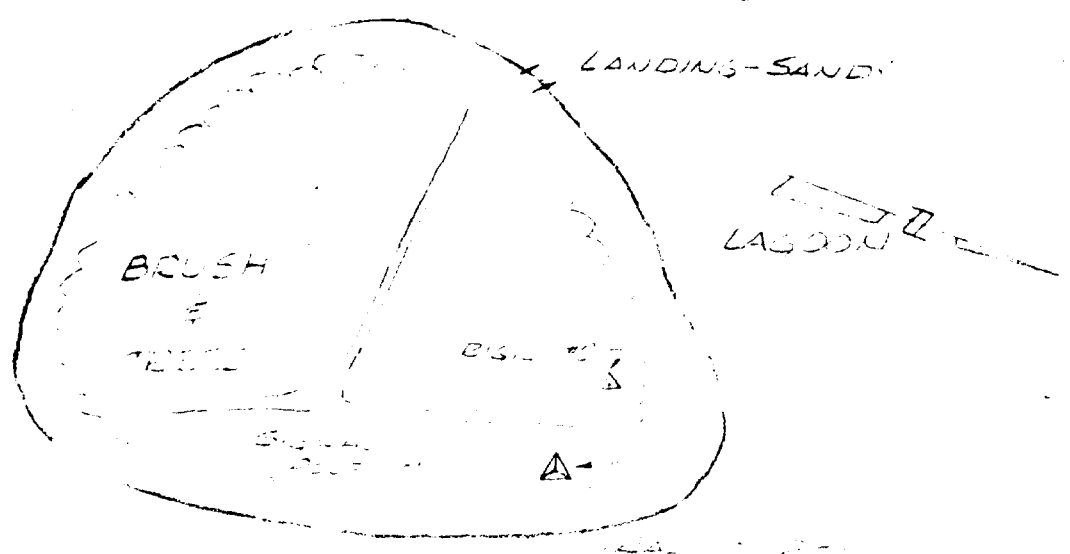
surface, 5-1/2 feet from the N.W. corner of a large metal radar reflector.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
122	4	3-5-51
159	4	2-21-54
296	20-22	1-12-57



LOCATION SKETCH.



~~OFFICIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS.
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Muzin - P.I. #1 SITE Kate
ESTABLISHED BY H&N YEAR 1950 Muzinbaarikku Island
RECOVERED BY E. F. Klanchar YEAR 1957 Eniwetok Atoll
FIELD BOOK NO. 296 PAGE 17-19 DATE 1-11-57 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		ELEVATION	
	DISTANCE			DIRECTION
	FEET	METERS		
Muzin	--	--	6.40	
Coral	--	--	--	
RM #1	43.36	13.216	244 - 14 - 47 8.64	
RM #2	49.84	15.191	291 - 37 - 30 10.26	
RM #3	62.01	18.901	170 - 27 - 32 4.20	

BRIEF HISTORY OF STATION:

This station is a third order station in the atoll control net. It was originally established as P.I. #1 of the Muzinbaarikku island traverse. It was tied in by local triangulation to the Engebi grid in the Holmes & Narver, 1949-50 survey. It was integrated in the atoll net in the Holmes & Narver 1952 control expansion.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard embossed Holmes & Narver disc 2-5/8" in diameter, stamped "Muzin - P.I. #1". It is set in concrete inside a 55 gallon drum. The mark is 1-1/2 ft. below the top of the drum and the drum is 1 ft. below the ground surface.

RM #1 is in good condition. It is a standard embossed Holmes & Narver disc unmarked except for a punch mark set in concrete in a 55 gallon drum. The marker is 1.7 ft. below the top of the drum and the drum extends 1 ft. above the ground surface.

RM #2 was set as a part of the recovery survey. It is a 2" diameter brass

PAGE 2-RECOVERY NOTE TRIANGULATION STATION

STATION Muzin - P.I. #1 SITE K&N

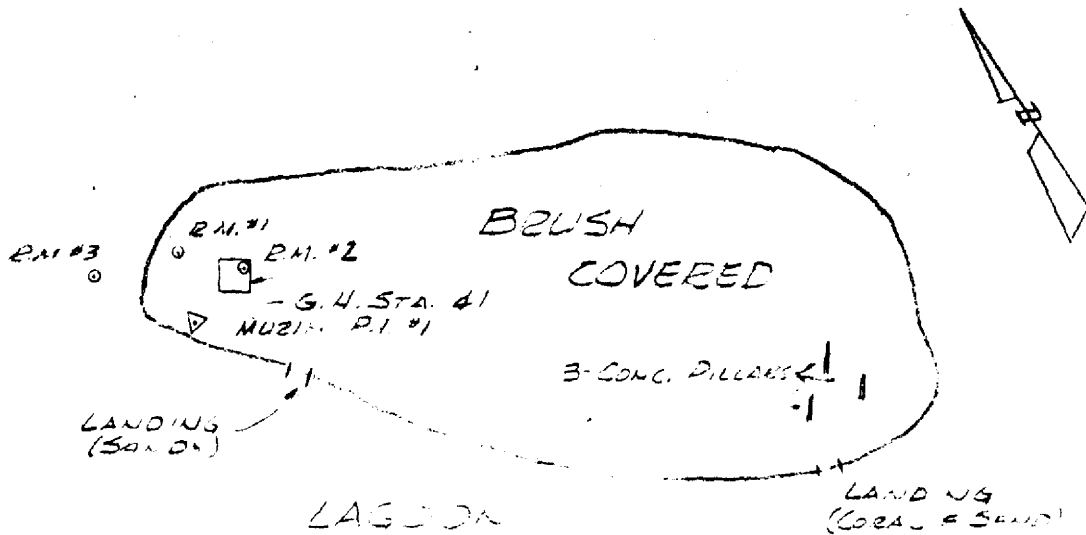
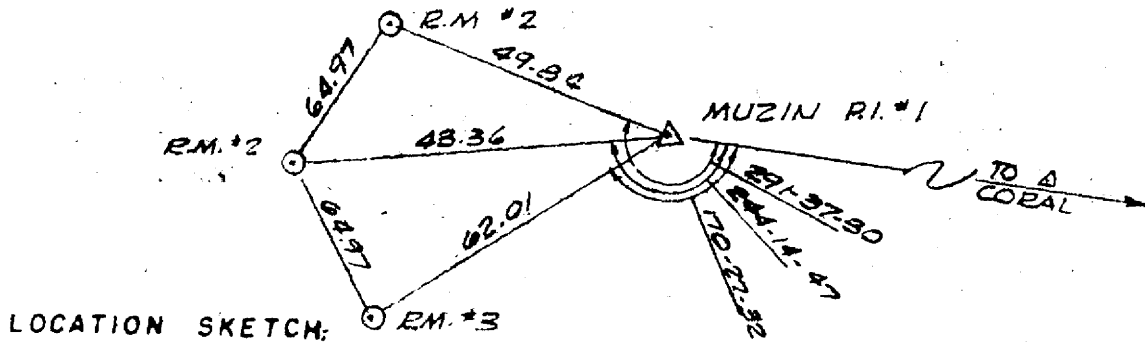
DETAILED DESCRIPTION OF STATION CENTER

disc stamped "RM #2 - Muzin H&N-1950". It is set in concrete in the northeast corner of Greenhouse station #41, an asphalt slab. The mark is 2" below the surface of the slab.

RM #3 was set as a part of the recovery survey. It is a brass tack in a lead plug driven into a hole in the reef coral. The lead plug is stamped "RM #3-Muzin-H&N-1950".

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
28	7	1-23-50
45	7-8	5-29-50
48	8-9	6-12-50
230	20	5-26-54
296	17-19	1-11-57



PAGE 2-RECOVER Y NOTE - TRIANGULATION STATION

STATION Lantana SITE Glenn

DETAILED DESCRIPTION OF STATION CONT.

The marks are flush with the ground surfaces.

References:

Field Book

Page

Date

223

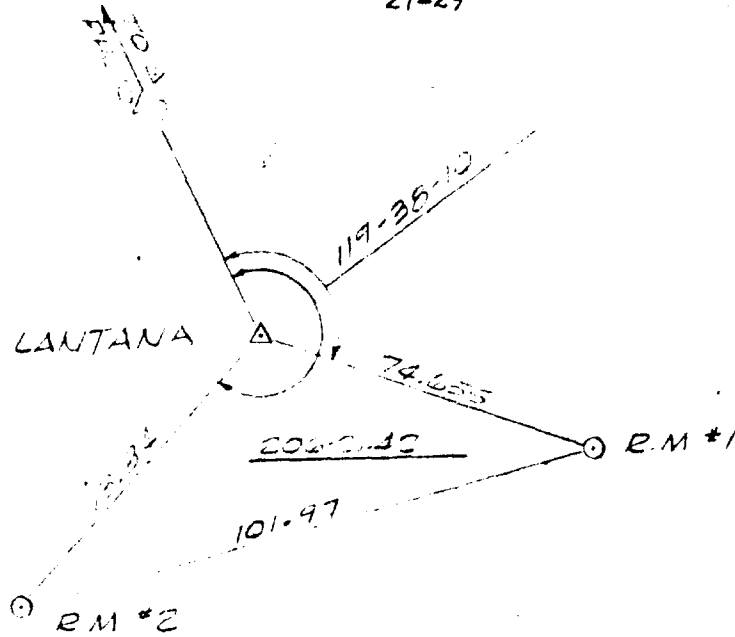
30

4-13-54

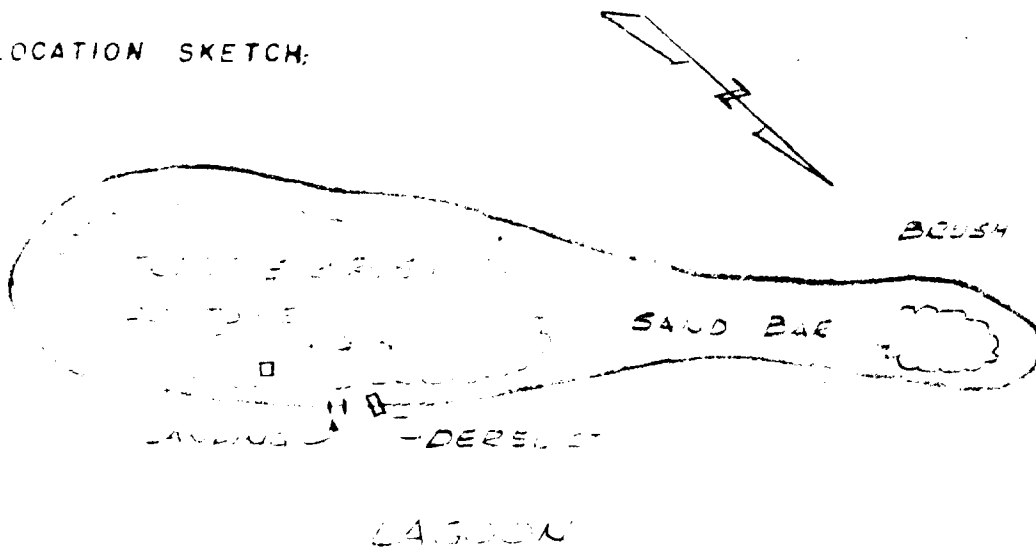
296

27-29

1-26-57



LOCATION SKETCH:



~~OFFICIAL USE ONLY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION: Bokon SITE: Mary
ESTABLISHED BY: H&N YEAR: 1949 Bokonaarappu Island
RECOVERED BY: E. F. Klanchar YEAR: 1957 Eniwetok Atoll
FIELD BOOK NO. 296 PAGE 10&11 DATE: 1-8-57 Marshall Islands

OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		
Bokon	--	--	--	10.40
Coral	--	--	00 - 00 - 00	--
RM #1	50.02	15.246	144 - 26 - 02	9.75
RM #3	80.18	24.439	239 - 55 - 35	9.33

BRIEF HISTORY OF STATION:

This station has been a second order station in the following surveys: Holmes & Narver, 1949-50; Holmes & Narver 1952 Expansion.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard embossed Holmes & Narver disc 2-5/8" in diameter stamped "Bokon". It is in concrete flush with the ground surface.

RM #1 is in good condition. It is a standard 2-5/8" diameter embossed Holmes & Narver disc stamped "RPI" with an arrow pointing toward the station, set in concrete 6" below the ground surface.

RM #2 was not recovered in the 1951 recovery program.

PAGE 2-RECORDARY NOTE - TRIANGULATION STATION

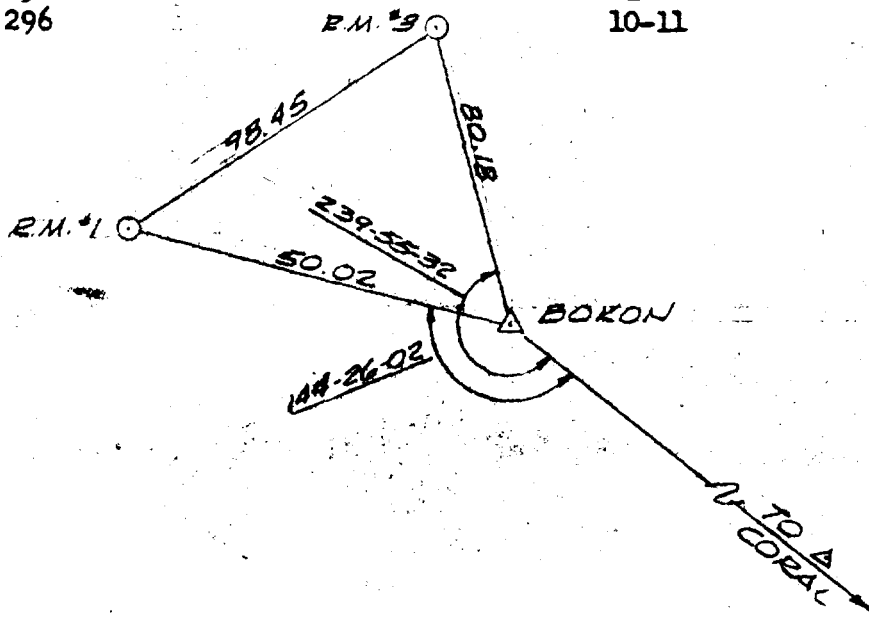
STATION Bokon SITE Mary

DETAILED DESCRIPTION OF STATION (CONT'D)

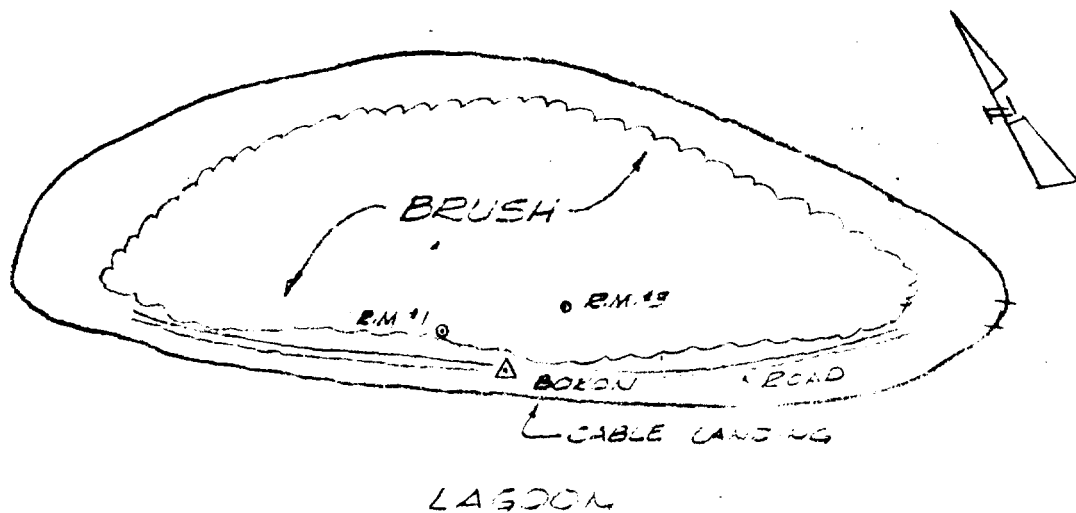
RM #3 is in good condition. It is a cross chiseled in the center of the top of a concrete anchor block of GREENHOUSE station 60.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
31	2	3-19-50
31	6	3-19-50
133	16	6-25-51
230	21	6-3-54
296	10-11	1-8-57



LOCATION SKETCH:



HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION	Photo	SITE	Mack
ESTABLISHED BY	JTF-7	YEAR: 1947	Coral Head
RECOVERED BY		YEAR: 1957	Eniwetok Lagoon
FIELD BOOK NO.	296 PAGE: 26	DATE: 2-2-57	Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		DIRECTION	ELEVATION
	DISTANCE			
	FEET	METERS		

BRIEF HISTORY OF STATION:

This station has been a secondary station in the following surveys: JTF-7, 1947-48; Holmes & Narver, 1949-50; Holmes & Narver Control Expansion, 1952.

DETAILED DESCRIPTION OF STATION:

This station was destroyed by the replacement of the decking under the photo tower. A living quarters building has been erected over the station location making it impossible to reestablish it at the present time.

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION	Rujoru	SITE	Pearl
ESTABLISHED BY	H&N	YEAR	1952
RECOVERED BY	E. F. Klanchar	YEAR	1957
FIELD BOOK NO.	296	DATE	1-7-57
	PAGE: 5-7		
			Rujoru Island Eniwetok Atoll Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS				
OBJECT	DISTANCE		DIRECTION	ELEVATION
	FEET	METERS		

BRIEF HISTORY OF STATION:

This station was established as a third order station in the 1952 Holmes & Narver Expansion Survey. It was established by observation of a triangle from Aomon and Coral.

DETAILED DESCRIPTION OF STATION:

This station and its two reference marks were recovered, but had been disturbed sufficiently to make it impossible to reestablish it. This station is considered to be destroyed.

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
159	9	4-21-52
186	15	10-13-52
227	13	4-23-54
296	5 - 7	1-7-57

~~OFFICIAL COPY~~

HOLMES & NARVER, INC.
ENGINEERS - CONSTRUCTORS
JOB 942

RECOVERY NOTE - TRIANGULATION STATION

NAME OF STATION Coral SITE Oscar
ESTABLISHED BY JTF-7 YEAR 1947-48 Coral Head
RECOVERED BY E. F. Klanchar YEAR 1957 Eniwetok Lagoon
FIELD BOOK NO. 289 PAGE: 30 DATE: 1-31-57 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		ELEVATION
	DISTANCE		
	FEET	METERS	
Coral	--	--	---
Photo			00 - 00 - 00
RM #1	93.31	28.441	260 - 23 - 33

BRIEF HISTORY OF STATION:

This station was established by JTF-7 on the same coral head where the USN 1944 intersection station "Reef" was located. It has been a primary station in all subsequent surveys and is the origin of coordinates (N 100,000, E 100,000) for the "Ivy" grid.

DETAILED DESCRIPTION OF STATION:

This station was recovered in good condition. The station mark is a standard stamped USC & GS brass disc 3" in diameter stamped "Coral". It is set in concrete, 14" below the surface of the surrounding concrete.

RM #1 is in good condition. It is a lead and tack in the small coral head 90' south-east of the main station structure. A piece of angle iron is embedded in the coral head directly behind the RM on the coral - RM #1 line.

~~CONFIDENTIAL~~

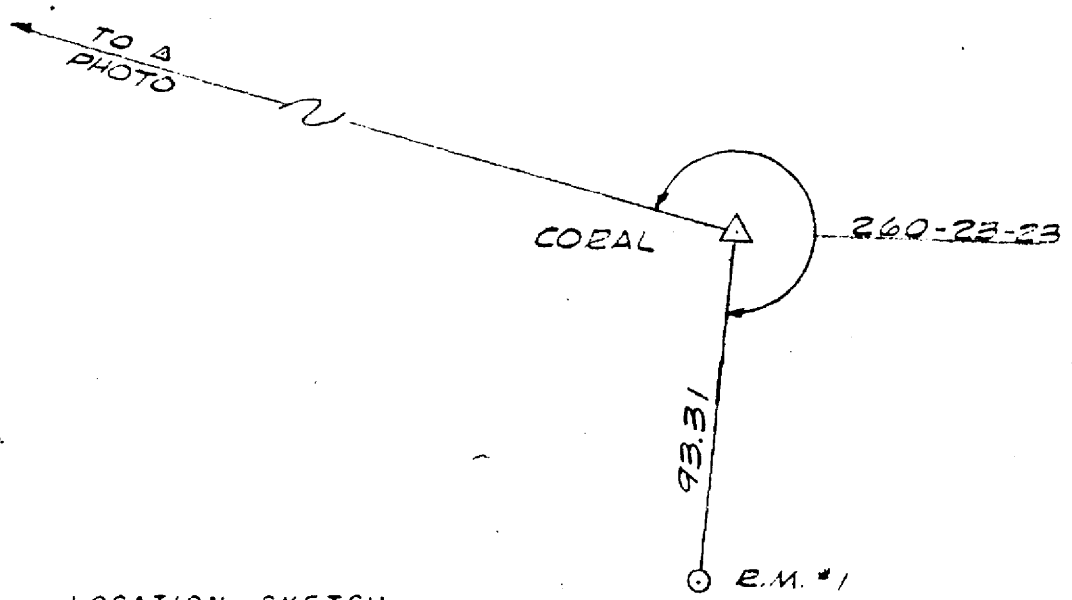
PAGE 2 - RECOVERY NOTE - TRIANGULATION STATION

STATION Coral SITE Oscar, Coral Head, Eniwetok Lagoon, M.I.

DETAILED DESCRIPTION OF STATION (CONT'D)

References:

<u>Field Book</u>	<u>Page</u>	<u>Date</u>
162	3	4-3-52
229	3 & 4	6-20-54
280	6	3-12-56
280	15 & 16	8-1-56
289	30	1-31-57



LOCATION SKETCH: