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HORIZONTAL CONTROL - ENIWETOK ATOLL M.I.  
1957 EXPANSION

A network of horizontal control stations was established in 1949-50 to cover the eastern portion of the Atoll. It consisted of a primary net of second order triangulation stations, supplemental with third order stations at locations of lesser importance. Standard procedures of the U.S. Coast and Geodetic Survey were carefully followed in executing the survey. Expansion surveys were completed in 1951, 1952, 1955 and in 1957 to establish additional stations and replace stations destroyed by test operations. The network now encompasses the Atoll and includes sixteen stations to second order specifications and eleven to third order accuracy.

Some features of two previous surveys were utilized in the scheme. A third order survey had been completed in 1944 by the USS Bowditch to control hydrographic mapping of the Atoll. This was followed in 1947-48 by a second order scheme of limited area by the U.S. Coast and Geodetic Survey. As the distribution of the existing stations of these surveys did not meet project requirements, and one end station of the base line had been destroyed, a substantially new and stronger scheme was necessary which could be expanded as required.

A base line for the net extended from station RUNIT on site YVONNE to a new station NORTH BASE #2 at the north end of the island. Station RUNIT was common to both the USS Bowditch and the USC & GS surveys. The base line was established to standard

NATIONAL ARCHIVES  
REPOSITORY PACIFIC SOUTHWEST REGION

COLLECTION RC 326 ATOMIC ENERGY COMMISSION

(1)

BOX No. 199679 (#1089) A16429 326-65AG/70

ENIWETOK 1957

FOLDER HORIZONTAL CONTROL HOLMES & NARVER JIS NO.5

procedures of the U.S. Coast and Geodetic Survey for second order base line measurement. The computed probable error of total measurement of the line was one part in 648,000. The allowable maximum probable error for second order base line measurement is one part in 500,000.

The geographic position of station RUNIT as determined by the USC & GS survey was adopted as the origin of geographic position. The azimuth values of this survey for the line, station RUNIT to station SAND were adopted as the origin of geodetic azimuth. The probable accuracy of the adopted values for position and azimuth are not known, but it was considered that the accuracy was consistent with project requirements at the time, and the expense of further refinement could not be justified.

The computed closing error of the survey before adjustment was determined as approximately one part in 25,000. An additional check was obtained in 1952 by inclusion of a first order traverse in the FLORA-GENE area. This indicated a closing error of approximately one part in 70,000 before adjustment of the adjacent quadrangle. In order that the values of a station would remain the same independent of the direction of computation through the net, an adjustment was applied to the triangulation figures. This consisted of a side equation adjustment which resulted in slight changes in the values previously reported.

A plane grid was established in 1952 which was common to the entire Atoll, and from which the inter-relation of structures and areas, and their positions could be specified by plane coordinates.

Due to the limited area, the slight additional refinement obtained by computing a Transverse Mercator Grid would not have been practical.

The origin of plane coordinates, N 100,000, E 100,000, was taken at station CORAL and the basis of bearings was a true meridian through this station as computed through the adjusted figures from the line, station RUNIT to station SAND.

The 1957 expansion survey included establishing new second order stations on sites YVONNE, SALLY and GENF and third order stations on sites GLENN, HENRY, JAMES and KEITH. The triangle closure to include station LANTANA on site GLENN exceeds the allowable closure limits. However, the triangulation towers were damaged by a storm before re-observing could be accomplished. As an evaluation of the observing results indicated the values to be within a tolerance of one part in 5,000, it was decided to defer the re-observing until such time as more precise values are required for the station.

## HOLMES &amp; HARVER INC. - ENGINEERS - CONSTRUCTORS

## PLANE CO-ORDINATES

LOCATION EXHIBIT D

PROJECTION PLANE GRID

1957 EXCEDED (SPEC)  
JOB NO. 757 SHEET OF

STATIONS	BEARING	DISTANCE	COORDINATES		NORTH	EAST
			LATITUDE	DEPARTURE		
1 COOKS IS	N 25° 39' .337 E	2565.00			102,022.00	100,022.00
2 MOLTON	N 26° 26' .997 E	32,812.92			106,208.00	124,284.56
3 SAWYER	N 12° 33' .814 E	33,525.88			129,914.73	113,542.61
4 GROUP #2					132,722.72	107,294.19
5 COOKS	S 30° 24' .424 W	56,429.46			142,202.87	21,408.56
6						
7 COOKS TO 22	S 34° 41' 16 E	2072.82			100,202.00	124,384.04
8 COOKS 22	N 26° 40' .324 E	14,988.65			129,603.22	122,897.50
9 COOKS 21					119,601.00	113,514.52
10						
11 COOKS TO					129,914.73	113,592.61
12 COOKS 20	S 21° 00' .491 E	1,048.50			119,601.00	117,514.52
13 COOKS 19	N 26° 16' 26.5 E	294.03			122,202.72	107,294.19
14						
15 COOKS TO					122,207.87	71,402.52
16 COOKS 18	N 26° 21' 22.6 E	1,616.61			124,207.92	76,506.20
17 COOKS 17	N 26° 13' 22.6 E	2,974.11			125,921.42	72,252.20
18						
19						
20						
21						
22						
23						
24						
25						
26						

PLANE CO-ORDINATES

LOCATION Eniwetok Atoll MI  
PROJECTION Ivy Grid

1957 Expansion Survey  
JOB NO. 942 SHEET 1 OF 3

STATIONS	BEARING	DISTANCE	COORDINATES		
			LATITUDE	DEPARTURE	NORTH
1					
2 Alice to	N62-13-02.25E	20,974.16			
3 Gail	N80-33-30.19E	34,116.16			
4 Engebi	S50-27-08.84E	61,143.84			
5 Coral					
6					
7 Coral to	N50-27-08.84W	61,143.84			
8 Alice	N30-24-46.49W	56,479.46			
9 Gail	N16-51-32.35W	46,527.59			
10 Engebi	N12-33-58.64E	33,525.88			
11 Ruijoru-2	N24-26-09.74E	32,858.02			
12 Sally	N41-50-50.54E	26,312.73			
13 Piiraa	N75-39-35.75E	25,065.01			
14 North	S89-10-25.88E	28,900.50			
15 Runit	S16-04-06.30W	71,964.78			
16 Lantana *	S23-42-54.10W	72,587.18			
17 Henry *	S31-44-31.30W	72,550.89			
18 James *	S35-47-46.50W	72,819.62			
19 Keith *	S67-27-45.60W	73,416.85			
20 Rigilli-2					
21					
22 Gail to	S74-31-28.65E	15,665.65			
23 Engebi	S30-24-46.49E	56,479.46			
24 Coral	S62-13-02.25W	20,974.16			
25 Alice					
26					

\* Third Order Station

PLANE CO-ORDINATES

LOCATION Eniwetok Atoll MI  
PROJECTION Ivy Grid

1957 Expansion Survey

JOB NO. 942 SHEET 2 OF 3

STATIONS	BEARING	DISTANCE	LATITUDE	DEPARTURE	COORDINATES	
					NORTH	EAST
2 Engebi to	S16-51-32.35E	46,527.59			144,527.90	86,506.20
3 Coral	S80-33-30.19W	34,116.16			100,000.00	100,000.00
4 Alice	N74-31-28.65W	15,665.65			138,231.40	52,852.20
5 Gail					148,707.87	71,408.50
6						
7 Rujorou-2 to	S65-58-16.06E	6,896.03			132,722.77	107,294.19
8 Sally	S38-01-22.46E	16,656.98			129,914.73	113,592.61
9 Piiraai	S12-33-58.64W	33,525.88			119,601.00	117,554.50
10 Coral					100,000.00	100,000.00
11						
12 Sally to	S21-00-49.16E	11,048.50			129,914.73	113,592.61
13 Piiraai	S24-26-09.74W	32,858.02			119,601.00	117,554.50
14 Coral	N65-58-16.06W	6,896.03			100,000.00	100,000.00
15 Rujorou-2					132,722.77	107,294.19
16						
17 Piiraai to	S29-32-16.78E	23,008.02			119,601.00	117,554.50
18 Runit	S26-40-41.30E	14,988.65			99,583.30	128,897.50
19 North	S41-50-50.54W	26,312.73			106,208.00	124,284.06
20 Coral	N38-01-22.46W	16,656.98			100,000.00	100,000.00
21 Rujorou-2	N21-00-49.16W	11,048.50			132,722.77	107,294.19
22 Sally					129,914.73	113,592.61
23						
24						
25						
26						

PLANE CO-ORDINATES

LOCATION Eniwetok Atoll MI  
PROJECTION Ivy Grid

1957 Expansion Survey  
JOB NO 942 SHEET 3 OF 3

STATIONS	BEARING	DISTANCE	LATITUDE	DEPARTURE	COORDINATES	
					NORTH	EAST
2 North to	S34-51-12.16E	8,072.82			106,208.00	124,284.06
3 Runit	S75-39-35.75W	25,065.01			99,583.30	128,897.50
4 Coral	N26-40-41.30W	14,988.65			100,000.00	100,000.00
5 Piiraai					119,601.00	117,554.50
6						5
7 Bunit to	N89-10-25.88W	28,900.50			99,583.30	128,897.50
8 Coral	N34-51-12.16W	8,072.82			100,000.00	100,000.00
9 North	N29-32-16.78W	23,008.02			106,208.00	124,284.06
10 Piiraai					119,601.00	117,554.50
11						10
12 Lantana to*	N49-25-24.70W	63,053.07			30,846.75	80,081.23
13 Rigilli-2	N16-04-06.30E	71,964.78			71,860.40	32,190.00
14 Coral					100,000.00	100,000.00
15						14
16 Henry to *	N45-13-19.50W	54,401.26			33,542.29	70,806.31
17 Rigilli-2	N23-42-54.10E	72,587.18			71,860.40	32,190.00
18 Coral					100,000.00	100,000.00
19						18
20 James to *	N41-27-08.70W	44,775.53			38,300.88	61,831.30
21 Rigilli-2	N31-44-31.30E	72,550.89			71,860.40	32,190.00
22 Coral					100,000.00	100,000.00
23						22
24 Keith to *	N39-11-44.10W	39,902.99			40,935.85	57,407.47
25 Rigilli-2	N35-47-46.50E	72,819.62			71,860.40	32,190.00
26 Coral					100,000.00	100,000.00

\* Third Order Station

HOLMES & NARVER, INC. - ENGINEERS - CONSTRUCTORS

GEOGRAPHIC POSITIONS

STATION	LATITUDE	LONGITUDE	AZIMUTH	BACK AZIMUTH	TO STATION	LOG. METERS	METERS	FEET	DISTANCE
Alice	11-38-46.347N	242-11-26.72	62-12-04.45	Gail	3.8057004	6,392.937	20,974.16		
	162-09-16.507E	260-31-54.61	80-33-03.03	Engebi	4.0169759	20.398.626	34.116.16		
	309-31-15.76	129-32-51.11	Coral	4.2703685	18,636.680	61,114.3.84			
Coral	11-32-20.254N	129-32-51.11	309-31-15.76	Alice	4.2703685	18,636.680	61,114.3.84		
	162-17-10.944E	149-35-13.46	329-34-15.57	Gail	4.2359063	17,214.974	56,479.46		
	163-08-27.60	343-08-00.30	Engabi	4.1517264	14,181.638	46,527.59			
	192-33-58.52	12-34-13.27	Rujoru-2	4.0093960	10,218.702	33,525.88			
	204-26-09.62	24-26-37.09	Sally	4.0006573	10,015.145	32,858.02			
	221-50-50.42	41-51-25.86	Piiraei	3.9041817	8,020.136	26,312.73			
	255-39-35.63	75-40-24.54	North	3.8830837	7,639.830	25,065.01			
			Runit	3.9449212	8,808.890	28,900.50			
	270-49-34.00	90-50-32.20	Lantana	4.3411358	21,934.909	71,964.78			
	16-04-05.81	196-03-36.06	Henry	4.3448758	22,124.617	72,587.18			
	23-42-54.10	203-41-55.83	James	4.3446586	22,113.556	72,550.89			
	31-44-31.30	211-43-15.08	Keith	4.3462642	22,195.465	72,819.62			
	35-47-46.50	215-46-21.43	Rigill-2	4.3498116	22,377.501	73,416.85			
	67-27-45.60	247-25-29.60	"						
Gail	11-40-23.398N	285-27-33.34	105-28-04.08	Engebi	3.6789643	4,774.900	15,665.65		
	162-12-23.207E	329-34-15.57	149-35-13.46	Coral	4.2359063	17,214.974	56,479.46		
		62-12-04.45	242-11-26.72	Alice	3.8057004	6,392.937	20,974.16		
Engebi	11-39-41.964N	343-08-00.30	163-08-27.60	Coral	4.1517264	14,181.638	46,527.59		
	162-14-55.151E	80-33-03.03	260-31-51.61	Alice	4.0169759	10,398.626	34,116.16		
	105-28-04.08	285-27-33.34	Gail	3.6789643	4,774.900	15,665.65			

ORDER TRIANGULATION  
SHEET 1 OF 4

HOLMES & NARVER INC. - ENGINEERS - CONSTRUCTORS

GEOGRAPHIC POSITIONS

STATION	LATITUDE	LONGITUDE	AZIMUTH	BACK AZIMUTH	TO STATION	DISTANCE	JOB NO.	SECOND	ORDER TRIANGULATION
					LOG METERS	METERS			SHEET OF
					FEET				
Rujoru-2	11-37-44.863N	294-01-58.55	114-02-11.32	Sally	3.3226150	2,101.914	6,896.03		
	162-18-24.339E	321-58-52.12	141-59-12.91	Piiraai	3.7056121	5,077.058	16,656.98		
	12-34-13.27	192-33-58.52	Coral		4.0093960	10,218.709	33,525.88		
Sally	11-37-17.000N	338-59-38.16	158-59-46.19	Piiraai	3.5273179	3,367.590	11,048.50		
	162-19-27.711E	24-26-37.09	204-26-09.62	Coral	4.0006573	10,015.145	32,858.02		
	114-02-11.32	294-01-58.55	Rujoru-2		3.3226150	2,101.914	6,896.03		
Piiraai	11-35-34.682N	330-28-18.47	150-28-41.37	Runit	3.8458951	7,012.859	23,008.02		
	162-20-07.557E	333-19-53.98	153-20-07.53	North	3.6597784	4,568.550	14,988.65		
	41-51-25.86	221-50-50.42	Coral		3.9041817	8,020.136	26,312.73		
	141-59-12.91	321-58-52.12	Rujoru-2		3.7056121	5,077.058	16,656.98		
	158-59-46.19	338-59-38.16	Sally		3.5273179	3,367.590	11,048.50		
North	11-33-21.810N	325-09-36.63	145-09-45.24	Runit	3.3910410	2,460.600	8,072.82		
	162-21-15.230E	75-40-24.54	255-39-35.63	Coral	3.8830837	7,639.830	25,065.01		
	153-20-07.53	333-19-53.98	Piiraai		3.6597784	4,568.550	14,988.65		
Runit	11-32-16.080N	90-50-32.20	270-49-34.00	Coral	3.9449212	8,808.890	28,900.50		
	162-22-01.621E	145-09-45.94	325-09-36.63	North	3.3910410	2,460.600	8,072.82		
	150-28-41.37	330-28-18.47	Piiraai		3.8458951	7,012.859	23,008.02		
Lantana ?	11-20-54.223	130-33-54.57	310-32-19.30	Rigill-2	4.2837221	19,218.614	63,053.07		
	162-13-50.718	196-03-36.06	16-04-05.81	Coral	4.3411358	21,934.909	71,964.78		

HOLMES & NARVER INC. - ENGINEERS - CONSTRUCTORS

## GEOGRAPHIC POSITIONS

LOCATION Eniwetok Atoll

DATUM Eniwetok Astronomic 1944

## Second

JOB NO 942

**ORDER TRIANGULATION**

SHEET 3 OF 4

GEOGRAPHIC POSITIONS

LOCATION Eniwetok Atoll  
DATUM Eniwetok Astronomic 1944

Second

JOB NO. 942

ORDER TRIANGULATION  
SHEET 4 OF 4

STATION	LATITUDE	LONGITUDE	BACK AZIMUTH	TO STATION	DISTANCE	
					LOG. METERS	FEET
Japtan ♀	11-25-41.449N					
		162-23-11.664E				
Lilac ♀	11-25-38.264N					
		162-22-22.842E				
Mack	11-32-57.854					
		162-14-54.033				
Muzin	11-39-20.189N					
		162-15-10.227E				
Ruchi ♀	11-38-26.544N					
		162-10-50.892E				
Sand	11-30-18.986N					
		162-23-06.870E				
Yerri ♀	11-38-07.928N					
		162-17-16.650E				

HOLMES & NARVER INC. - ENGINEERS - CONSTRUCTORS

## **TRAVERSE**    LOCATIONS OF STATIONS

LOCATIONS OF STATIONS  
NORTH, SALLY, RIVER-E, GAILJOB NO. 942

CALC. BY LSH

DATE 12-14-57

NORTH, SALLY, RUMBO-2, GAILJOB NO. 740

CHKD. BY E.R.Q

DATE 12-26-57

B. REF. SHEET NO. /

HOLMES & MARVER, INC.  
ENGINEERS-CONSTRUCTORS

# POSITION COMPUTATION

## SECOND ORDER TRIANGULATION

COMPUTED BY  $\angle 54$  DATE 1/2-57

		JOB NO.	942	LOCATION ENVIETOK	ATOLL
a	2 PII/RAAI inc CORAL	41° 51'	25.86"	3 CORAL 102 PII/RAAI	221° 50' 50.42"
Δα	+ 117.08	20.33	3dL	8	- 17 24 40.80
a	PII/RAAI 101 SALLY	158.59	46.19	3 CORAL 101 SALLY	204 26 09.62
Δα	- 0	08.02	Δα		+ 0 27.45
		180	00.00		180 00 00.00
a'	1 SALLY 102 PII/RAAI	338.59	38.16	a' 1 SALLY 103 CORAL	24 26 37.09
Δα'	+ 01 42 3/8	1162	20 07557	Δα' 11 32 20254 3 CORAL	162 17 10.944
Δφ'	+ 11 37 17.000	1162	19 27.711	Δφ' 0 39.846 Δφ + 04 56.747	Δλ + 02 16.267
				11 37 17.000 1 SALLY	162 19 27.711
				Logarithms Values in seconds	
					$\frac{1}{2}(\phi + \phi')$
				s 4.0006573	Logarithms Values in seconds
				b 8.5124997	Logarithms Values in seconds
				h 2.4724006 1st term	Logarithms Values in seconds
				s <sup>2</sup> 8.00121	Logarithms Values in seconds
				sin <sup>2</sup> α 9.23332	Logarithms Values in seconds
				Δλ 1.6003852 39.8460 C 0.71669	Logarithms Values in seconds
				2d term + 3.0089	Logarithms Values in seconds
				-Δα 0.9090146 8.017 n <sup>2</sup> 4.9448	Logarithms Values in seconds
				d 1.9845	Logarithms Values in seconds
				c. 9293 3d term + 0.0008	Logarithms Values in seconds
				-Δφ - 02.3182	Logarithms Values in seconds

FIRST ANGLE OF TRIANGLE 45-26-58.93

3	11 25 34.682 2 PII/RAAI	162	20 07557	φ 11 32 20254 3 CORAL	λ 162 17 10.944
Δφ	+ 01 42 3/8	Δλ	0 39.846 Δφ + 04 56.747	Δλ + 02 16.267	
φ'	+ 11 37 17.000	λ'	11 37 17.000 1 SALLY	λ' 162 19 27.711	
			Logarithms Values in seconds		
				$\frac{1}{2}(\phi + \phi')$	Logarithms Values in seconds
				s 4.0006573	Logarithms Values in seconds
				b 8.5124997	Logarithms Values in seconds
				h 2.4724006 1st term	Logarithms Values in seconds
				s <sup>2</sup> 8.00121	Logarithms Values in seconds
				sin <sup>2</sup> α 9.23332	Logarithms Values in seconds
				Δλ 1.6003852 39.8460 C 0.71669	Logarithms Values in seconds
				2d term + 3.0089	Logarithms Values in seconds
				-Δα 0.9090146 8.017 n <sup>2</sup> 4.9448	Logarithms Values in seconds
				d 1.9845	Logarithms Values in seconds
				c. 9293 3d term + 0.0008	Logarithms Values in seconds
				-Δφ - 02.3182	Logarithms Values in seconds

HOLMES & HARVER, INC.  
ENGINEERS-CONSTRUCTORS

# POSITION COMPUTATION SECOND ORDER TRIANGULATION

COMPUTED BY	L.S.H.	DATE	12/12/57	"	JOB NO.	942	LOCATION	ENI/WETOKE ATOLL	"
SALLY	to 3 CORAC		24° 26'	37.09 "	α	3	CORAC	to 2 SALLY	204° 26' 09.62 "
+ 89	35		34.23	3dL	Δα	8		- 11	52 11.10
SALLY to 1 RVJORU-2	1/4 02		11.32	α	3	CORAC	to 1 RVJORU-2	192 33 58.52	
-			-	12.75	Δα		+		14.73
180	00		00.0				180	00	00.0
RVJORU-2 to 1 SALLY	294 C/		58.575	α	1	RVJORU-2 to 3 CORAC	1/2	34	13.25
1/4 1st ANGLE OF TRIANGLE 78-32-14.72	"		"	"	"				
2 11 27 17.000 2 SALLY	λ	162	19 27.111	φ	11	32 20254 3 CORAC	λ	162	17 10.944
Δλ	+ 0	27.862	- 01 03.372	Δφ	+ 05 24.609		Δλ	+ 01	13.395
2 11 27 44.362 3 RVJORU-2	λ	162	18 24.339	φ	11	37 49.863 1 RVJORU-2	λ	162	18 24.339
Logarithms						Logarithms	Values in seconds		
$\frac{1}{2}(\phi + \Phi)$						$\frac{1}{2}(\phi + \Phi)$			
3.3226150						S	4.0093960		
λ 9.0099238						Cos φ	9.9894698		
5.5124780						S	8.5124997		
3.3226150						h	2.5113655	1st term	-324.6127
Sin φ 0.0090068						S <sup>2</sup>	8.01879		
A' 5.0096669						sin <sup>2</sup> φ	9.67519		
Sec φ' 0.0090068						C	0.71669		
Δ λ 1.8018957 63.3717						7.41067	2d term	+0.0026	sin <sup>2</sup> (φ+Φ)
C. 71877						-Δ α	1.1055251 12.750	n <sup>2</sup>	9.3026316 14.733
7.28420						D	1.9845		
2.8901						7.0072	3d term	+0.0010	
1.9864						-Δ φ	-2246090		
4.8765 - 3d term						-Δ φ	-27.8623		



HOLMES & HARVER, INC.  
ENGINEERS-CONSTRUCTORS

POSITION COMPUTATION SECOND ORDER TRIANGULATION

COMPUTED BY		DATE	JOB NO.		LOCATION		ENIVETOK - ATOLCA	
			942					
1	2	RUNIT	90° 50' 32.20"	x	3 CORAL	102	RUNIT	270° 49' 34.00"
+ 59	38	PIRAAI	09.17 3dL		- 48	58	43.58	
150	28	PIRAAI	41.37	x	3 CORAL	101	PIRAAI	221 50 50.42
-	0	PIRAAI	22.87	Δα	+	0	35.41	
190	00.00	PIRAAI	18.47	Δα	180	00.00	0.00	
330	28	PIRAAI	PIRAAI	103 CORAL	41	51	25.86	
FIRST ANGLE OF TRIANGLE 71-23-07.39								
1	2	RUNIT	162 22 01.621	φ	11	32	20.254 3 CORAL	162 17 0.944
Δα	-	PIRAAI	- 01 54.063	Δφ	+ 03 14.928	Δλ	+ 02 56.612	
11	35 34.682	PIRAAI	162 20 07.557	φ'	11 35 34.682	1 PIRAAI	162 20 07.551	
Logarithms Values in seconds								
5.6458951	11-33-55.381	1/2(φ+φ')	3.904/817	s	3.904/817	f(φ+φ')	11-33-57.468	
9.9396030	16.080	RUNIT	Logarithms Values in seconds	CUSA 9.872//126	Logarithms Values in seconds	Logarithms Values in seconds	Logarithms Values in seconds	
8.5124998	+ 03 18.602	PIRAAI	B 8.5124997	B 8.5124997	B 8.5124997	B 8.5124997	S 3.904/1817	
2.2979979	1st term - 198.6085	PIRAAI	h 2.2887940	1st term - 192.4438	h 2.2887940	h 2.2887940	S 9.8242223	
7.69179	8.5096672	PIRAAI	s <sup>2</sup> 7.80836	s <sup>2</sup> 7.80836	s <sup>2</sup> 7.80836	s <sup>2</sup> 7.80836	A' 8.5096672	
9.38526	0.0089512	PIRAAI	Sec φ' 9.64844	Sec φ' 9.64844	Sec φ' 9.64844	Sec φ' 9.64844	Sec φ' 0.0089512	
0.71664	2.0571448	PIRAAI	0.71669	0.71669	0.71669	0.71669	Δλ 2.2476224 176 612	
7.79369	2.3 term + 0.0062	PIRAAI	8.17349	8.17349	8.17349	8.17349	8.17349	
4.5960	3.592289	PIRAAI	4.5776	4.5776	4.5776	4.5776	8.17349	
1.9845	1.3592289	PIRAAI	0 1.9845	0 1.9845	0 1.9845	0 1.9845	0 1.9845	
6.5805	3d term + 0.0004	PIRAAI	6.5621	3d term + 0.0004	6.5621	3d term + 0.0004	6.5621	
	- Δφ	PIRAAI	- 194.4285					

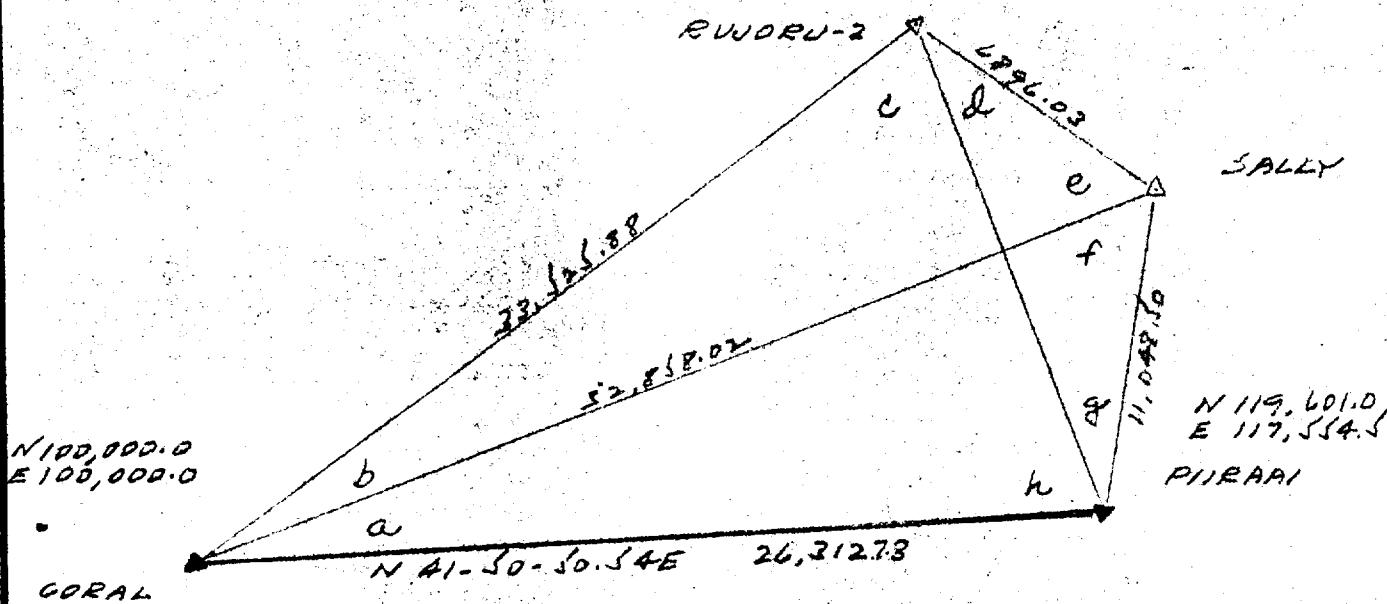
HOLMES & NARVER, INC.  
ENGINEERS - CONSTRUCTORS  
LOS ANGELES, CALIFORNIA

JOB NO. 942

SHEET 1 OF 2

BY LSH DATE 9-11-57

TITLE LOCATIONS 'A STA. RUWORU-2, SALLY



N 119,601.0  
E 117,554.5  
PIIRAAI

	OBS. #	GEO. COND.	TEIG. COND.
a	17-24-40.9	40.9	39.7
b	11-52-12.8	12.3	12.2
c	50-35-20.0	20.0	20.0
d	27-56-54.7	54.1	54.7
e	89-35-33.1	32.5	33.1
f	45-27-00.6	00.0	00.0
g	17-00-32.7	32.1	32.2
h	100-07-49.3	48.7	48.1

$$\frac{\sin a, \sin c, \sin e, \sin g}{\sin b, \sin d, \sin f, \sin h} = 1$$

10g sin. 17-24-39.7	9.4759971	67.2	11-52-12.2	9.3132190	100.1
- - 50-35-20.0	9.8879606	17.3	27-56-54.7	9.6708747	39.7
- - 89-35-33.1	9.9999890	0.2	45-27-00.0	9.8528693	20.7
- - 17-00-32.2	9.4661571	68.5	100-07-48.1	9.9931762	3.8
	8.8301038	153.5		8.8301392	164.3
		164.3		1038	
		317.8		314	

$$354 / 317.8 = .11$$

HOLMES & NARVER, INC.  
ENGINEERS - CONSTRUCTORS  
LOS ANGELES, CALIFORNIA

JOB NO. 116

SHEET 2 OF 2

BY LSH DATE 9-11-57

TITLE LOCATION A STA. RUMORU-2, SALLY

<u>26,312.73</u> SIN 45-36-38.9	SIN 117-08-20.3 32,858.024	SIN 17-24-40.8 11,048.501
<u>32,858.024</u> SIN 78-32-14.7	SIN 11-52-11.1 6896.030	SIN 89-35-34.2 33,525.878
<u>26,312.73</u> SIN 50-35-21.1	SIN 29-16-51.9 16,656.978	SIN 100-07-47.0 33,525.893
<u>16,656.978</u> SIN 135-02-33.1	SIN 27-56-52.6 11,048.521	SIN 17-00-33.3 6896.018

HOLMES &amp; NARVER ENGINEERS-CONSTRUCTORS

## COMPUTATION OF TRIANGLES

CALC. BY L.S.H.DATE 12-11-57JOB NO. 942CHKD. BY E.R.G.DATE 12-20-57LOCATION ENIWEJOK ATOLL

STATION	OBSERVED ANGLE	CORR-N	SPHERICAL		PLANE ANGLE AND DISTANCE	LOGARITHM
			ANGLE	EXCESS		
2-3					8,020.136	3.9041817
1 SALLY	45-27-00.6		58.93	0.03	26-58.90	
2 PIIRAAI	117-08-22.0		20.33	0.03	20.30	
3 CORAL	17-24-40.9		40.80	0.00	40.80	
1-3		63.5				
1-2						
2-3					10,015.145	4.006573
1 RVJORU-2	78-32-15.3		14.72	0.02	14.70	
2 SALLY	89-35-33.1		34.23	0.03	34.20	
3 CORAL	11-52-12.8		11.10	0.00	11.10	
1-3		-01.2				
1-2						
2-3					8,020.136	3.9041817
1 RVJORU-2	50-35-20.6		21.15	0.05	21.1	
2 PIIRAAI	100-07-49.3		47.05	0.05	47.0	
3 CORAL	29-16-53.7		51.90	0.00	51.9	
1-3		63.6				
1-2						
2-3						
1						
2						
3						
1-3						
1-2						

HOLMES & HARVER, INC.  
ENGINEERS-CONSTRUCTORS

POSITION COMPUTATION

COMPUTED BY C-54 DATE 12-14-57

## SECOND ORDER TRIANGULATION

OB NO. 942 LOCATION ENNIETOK, ATOLIA

FIRST ANGLE OF TRIANGLE

$\alpha$	11 39 41.9642 ENG E B1	$\lambda$	162 14 55.151	$\phi$	3
$\Delta \phi$	- 0 55.617	$\Delta \lambda$	- 05 38.644	$\Delta \phi$	
$\alpha'$	11 38 46.347	$\lambda'$	162 09 16.507	$\phi'$	
	Logarithms	Values in seconds	Logarithms	Values in seconds	
$\frac{1}{2}(\phi + \phi')$	$\frac{1}{2}(\phi + \phi')$	$s$	$\log s$	$s$	$\log s$
$\sin \alpha$	$\sin \alpha$	$s$	$\log s$	$s$	$\log s$
A	4.0169759	4.0169759	4.0169759	B	8
B	9.2153000				
C	8.5124960				
D	1.7447719	1st term + 55.5612	$\sin \alpha$ 9.9940670	E	h
E	8.03395	A'	8.5096666	F	$s^2$
F	9.98813	Sec $\phi'$ 0.0090342	Sec $\phi'$ 0.0090342	G	$\sin^2 \alpha$
G	0.72139	$\Delta \lambda$ 2.5297437	$\Delta \lambda$ 2.5297437	H	C
H	8.74347	$\sin^2(\phi + \phi')$ 7.3053512	$\sin^2(\phi + \phi')$ 7.3053512	I	$\Delta \lambda$
I	3.4695	$-\Delta \alpha$ 1.8350949	$-\Delta \alpha$ 1.8350949	J	$\sin^2(\phi + \phi')$
J	1.9887	68.4060	68.4060	K	$\Delta \alpha$
K	5.4584	30 term + 0.0000	30 term + 0.0000	L	$-\Delta \phi$
L	55.6166				

# POSITION COMPUTATION

COMPUTED BY L.S.H. DATE 12-14-57

HOLMES & MARVER, INC.  
ENGINEERS-CONSTRUCTORS

# SECOND ORDER TRIANGULATION

				JOB NO. <u>922</u>		LOCATION <u>ENWETOK ATOLL</u>	
2	GAIL	103 CORAL	329° 34' 15.57"	3 CORAL	102 GAIL	149° 35' 13.46"	
+ 92	37	48.88	3dL	8	- 20	02	22.35
101 ALICE	62	12 04.45	3 CORAL	101 ALICE	129 32	51.11	
- 0	37.73	Δα	-	-	- 01	35.34	
180	00	00.0		180	00	00.0	
1 ALICE	242	11 26.72	Δ ALICE	103 CORAL	309 31	15.76	

FIRST ANGLE OF TRIANGLE 67-19-49.04

				LOGARITHMS		VALUES IN SECONDS	
1	40 23.398	2 GAIL	2 162 12 23.207	9	11 32 20.254	3 CORAL	λ 162 17 10.944
- 01	37.051		Δx - 03 06.700	Δx + 06 26.094			Δx - 07 58.45
11 38 46.347	12 ALICE	x' 162 09 16.507	Δx 11 38 46.347	Δx' 1 ALICE	λ' 162 09 16.50		
Logarithms	Values in seconds	Logarithms	Values in seconds	Logarithms	Values in seconds	Logarithms	Values in seconds
2.8057004		4.2703685		4.2703685		4.2703685	
9.6687283		Logarithms	Values in seconds	Logarithms	Values in seconds	Logarithms	Values in seconds
8.5124956		8.5124956	9.8039472	8.5124956	9.8039472	8.5124956	9.8039472
1.9866924	1st term	1.9866924	1st term	1.9866924	1st term	1.9866924	1st term
76140		76140		76140		76140	
9.89349		9.89349		9.89349		9.89349	
0.72184		0.72184		0.72184		0.72184	
5.22673	2d term	5.22673	2d term	5.22673	2d term	5.22673	2d term
5.9739		5.9739		5.9739		5.9739	
1.9892		1.9892		1.9892		1.9892	
5.9631	3d term	5.9631	3d term	5.9631	3d term	5.9631	3d term
- 1d	+	+	+	- 1d	+	- 1d	+

HOLMES & MARVER, INC.  
ENGINEERS-CONSTRUCTORS

# POSITION COMPUTATION

COMPUTED BY  $\angle 54^{\circ}$  DATE 12-12-57.

COMPUTED BY		JOB NO. 942		LOCATION B/K/N/V		ATOLL	
A	ENGEBI	1	CORAL	343° 08'	00. 30"	3 CORAL	to 2 ENGEBS/
$\Delta \alpha$				+122 20	03. 78' 3dL	8	163° 08' 27. 60"
A	ENGEBS/	to 1	GAI	105 28	04. 08' $\alpha$	3 CORAL	to 1 GAI
$\Delta \alpha$				- 0	30. 73' $\Delta \alpha$		- 13 33 19. 14
A		1	GAI	180	00. 0		- 149 35' 13. 46
A		to 2	ENGEBS/	285 27	33. 34' $\alpha$	1 GAI	- 0 0 57. 89
A						10 3 CORAL	180 00 00. 0
A						329 34	15. 57
FIRST VISIBLE TRIANGLE 44-06-92.23							
A	39 41. 964	ENGEBS/	162 14' 55. 15"	φ	//	32 20. 284 3 CORAL	$\lambda$ 162 17 10. 949
$\Delta \alpha$	0 41. 434		$\Delta \alpha$ - 02 31. 945	Δφ	+	08 03. 144	$\Delta \lambda$ - 09 47. 737
A	40 23. 998	GAI	162 12' 23. 207	φ'	//	40 23. 398 1 GAI	$\lambda'$ 162 12 23. 207
Logarithms Values in seconds							
A	3.6789645		$\frac{1}{2}(\phi + \phi')$	S	4.2359063		$\frac{1}{2}(\phi + \phi')$
B	9.4260170		Logarithms Values in seconds	Cos φ	9.9357085		Logarithms Values in seconds
B	8.5124960			B	8.5124997		
A	1.6174773	1st term	-41. 4455	S	3.6789643		
B	7.35793		Sin φ 9. 9839782	h	2.6841145 1st term	483.1862	S 4.2359063
B	9.96796		A' 8.5096664	S <sup>2</sup>	8.47141		$\sin \alpha$ 9.7043464
C	0.72139		Sec φ' 0.0090764	Sec φ' 9. 40869	Sec φ' 8.5096664		$\lambda'$ 8.5096664
C	8.04728	2d term	+0. 0112 Sin <sup>2</sup> (φ) 9. 3058963	A	2.1816853 151. 9446	0.0090764	$\Delta \lambda$ 0.4589955 287. 7369
C	2.350		-Δα 1.4875816	C	0.71669		" 7.3035882
C	1.9889			B	8.59679	2d term	-Δα 1.7625837 57. 887
C	5.2239	3d term	+0. 0000	D	1.9845	+0.0396 Sin <sup>2</sup> (φ+φ)	-Δφ -41.4343
C			- Δφ	E	7.3523	3d term	- Δφ -483.1443

HOLMES & NARVER, INC.  
ENGINEERS - CONSTRUCTORS  
LOS ANGELES, CALIFORNIA

JOB NO. 942

SHEET 1 OF 1

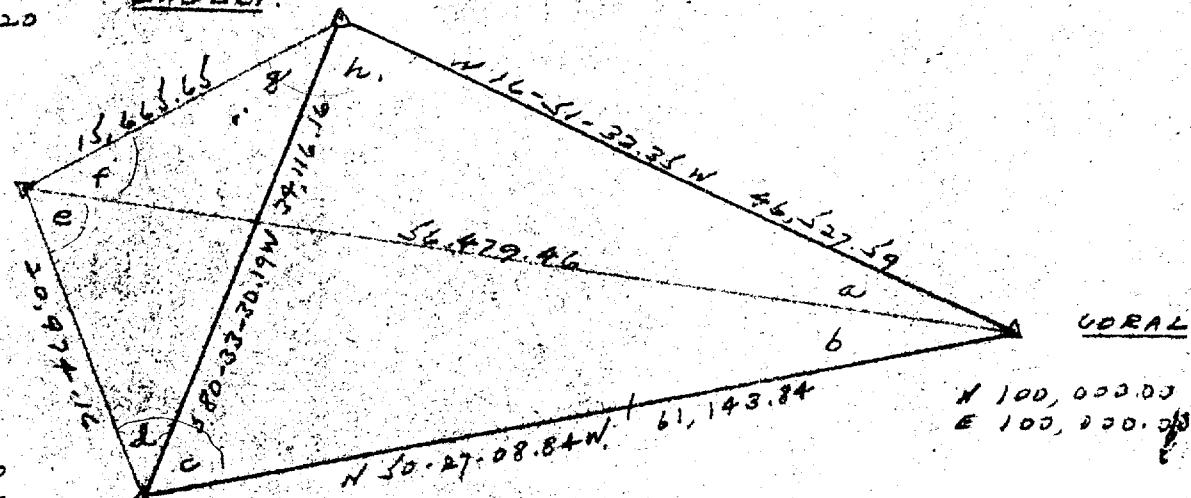
TITLE LOCATION OF A STATION IN GAIL

BY LSH DATE 10-7-57

N 144.527.90  
E 86.506.20

ENGEBI.

N 138.931.40  
E 52.852.20



OBS. #	OBS. F	GED. COND.			TRIG. COND.
		B-360	B-229	a+b+f	
a	13-33-13.8	13.3	14.0	14.14	14.14
b	20-02-23.0	22.5	22.2	22.35	22.35
c	48-39-20.6	20.2	19.9	20.97+	20.97
d	18-20-28.2	27.7	27.0	26.89	27.94+
e	92-37-51.9	51.5	50.9	50.29	48.74-
f	44-06-40.3	39.8	40.0	40.61	42.16+
g	24-51-02.3	01.8	02.1	02.71	01.16
h	97-25-08.4	03.2	02.9	02.54	02.54

TRIG. EQ = ALICE-CORAL, SIN C+d, SIN f = 1  
ENGEBI-CORAL, SIN g+h, SIN c = 1  
X = FIXED & S.

109.	61,143.84	47863527	46,527.59	4.5677106	1
109.5100	67-19-47.36	9.9650788	88+	122-20-03.25	9.9268244
"	44-06-40.61	9.3426430	31.7+	92-27-50.29	9.9995420
		4.1940741	30.5'	37	4.1940770
					14.3
					1.0
					30.1
					44.8
					25
					745
					30.1
					44.8

25144.8 = a+b  
0.56 X 276 = 146

61,143.84	(92274172)	(34266857)
SIN 67-19-47.36	SIN 20-02-22.35	
(199894052)	56,479.463	20,974.165-
46,527.59	(86494122)	(23436047)
SIN 44-06-40.61	SIN 122-20-03.70	SIN 13-33-14.14
(69205957)	56,479.474	18,665.613

HOLMES &amp; NARVER ENGINEERS-CONSTRUCTORS

## COMPUTATION OF TRIANGLES

CALC. BY LSH

DATE 12-11-57

JOB NO.

942

CHKD. BY E.R.G.

DATE 12-20-57

LOCATION

ENIWE TOE ATOLL

STATION	OBSERVED ANGLE	CORR - N	SPHERICAL		PLANE ANGLE AND DISTANCE	LOGARITHM
			ANGLE	EXCESS		
2-3					4,181.638	4.1517264
1 GAIL	44-06-40.3		42.23	0.07	42.16	
2 ENGEBI	122-20-05.9		03.78	0.08	03.70	
3 CORAL	13-33-13.8		14.14	0.00	14.14	
1-3	00.0					
1-2						
2-3					18,636.680	4.2705685
1 GAIL	67-19-48.8		49.04	0.13	48.91	
2 CORAL	92-37-51.9		48.88	0.14	48.74	
3 ALICE	20-02-25.0		22.35	0.00	22.35	
1-3						
1-2						
2-3					14,181.638	4.1517264
1 ALICE	48-59-20.6		21.15	0.18	20.97	
2 ENGEBI	97-25-03.6		02.73	0.19	02.54	
3 CORAL	33-35-36.8		36.49	0.00	36.49	
1-3	01.0					
1-2						
2-3						
1						
2						
3						
1-3						
1-2						

HOLMES & HARVEY, INC.  
ENGINEERS-CONSTRUCTORS

# POSITION COMPUTATION SECOND ORDER TRIANGULATION

COMPUTED BY L.S.H. DATE 12-11-57

POINT		CITY		DATE		TIME		COMPUTED BY		JOB NO.		LOCATION		ENCL. ATOLL		
"	2	PUNIT	to 3 CORAL	90°	50'	32.20"		α	3 CORAL	102	PUNIT	270°	49'	34.00"		
2d	2			+ 54	19.	13.74		3d			8		- 15	09	58.37	
α	2	PUNIT	to 1 NORTH	145	09	45.94		α	3 CORAL	101	NORTH	255	39	35.63		
Δ α				-		09.29		Δ α				+	0	48.90		
α'	1	NORTH	to 2 PUNIT	325	09	36.43		α'	1 NORTH	103	CORAL	75	40	24.54		
				180	00	00.0				180	00	00.0				

## FIRST ANGLE OF TRIANGLE 110-30-47.91

Logarithms		Values in seconds		Logarithms		Values in seconds		Logarithms		Values in seconds		Logarithms		Values in seconds	
3.3910410				3.3910410		3.8830837		3.3938260		3.8830837		3.3938260		3.8830837	
3.9142238				s				B	8.5124997						
8.5124998								h	1.7894694	1st term	" 61.5842	sin α	9.9862532		
8.5176666								s <sup>2</sup>	7.76617			A'	8.5096676		
6.78208								sin <sup>2</sup> α	9.97251			Sec φ'	0.0088946		
9.51365												Δ λ	2.3878991	244.2863	
0.71664								Δ λ	1.6664273	46.3903	C	0.71669			
7.01237									sin $\frac{1}{2}(\phi + \theta)$	9.3014075		8.45537	2 d term	+ 0.0285 sin $\frac{1}{2}(\phi + \theta)$	7.3014215
3.6355									- Δ α	0.9678348	9.286	n <sup>2</sup>	3.5789		
1.9845											D	1.9845			
5.6200											5.5634	3 d term	+ 0.0001		
- A d												- Δ φ	- 61.5556		

# POSITION COMPUTATION

COMPUTED BY L.S.A. DATE /2-11-57

HOLMES & HARVER, INC.  
ENGINEERS-CONSTRUCTORS

# SECOND ORDER TRIANGULATION

JOB NO. 982		LOCATION	ATOLL
x	3 PIRAAI	10.2 CORAL	41° 51' 25.86"
8			- 68 31 51.83
10.1			
Δα			
Δα			
180	(+) 00.0		
10.2			
Δα			
180	(+) 00.0		
10.3			
Δα			
180	(+) 00.0		
10.4			
Δα			
180	(+) 00.0		
10.5			
Δα			
180	(+) 00.0		
10.6			
Δα			
180	(+) 00.0		
10.7			
Δα			
180	(+) 00.0		
10.8			
Δα			
180	(+) 00.0		
10.9			
Δα			
180	(+) 00.0		
10.10			
Δα			
180	(+) 00.0		
10.11			
Δα			
180	(+) 00.0		
10.12			
Δα			
180	(+) 00.0		
10.13			
Δα			
180	(+) 00.0		
10.14			
Δα			
180	(+) 00.0		
10.15			
Δα			
180	(+) 00.0		
10.16			
Δα			
180	(+) 00.0		
10.17			
Δα			
180	(+) 00.0		
10.18			
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180	(+) 00.0		
10.20			
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180	(+) 00.0		
10.21			
Δα			
180	(+) 00.0		
10.22			
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10.35			
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10.37			
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180	(+) 00.0		
10.38			
Δα			
180	(+) 00.0		
10.39			
Δα			
180	(+) 00.0		
10.40			
Δα			
180	(+) 00.0		
10.41			
Δα			
180	(+) 00.0		
10.42			
Δα			
180	(+) 00.0		
10.43			
Δα			
180	(+) 00.0		
10.44			
Δα			
180	(+) 00.0		
10.45			
Δα			
180	(+) 00.0		
10.46			
Δα			
180	(+) 00.0		
10.47			
Δα			
180	(+) 00.0		
10.48			
Δα			
180	(+) 00.0		
10.49			
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180	(+) 00.0		
10.66			
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180	(+) 00.0		
10.67			
Δα			
180	(+) 00.0		
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Δα			
180	(+) 00.0		
10.132			
Δα			
180	(+) 00.0		
10.133			
Δα			
180	(+) 00.0		
10.134			
Δα			
180	(+) 00.0		

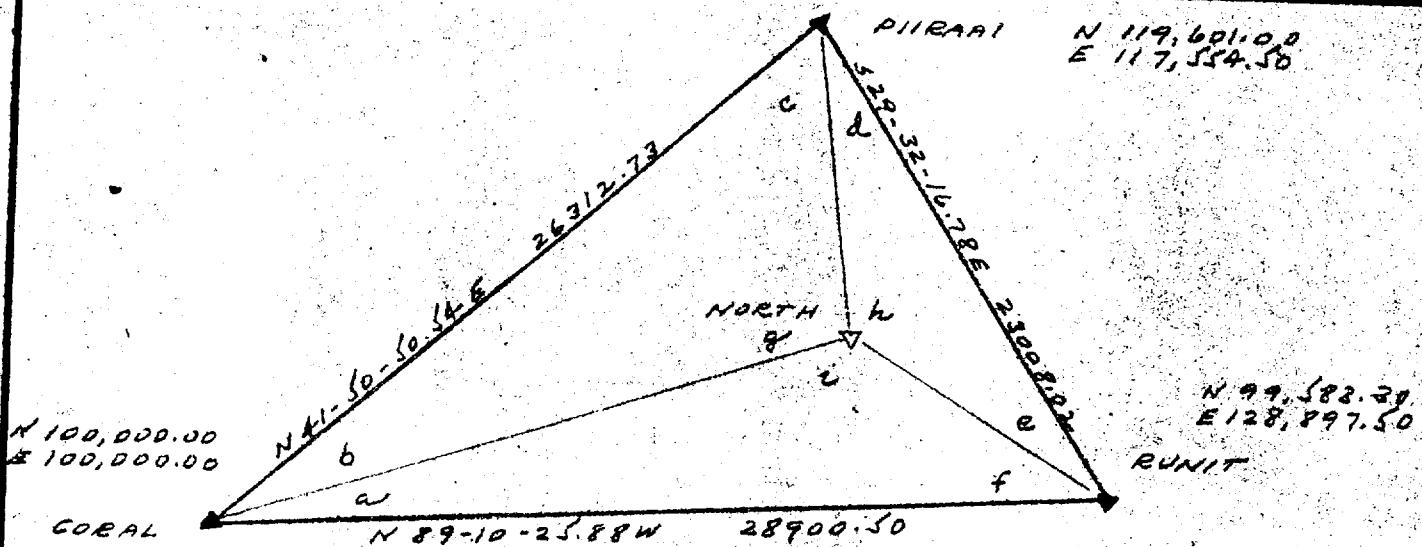
HOLMES & NARVER, INC.  
ENGINEERS - CONSTRUCTORS  
LOS ANGELES, CALIFORNIA

JOB NO. 942

SHEET 1 OF 2

TITLE LOCATION A STATION NORTH

BY LSH DATE 9-6-57



	OBS. #	GEO. COND.	TRIG. COND.
a	15-10-01.9 x	01.8	00.44 * 58.37
b	33-48-44.7	43.8	43.14 45.21
c	68-31-34.8 x	33.9	34.23 32.16
d	2-51-35.3		33.09 35.16
e	5-18-53.2 x		57.77 35.48
f	54-19-10.8	10.7	11.33 55.38
g	77-39-43.2	42.3	42.68 13.40
h	171-49-29.2		29.14
i	110-30-47.6	47.5	48.23 47.91

sin a, sin c, sin e = 1  
sin b, sin d, sin f

\* = Fixed #s.

Log sin. 15-10-00.44	9.4176871	77.6	33-48-43.14	9.7454412	31.4
68-31-34.23	9.9687560	8.3	2-51-33.09	8.6979745	421.7
5-18-57.77	8.9668429	226.6	54-19-11.33	9.9097086	15.1
	8.3532860	312.5		8.3531243	468.2
		1243			312.5
		1617	1617 1780.7 = 2.07		780.7

Coral - PIIRAAI, sin c, sin i = 1  
Coral - RUNIT, sin f, sin g

Log 26312.73	4.4201689	28900.50	4.4609053		
" sin. 68-31-32.16	9.9687543	8.3	54-19-13.40	9.9097117	15.1
" " 110-30-48.23	9.9715496	7.9	77-39-42.63	9.9898517	4.6
	4.3604698	15.2		4.3604687	19.7
	687				15.2

HOLMES & NARVER, INC.  
ENGINEERS - CONSTRUCTORS  
LOS ANGELES, CALIFORNIA

JOB NO. 942

TITLE LOCATION A STATION NORTH

SHEET 2 OF 2

BY LSH DATE 9-6-67

26312.73  
SIN 77-39-42.95

SIN 68-31-31.84  
25,065.024

SIN 33-48-45.21  
14,988.624

28900.50  
SIN 110-30-47.91

SIN 54-19-13.72  
25,064.997

SIN 15-09-58.37  
8072.842

HOLMES &amp; NARVER ENGINEERS-CONSTRUCTORS

## COMPUTATION OF TRIANGLES

CALC. BY L.S.H.DATE 12-11-57JOB NO. 942CHKD. BY E.R.G.DATE 12-20-57LOCATION ENIWIETOK ATOL

STATION	OBSERVED ANGLE	CORR - N	SPHERICAL		PLANE ANGLE AND DISTANCE	LOGARITHM
			ANGLE	EXCESS		
2-3					8,808.890	3.9449212
1 NORTH	110-30-47.6		47.94	0.03	47.91	
2 RUNIT	54-19-10.8		13.74	0.02	13.72	
3 CORAL	15-10-01.9		58.37	0.00	58.37	
1-3	00.3					
1-2						
2-3					8,020.136	3.9041817
1 NORTH	77-39-43.2		42.99	0.04	42.95	
2 CORAL	33-48-44.7		45.21	0.00	45.21	
3 PIIRAAI	68-31-34.8		31.88	0.04	31.84	
1-3	02.7					
1-2						
2-3					8,808.890	3.9449212
1 PIIRAAI	71-23-10.1		07.39	0.07	07.32	
2 RUNIT	59-38-04.0		09.17	0.07	09.10	
3 CORAL	48-58-46.6		93.58	0.00	93.58	
1-3	00.7					
1-2						
2-3						
1						
2						
3						
1-3						
1-2						

CALC. BY LSH

CHKD. BY E.R.Q

DATE 11-57

**TRAVERSE** LOCATION OF

STA. LANTANA, KEITH, JAMES, HENRY JOB NO. 942

DATE 11-31

F. B. I. REF. 350-111-1

DATE 12-26-5

F. B. I. REF. SHEET NO. / OF

SHEET NO. / OF /

HOLMES & HARVER, INC.  
ENGINEERS-CONSTRUCTORS

POSITION COMPUTATION

FUDGEL 111-12-1557

COMPUTED BY	L.SA	DATE	L.SA	L.G.LI-2	L.G.LI-2
R/G/LI	8	CORAL	247° 25' 29.60"	α	- 51° 23' 39.79'
	+ 63 06	49.70	3dL	8	04 05.81
R/G/LI	8	↑ 01 CANTANA	310 32 19.30	α	- 10 39.73
	+ 01	35.25	Δα		
				180	00 00.0
					6
					36.08

FIRST. CYCLE OF TRIANGLE CONNECTIONS.

11 27 46.853 2 RIGGEL -2		162 05 49.036 φ		11 32 20.254 3 CORAL		Δλ - 0.3 20.226	
Δφ + 0.6 46.660		Δλ + 0.8 01.683 Δφ		- 11 26.031		Δλ - 0.3 20.226	
φ' 11 20 54.223 1 CANTANA		λ' 162 13 50.719 8 φ'		11 20 54.223 1 CANTANA		λ' 162 13 50.718	
Logarithms		Values in seconds		Logarithms		Values in seconds	
$\frac{1}{2}(\phi + \phi')$		Logarithms		$\frac{1}{2}(\phi + \phi')$		Logarithms	
s 4.2837221		Values in seconds		s 4.2837221		Values in seconds	
S 8.5124997		CUSA 9.9826929		S 8.5124997		S 4.3411358	
h 2.8363284		1st term + 6.86.00668		h 2.8363284		Sina 9.4421390	
S <sup>2</sup> 8.68227		S <sup>2</sup> 8.68227		S <sup>2</sup> 8.68227		A' 8.5096696	
Sin <sup>2</sup> φ 8.88427		Sin <sup>2</sup> φ 8.88427		Sin <sup>2</sup> φ 8.88427		Sec φ' 0.0085751	
A' 8.5096696		C 0.71669		A' 8.5096696		Sec φ' 0.0085751	
Sec φ' 0.0085751		C 0.71669		Sec φ' 0.0085751		Δλ 2.3015195 200.225	
Δλ 2.6827617.981.6834		C 0.71669		Δλ 2.6827617.981.6834		Δλ 2.3015195 200.225	
S 8.56744		S 2.8323		S 8.28323		Sin <sup>2</sup> (φ+φ') 9.2975517	
S <sup>2</sup> 9.76159		n <sup>2</sup> 5.6727		S <sup>2</sup> 8.28323		-Δα 1.5990712 39.726	
C 0.71367		D 1.9845		D 1.9845		-Δα 1.5990712 39.726	
S 9.04270		2d term + 0.1103		D 7.6572		3d term + 0.0045	
S 5.2182		n <sup>2</sup>		D 7.6572		-Δφ + 6.86.0305	
S 1.9817		3d term + 0.0016		n <sup>2</sup>		-Δφ + 6.86.0305	
S 7.1999		-Δφ + 6.86.0305		n <sup>2</sup>		-Δφ + 6.86.0305	

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HOLMES & MARVER, INC.  
ENGINEERS-CONSTRUCTORS

# POSITION COMPUTATION SECOND ORDER TRIANGULATION

COMPUTED BY LSH DATE 12-15-57

		JOB NO. 942		LOCATION ENNWETOK ATOLL	
$\alpha$	2 R/G/L-2 + 3 CORAL	247° 25' 29.60 "	$\alpha$	3 CORAL	102 R/G/L-2
$\Delta \phi$	8	+ 73 20 30.63	$\Delta \lambda$	8	- 31 39 59.10
$\alpha$	2 E/G/L-2 + 1 KEITH	320 46 00.23	$\alpha$	3 CORAL	101 KEITH
$\Delta \phi$		+ 50.23	$\Delta \lambda$		- 35 47 46.50
$\alpha$		180 00 00.0			- 31 11 25.06
$\alpha$	1 KEITH	102 R/G/L-2	$\alpha'$	1 KEITH	103 CORAL
$\Delta \phi$		/40 46 50.48	$\alpha'$		215 46 21.48
$\alpha$					180 00 00.0

FIRST ANGLE OF TRIANGLE 74-59-30.94

		LOGARITHMS		VALUES IN SECONDS	
$\alpha$	27 40.883 2 R/G/L-2	$\lambda$	162 05 49.036	$\theta$	32 20.254 3 CORAL
$\Delta \phi$	- 05 42.240	$\Delta \lambda$	+ 04 13.720	$\Delta \theta$	- 09 46.013
$\alpha$	11 32 34.240	$\lambda'$	162 10 02.754	$\lambda'$	11 22 39.241 1 KEITH
$\Delta \phi$		$\theta'$	"	$\theta'$	"
$\alpha$		Logarithms	Values in seconds		
$\alpha$		$\frac{1}{2}(\phi + \phi')$	$s$	$\frac{1}{2}(\phi + \phi')$	
$\Delta \phi$		Logarithms	Values in CUSA	Logarithms	Values in seconds
$\alpha$		$s$	9.9090755	$s$	9.9090755
$\Delta \phi$		$B$	8.5124997	$B$	8.5124997
$\alpha$		$s$	4.0850213	$h$	2.7678394 1st term + 585.922/5
$\Delta \phi$		$s$		$s^2$	8.69253
$\alpha$		$A$	9.8010462	$A'$	8.5096694
$\Delta \phi$		$A'$	8.5096694	$Sec \phi'$	0.0086175
$\alpha$		$Sec \phi'$	0.0086175	$Sec \phi'$	0.0086174
$\Delta \phi$		$\Delta \lambda$	2.4043544 253 778	$\Delta \lambda$	2.6316361 428.189
$\alpha$		$2d$	2d term + 0.0336	$2d$	$2d$ term + 0.0878
$\Delta \phi$		$2d$	$sin^2(\phi + \phi') 9.2966178$	$sin^2(\phi + \phi')$	$sin^2(\phi + \phi') 9.2980715$
$\alpha$		$3d$	- $\Delta \lambda$ 17009722 50.231	$n^2$	- $\Delta \lambda$ 1.9297076 85.056
$\Delta \phi$		$3d$		$D$	
$\alpha$		$3d$		$7.5202$	
$\Delta \phi$		$3d$		$1.9845$	
$\alpha$		$3d$		$+ 0.0033$	
$\Delta \phi$		$3d$		$- \Delta \phi + 506.0126$	

HOLMES & MARVER, INC.  
ENGINEERS-CONSTRUCTORS

# POSITION COMPUTATION SECOND ORDER TRIANGULATION

COMPUTED BY L.S.H. DATE 12-15-57.

		JOB NO. 262		LOCATION ENVIRONS		STOKE	
2	RIG/L1-2	103 CORAL	247° 25' 29.60 "	3 CORAL	to 2 RIG/L1-2	67° 27'	45.60 "
+ 71	05	06.07	3d L		8	- 35	93 14.30
α	RIG/L1-2	101 JAMES	318 30 55.67	3 CORAL	to 1 JAMES	31 44	31.30
Δ α			+ 59.02	Δ α		-	01 16.20
180	00	00.0			180	00	00.0
1	JAMES	102 RIG/L1-2	138 31 34.67	1 JAMES	103 CORAL	21 43	15.14
Δ α							

FIRST ANGLE OF TRIANGLE 73-11-40.37 "

		LOGARITHMS		LOGARITHMS		LOGARITHMS	
2	27 40.3892 RIG/L1-2	2	162 05 49.036	Φ	//	32 20.254	3 CORAL
Δ φ	- 05 52.765	Δ η	+ 02 58.203	Δ Φ	- 10 12.136	Δ η	- 06 23.706
φ	11 22 05.1181 JAMES	x'	162 10 47.239	d'	//	22 08.1181 JAMES	x' 162 10 47.238
Δ φ		Logarithms	Values in seconds	Logarithms	Values in seconds	Logarithms	Values in seconds
Δ (φ + φ')		s	4.3446586	s	4.3446586	s	4.3446586
Δ (φ - φ')		Logarithms	Values in seconds	Logarithms	Values in seconds	Logarithms	Values in seconds
Δ φ	2.52208/3 1st term, 332.72/8	A	9.8211792	B	8.5129997	C	8.27011
Δ φ	8.27011	sin φ	9.8211792	h	2.78677945	1st term, 6/2.067	sin φ
Δ φ	9.64236	sec φ	9.5096625	s <sup>2</sup>	8.682952	"	9.2210647
Δ φ	0.71367	sin φ	0.2036063	sin <sup>2</sup> φ	9.44213	Δ η	A'
Δ φ	9.64236	sec φ	2.4745121	298.2031	C	Sec φ' 0.0086063	8.5096695
Δ φ	0.71367	sin φ	9.2964818	sin φ	0.71669	Δ η	2.5839991 383.706
Δ φ	9.64236	sec φ	9.2964818	sin <sup>2</sup> φ	0.84814	Δ (φ + φ')	9.2979357
Δ φ	1.7709939	sin φ	59.020	2d term	+ 0.0724	Δ φ	1.8819348 76.196
Δ φ	5.042	sec φ	5.7359	2d term	+ 0.0724	Δ (φ + φ')	7.2209 3d term + 0.0053
Δ φ	1.9847	sin φ	1.9845	3d term	+ 0.0053	Δ φ	7.2209 + 6/2.1364
Δ φ	7.2209	sec φ	7.2209	3d term	+ 0.0053	Δ φ	+ 332.7652

HOLMES & HARVER, INC.  
ENGINEERS-CONSTRUCTORS

## POSITION COMPUTATION SECOND ORDER TRIANGULATION

COMPUTED BY 654 DATE 12-15-57

2006-2007 学年第二学期期中考试

FIRST SINGULAR OF TRIANGLE 68-56-14. 94.

Logarithms		Values in seconds		$\frac{1}{2}(\phi + \phi')$		Logarithms		Values in seconds		$\frac{1}{2}(\phi + \phi')$		Logarithms		Values in seconds		
11	27 40.833	1	162 20.244	φ	1	32 20.244	φ	1	162 17 10.944	λ	1	32 20.244	φ	1	162 17 10.944	
Δφ	- 0.6 19.942	Δλ	+ 0.5 19.942	Δφ	+ 0.6 28.44	Δλ	- 0.6 28.44	Δφ	- 0.4 53.468	Δλ	- 0.4 53.468	Δφ	+ 0.6 28.44	Δλ	- 0.4 53.468	
φ'	11 21 20.941	HENRY	X'	162 12 17.25	φ'	11 21 20.942	HENRY	X'	162 12 17.25	φ'	11 21 20.942	HENRY	X'	162 12 17.25	φ'	11 21 20.942
Logarithms		Values in seconds		Logarithms		Values in seconds		Logarithms		Values in seconds		Logarithms		Values in seconds		
42 196249	sin φ	9.8475073	5	8.3448758	cos φ	2.9616854	5	8.3448758	sin φ	2.9616854	5	8.3448758	cos φ	2.9616854	5	8.3448758
5.5125021	sin φ	11.2196248	6	8.5124997	cos φ	2.81190609	6	8.5124997	sin φ	2.81190609	6	8.5124997	cos φ	2.81190609	6	8.5124997
2.5796342	sin φ	379.8693	7	9.8514449	cos φ	0.71669	7	9.8514449	sin φ	0.71669	7	9.8514449	cos φ	0.71669	7	9.8514449
8.43925	sin φ	0.5096696	8	8.5096696	cos φ	0.208865	8	8.5096696	sin φ	0.208865	8	8.5096696	cos φ	0.208865	8	8.5096696
9.70289	sin φ	0.0095864	9	9.70289	cos φ	0.0412	9	9.70289	sin φ	0.0412	9	9.70289	cos φ	0.0412	9	9.70289
0.71367	sin φ	2.5893257	10	388.9415	cos φ	0.2976206	10	388.9415	sin φ	0.2976206	10	388.9415	cos φ	0.2976206	10	388.9415
8.85568	sin φ	sin $\frac{1}{2}(\phi + \phi')$ 9.2962356	11	8.6/529	cos φ	0.7652514	11	8.6/529	sin φ	0.7652514	11	8.6/529	cos φ	0.7652514	11	8.6/529
5.1593	sin φ	-Δφ 1.8855613	12	76.835	cos φ	-Δα 1.9845	12	76.835	sin φ	-Δα 1.9845	12	76.835	cos φ	-Δα 1.9845	12	76.835
1.2817	sin φ	30 term + 0.0014	13	7.62226	cos φ	31 term + 0.0042	13	7.62226	sin φ	31 term + 0.0042	13	7.62226	cos φ	31 term + 0.0042	13	7.62226
7.1410	sin φ	-Δφ + 379.9424	14	-Δφ + 659.3119	cos φ	-Δφ + 659.3119	14	-Δφ + 659.3119	sin φ	-Δφ + 659.3119	14	-Δφ + 659.3119	cos φ	-Δφ + 659.3119	14	-Δφ + 659.3119

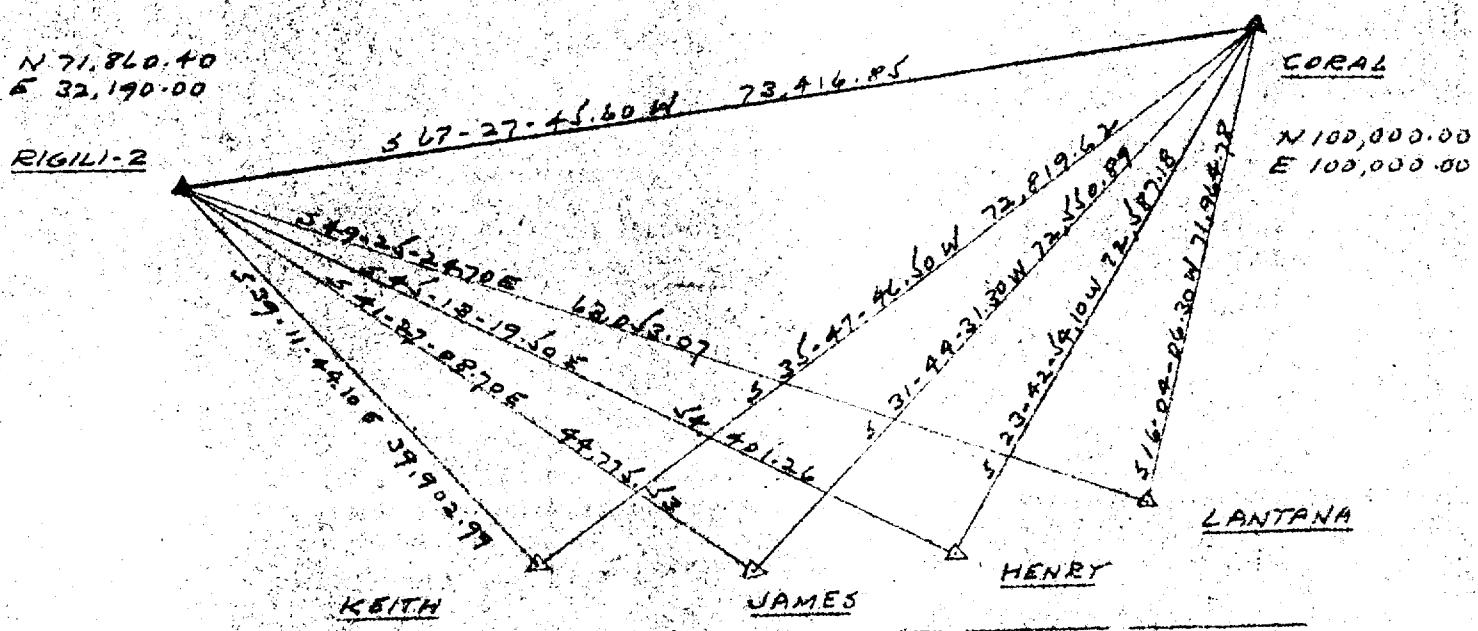
HOLMES & NARVER, INC.  
ENGINEERS - CONSTRUCTORS  
LOS ANGELES, CALIFORNIA

JOB NO. 942

SHEET 1 OF 1

BY LSH DATE 12-10-58

TITLE LOCATION OF STA. LANTANA, KEITH, JAMES, HENRY



HENRY 68-56-14.8 13.6

CORAL 43-44-52.6 51.5

RIGILI-2 67-18-56.0 34.9  
13.4

JAMES 73-11-41.5 40.0

CORAL 35-43-15.7 14.3

RIGILI-2 71-06-07.1 01.7  
09.2

KEITH 74-59-31.9 30.6

CORAL 31-40-00.4 39.9.1

RIGILI-2 73-20-31.6 30.2  
03.9

LANTANA 65-29-34.0 31.0

CORAL 51-23-42.4 39.3

RIGILI-2 63-06-52.8 47.7  
09.2

KEITH 73,416.85  
SIN 74-59-30.60

SIN 31-39-39.10  
39,902.987

SIN 73-20-30.30  
72,819.620

JAMES 73,416.85  
SIN 73-11-40.00

SIN 35-43-14.30  
44,776.528

SIN 71-05-05.70  
72,550.886

HENRY 73,416.85  
SIN 68-56-13.60

SIN 43-44-51.50  
54,401.263

SIN 67-18-54.90  
72,587.182

LANTANA 73,416.85  
SIN 65-29-31.0

SIN 51-28-39.3  
63,053.069

SIN 63-06-49.7  
71,964.781

HOLMES &amp; NARVER ENGINEERS-CONSTRUCTORS

## COMPUTATION OF TRIANGLES

CALC. BY L.S.H. DATE 12-11-57  
CHKD. BY E.R.Q. DATE 12-20-57JOB NO. 942  
LOCATION ENIWETOK ATOLL

STATION	OBSERVED ANGLE	CORR - N	SPHERICAL		PLANE ANGLE AND DISTANCE	LOGARITHM
			ANGLE	EXCESS		
2-3					22,377.501	4.3498116
1 LANTANA	65-29-34.0		31.49	0.49	51.0	
2 RIGILI-2	51-23-42.4		39.79	0.49	39.3	
3 CORAL	63-06-52.8		49.70	0.00	49.7	
1-3						
1-2						
2-3					22,377.501	4.3498116
1 HENRY	68-56-14.8		14.04	0.44	13.60	
2 RIGILI-2	67-18-56.0		55.33	0.43	54.90	
3 CORAL	43-44-52.6		51.50	0.00	51.50	
1-3	03.4					
1-2						
2-3					22,377.501	4.3498116
1 JAMES	73-11-41.5		40.37	0.37	40.00	
2 RIGILI-2	71-05-07.1		06.07	0.37	05.70	
3 CORAL	35-43-15.7		14.30	0.00	14.30	
1-3	09.3					
1-2						
2-3					22,377.501	4.3498116
1 KEITH	74-59-31.9		30.94	0.34	30.60	
2 RIGILI-2	73-20-31.6		30.63	0.33	30.30	
3 CORAL	31-40-00.4		59.10	0.00	39-59.10	
1-3	03.9					
1-2						

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ENGINEERS - CONSTRUCTORS  
JOB 942

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION	GAIL	SITE	Gene
CHIEF OF PARTY	H. M. Johnson		Teiteiripucchi Island
DESCRIBED BY	W. Creasman	MARKED BY	Eniwetok Atoll
FIELD BOOK NO	PAGE	DATE	Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS			
OBJECT	DISTANCE FEET	DIRECTION	ELEVATION
	METERS		
Gail			4.52
Elgin	---	00-00-00	---
Buck #1	164.04	32-27-24	8.15
Buck #2	328.07	32-27-24	9.23

ELEVATION OF MARK. 4.52

DETAILED DESCRIPTION OF STATION

This station was established as a second order triangulation station in the Atoll Control Net by the Holmes & Narver 1957 Replacement Survey to replace triangulation Station GENE which was destroyed during Operation Redwing.

This station is located approximately at the center of the island and 125 feet from the lagoon high tide line.

The station mark is a standard H & N brass cap set in a concrete filled 55 gallon drum encasing the top of a 10" H-pile. It is stamped "Gail - H & N - 1957." The mark is 6" below the ground surface.

This station is the western end of the "Gene-Helen-Irene" first order traverse.

Bucks #1 and #2 are 4"x4" posts set in concrete with a punched aluminum strip fastened to the top. The strips are stamped with the buck number.

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GSA FPMR (41 CFR) 101-11.2

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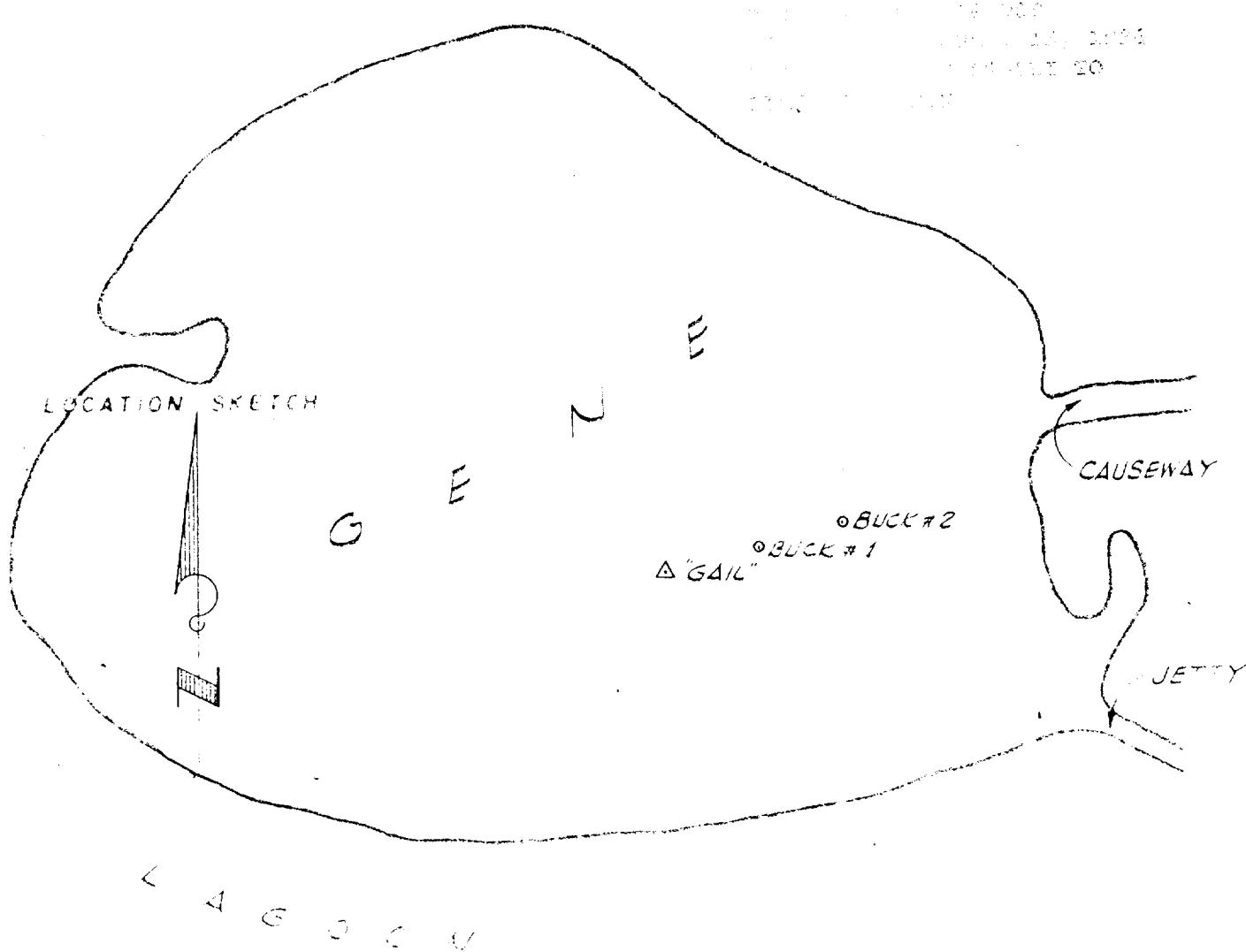
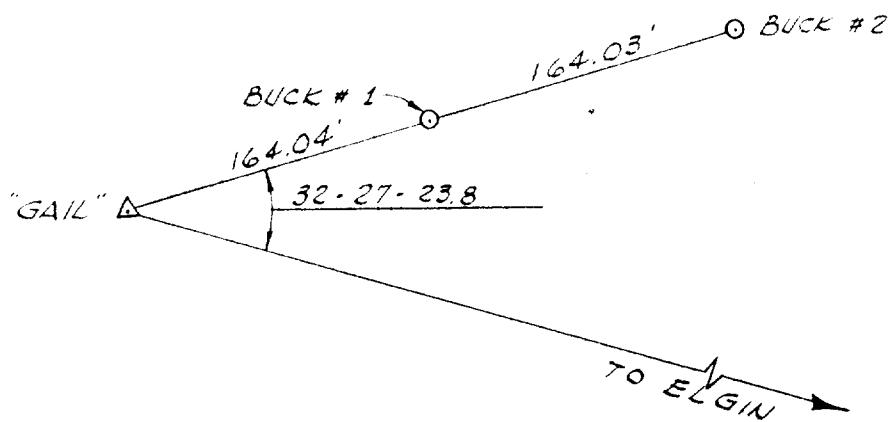
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PAGE 2 - DESCRIPTION OF TRIANGULATION STATION

STATION Gail

SITE Gene, Teiteiripucchi Is., Eniwetok Atoll, M.I.

DETAILED DESCRIPTION OF STATION (CONT'D)



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DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION	HENRY	SITE	HENRY
CHIEF OF PARTY	F. A. Axtell		Mui Island
DESCRIBED BY	W. Creasman	MARKED BY	Eniwetok Atoll.
FIELD BOOK NO	PAGE	DATE	Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS			
OBJECT	DISTANCE	DIRECTION	ELEVATION
	FEET METERS		
Henry			6.54
Rigili #2	---	00-00-00	---
P.I. #1	147.35	275-20-33	7.72
P.I. #9	560.33	142-49-13	11.64

ELEVATION OF MARK 6.54

DETAILED DESCRIPTION OF STATION

This station was established as a third order triangulation station in the Atoll Control Net by the Holmes & Narver 1957 Expansion Survey

This station is located on the north east portion of the island approximately 50 feet south of the lagoon high tide line.

The station mark is a standard H & N brass cap set in concrete 1 foot below the ground surface. It is stamped "Henry - H & N - 1957."

P.I.'s #1 and #9 are 1"x3" flats marked with stake tacks. The flats are driven flush with the ground surface. They are P.I.'s in the Island topographic control traverse.

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PAGE 2 - DESCRIPTION OF TRIANGULATION STATION

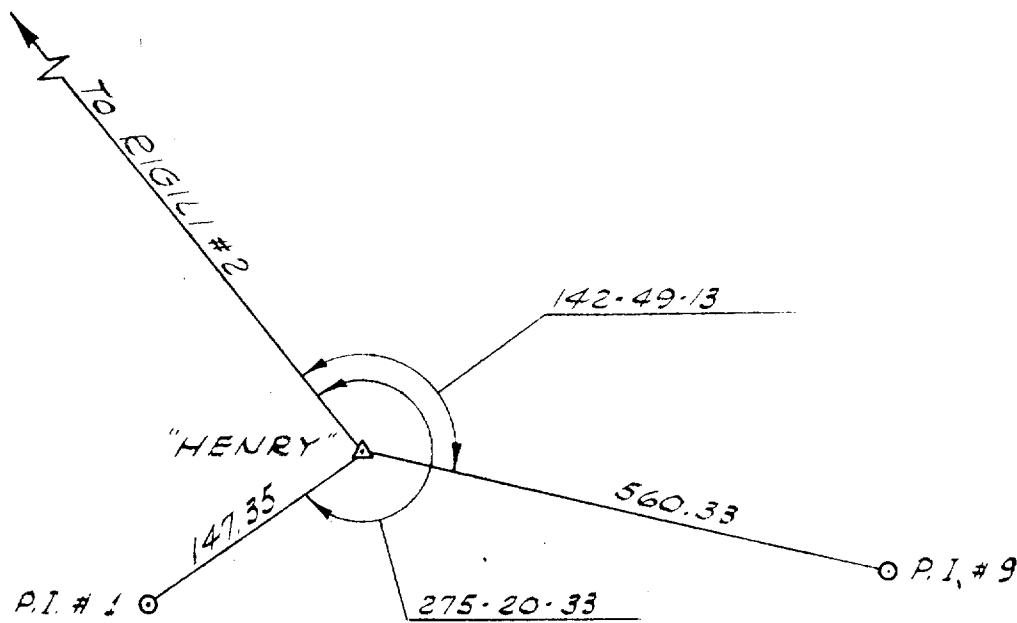
STATION

Henry

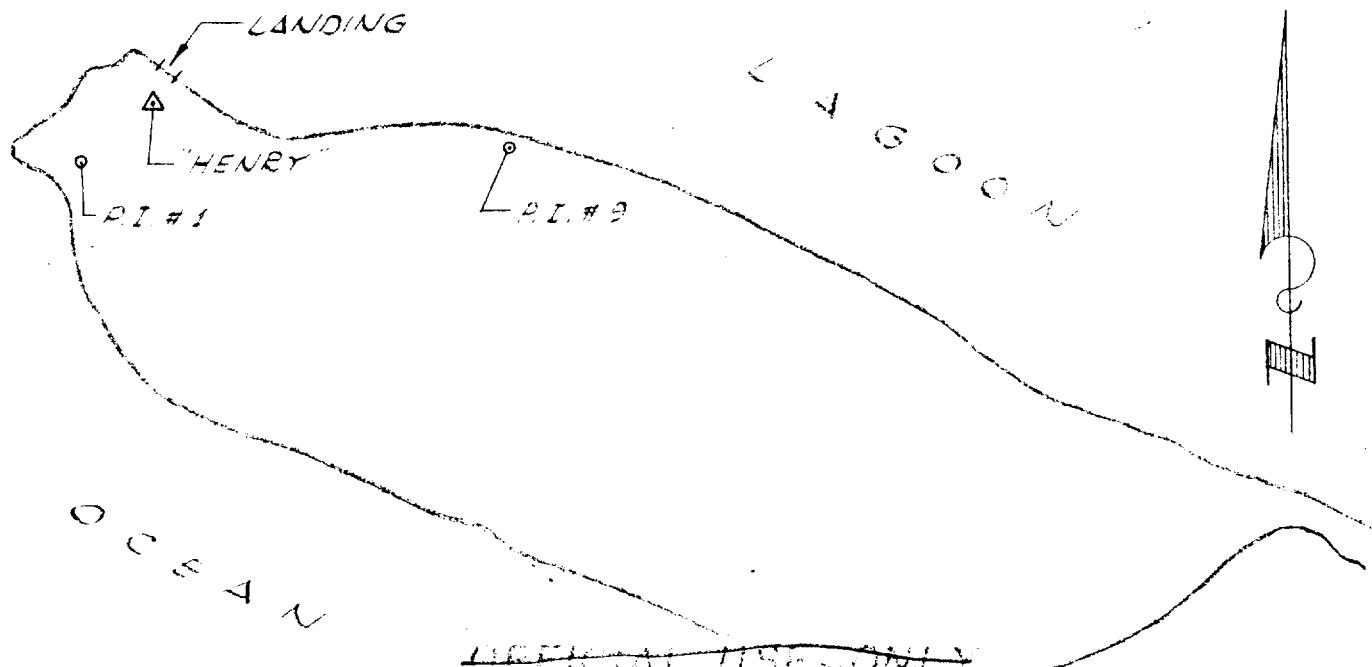
SITE

Henry, Mui Island, Eniwetok Atoll, M.I.

Detailed Description of Station Cont'd



LOCATION SKETCH



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DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION JAMES SITE JAMES  
CHIEF OF PARTY, F. A. Axtell Rabaion Island  
DESCRIBED BY W. Creasman MARKED BY F.A.A. Eniwetok Atoll  
FIELD BOOK NO. PAGE DATE June 1957 Marshall Islands

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		
	DISTANCE	DIRECTION	ELEVATION
	FEET	METERS	
James			6.76
Rigilli #2	—	—	—
P.I. #1	197.26	—	7.18
P.I. #8	117.10	—	—

ELEVATION OF MARK 6.76

DETAILED DESCRIPTION OF STATION.

This station was established as a third order triangulation station in the Atoll Control Net by the Holmes & Narver 1957 Expansion Survey.

This station is located on the north east portion of the island approximately 30 feet from the lagoon high tide line.

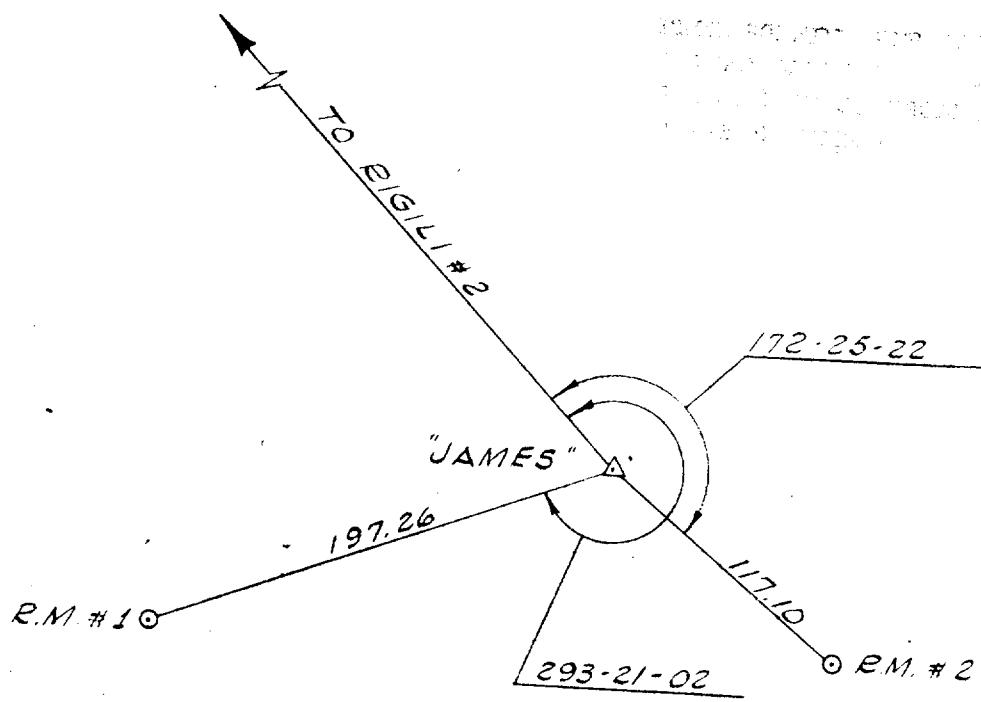
The station mark is a standard H & N brass cap set in concrete flush with the ground. It is stamped "James - H & N - 1957."

P.I.'s #1 and #8 are 1"x3" flats marked with stake tacks. The flats are driven flush with the ground surface. They are P.I.'s in the Island topographic control traverse.

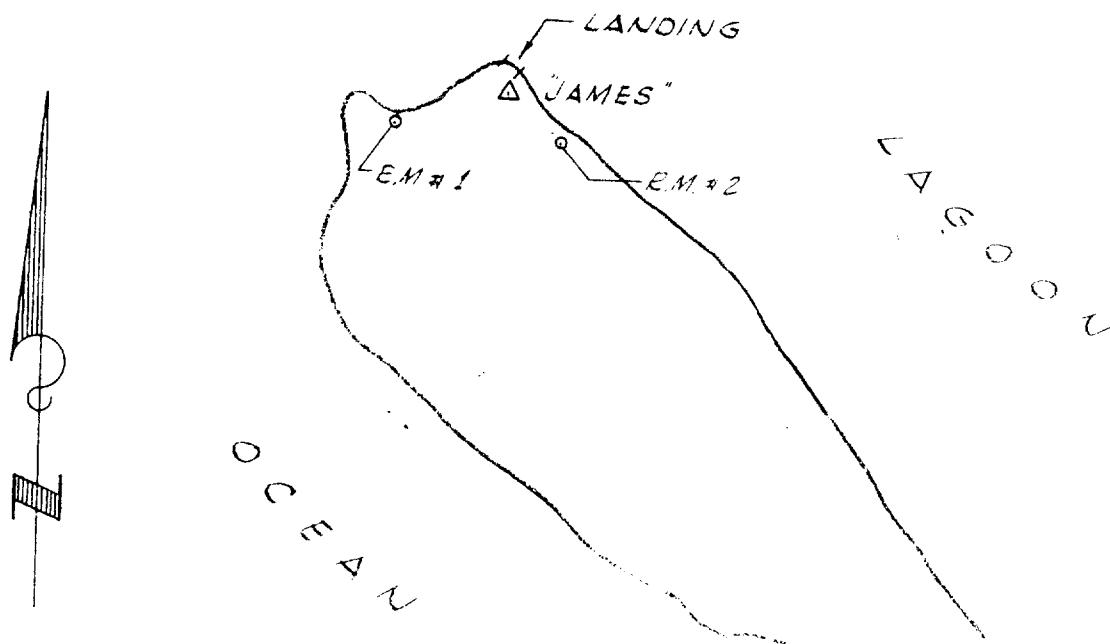
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PAGE 2 - DESCRIPTION OF TRIANGULATION STATION  
STATION JAMES SITE James, Rabaion Island, Eniwetok Atoll, M.I.  
DETAILED DESCRIPTION OF STATION, CONT'D.



LOCATION SKETCH



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DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION	JUNK	SITE	IRWIN
CHIEF OF PARTY	H. C. Dalton		Pokon Island
DESCRIBED BY	W. Creasman	MARKED BY	Eniwetok Atoll
FIELD BOOK NO.	PAGE	DATE	Marshall Islands

8/10/57

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		
	FEET	METERS	DIRECTION
Junk			
Henry	2544.54		00-00-00
P.I. #3	103.99		24-33-52
P.I. #4	197.03		155-26-08

ELEVATION OF MARK.

DETAILED DESCRIPTION OF STATION.

This station was established as a third order Traverse Station in the Atoll control net by traverse from Triangulation Station Henry as a part of the Holmes & Narver 1957 Expansion Survey.

This station is located approximately 355 feet from the east end of the island and 45 feet from the lagoon high tide line.

The station mark is a standard Holmes & Narver brass disc set in concrete 1 foot below the ground surface. It is stamped "Junk - H & N - 1957."

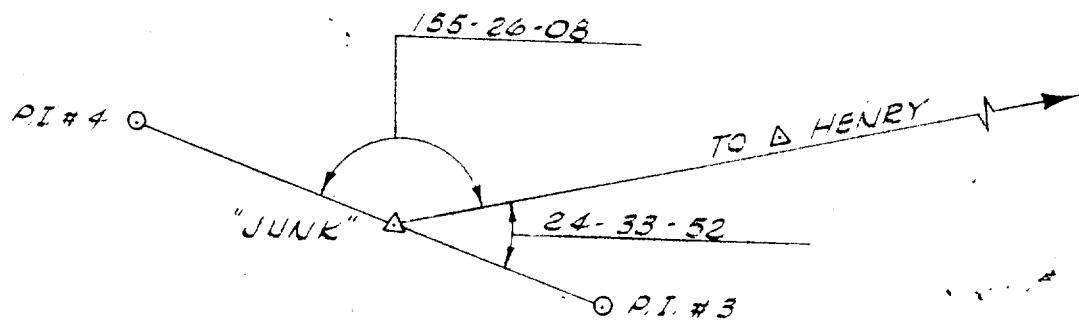
P.I. #3 is a 1"x3" flat marked with a stake tack driven flush with the ground surface.

P.I. #4 is a 2"x2" stake marked with a stake tack driven flush with the ground surface.

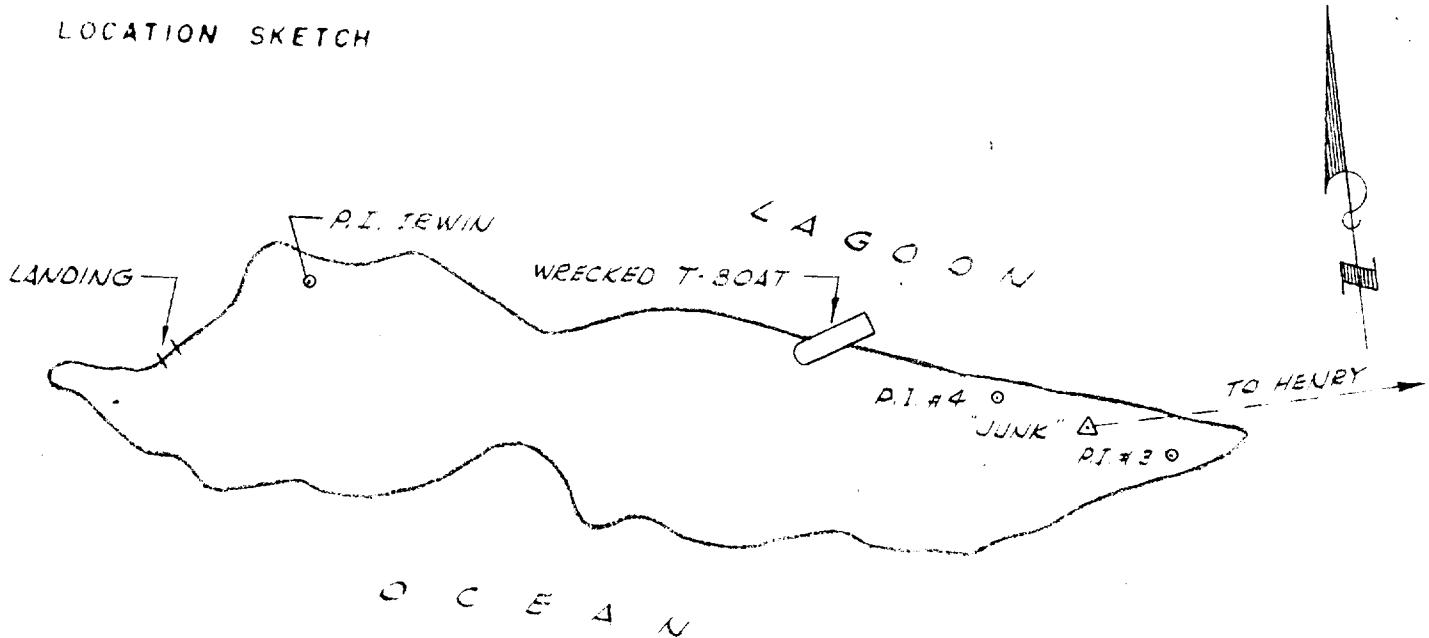
P.I.'s #3 & #4 are both P.I.'s in the Island topographic control traverse.

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PAGE 2 - DESCRIPTION OF TRIANGULATION STATION  
STATION JUNK SITE Irwin, Pokon Island, Eniwetok Atoll, M.I.  
DETAILED DESCRIPTION OF STATION (CONT'D)

DECLASSIFIED PER DOE  
LAWRENCE DATED JULY, 15, 1994  
FROM AUTON CIRISGALLI TO  
STEVE S. NIMON



LOCATION SKETCH



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DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION.	KEITH	SITE	KEITH
CHIEF OF PARTY	F. A. Axtell	Giriinien Island	
DESCRIBED BY	W. Creasman	MARKED BY	F.A.A.
FIELD BOOK NO.	PAGE	Eniwetok Atoll	
		Marshall Islands	
		June 1957	

OBJECT	DISTANCES AND DIRECTIONS TO REFERENCE MARKS		
	DISTANCE FEET	METERS	DIRECTION
Keith			
Rigili #2	—	—	00-00-00
P.I. #1	203.61		334-37-49
P.I. #9	605.25		167-11-39

ELEVATION OF MARK 8.69

DETAILED DESCRIPTION OF STATION.

This station was established as a third order triangulation station in the Atoll Control Net by the Holmes & Narver 1957 Expansion Survey.

This station is located on the north portion of the island, approximately 40 feet from the lagoon high tide line.

The station mark is a standard H & N brass cap set in concrete 1 foot below the ground surface. It is stamped "Keith - H & N - 1957."

P.I.'s #1 and #9 are 1"x3" flats marked with stake tacks. The flats are driven flush with the ground surface. They are P.I.'s in the Island topographic control traverse.

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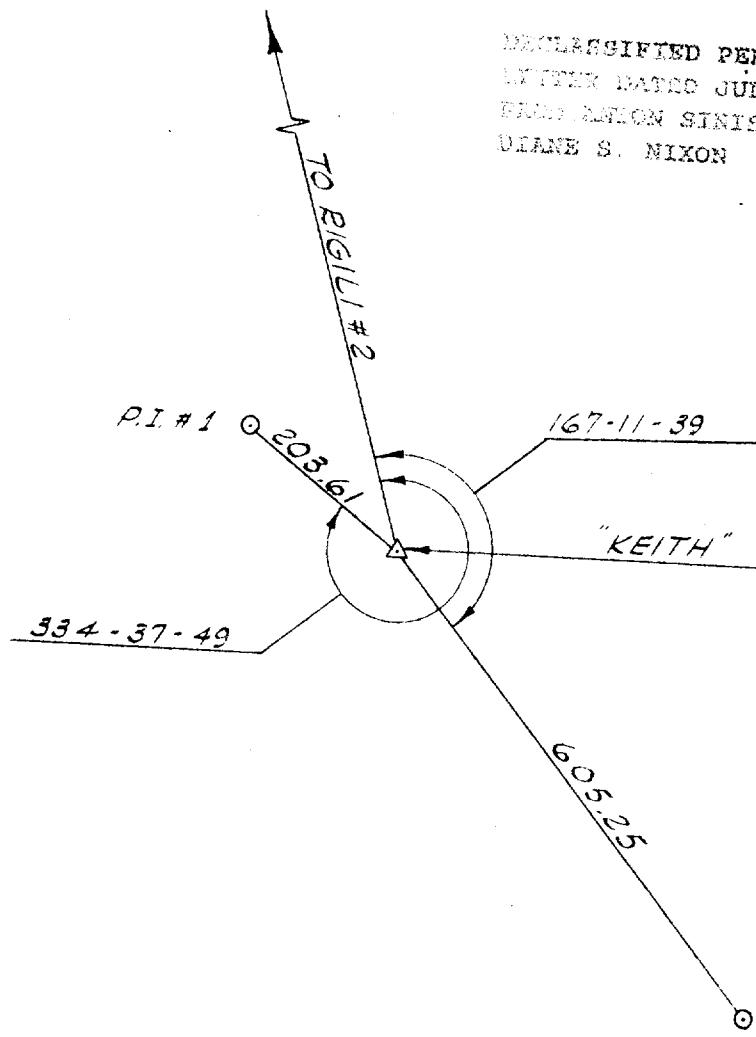
PAGE 2 - DESCRIPTION OF TRIANGULATION STATION

STATION KEITH

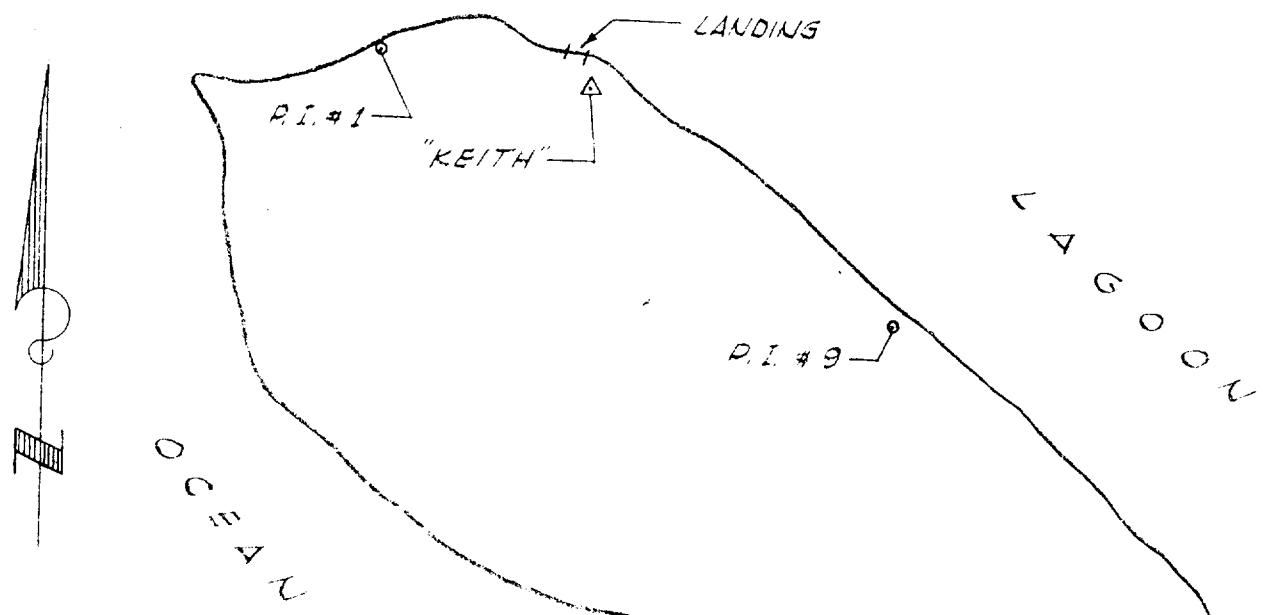
SITE: Keith, Giriinien Island, Eniwetok Atoll, M.I.

DETAILED DESCRIPTION OF STATION (CONT'D)

DECLASSIFIED PER DOE  
BY NMIC DATE JULY, 15, 1994  
RIGHTS RETURN SINISCALLY TO  
DIANE S. NIXON



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DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION	NORTH	SITE	YVONNE
CHIEF OF PARTY	H.M. Johnson	RUNIT ISLAND	Runit Island
DESCRIBED BY W. Creasman	MARKED BY H.M.J.	ENIWETOK ATOLL	Eniwetok Atoll
FIELD BOOK NO	PAGE	DATE	5/10/57 Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS			
OBJECT	DISTANCE FEET	DIRECTION	ELEVATION
North			5.44
Coral	---	00-00-00	---
R.M. #1	164.03	114-37-05	10.59
R.M. #2	3658.29	114-37-05	13.62

ELEVATION OF MARK 5.44.

DETAILED DESCRIPTION OF STATION

This station was established as a Second Order Triangulation Station in the Atoll Control Net by the Holmes & Narver 1957 Replacement Survey to replace triangulation station Yvonne, which was disturbed during Operation Redwing.

This station is located approximately 500 feet from the north end of the island and 300 feet from the lagoon high tide line.

The station mark is a standard H & N brass cap set in a concrete filled 55 gallon drum encasing the top of a 10" H-pile. It is stamped "North - H & N - 1957." The mark is 6" below the ground surface.

This station is at the north end of the "Yvonne" first order traverse.

R.M. #1 is a 4"x4" post set in concrete with a punch-marked aluminum strip stamped "Buck #1" nailed to its top. It is a chaining buck on the "Yvonne" first order traverse.

R.M. #2 is a standard H & N brass cap set in concrete set flush with the ground surface. It is stamped "Ynez." It is flush with the surrounding ground. This R.M. is an angle point on the "Yvonne" first order traverse.

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CLASSIFIED UNTIL JULY, 15, 1984  
BY THE USE OF THIS FORM  
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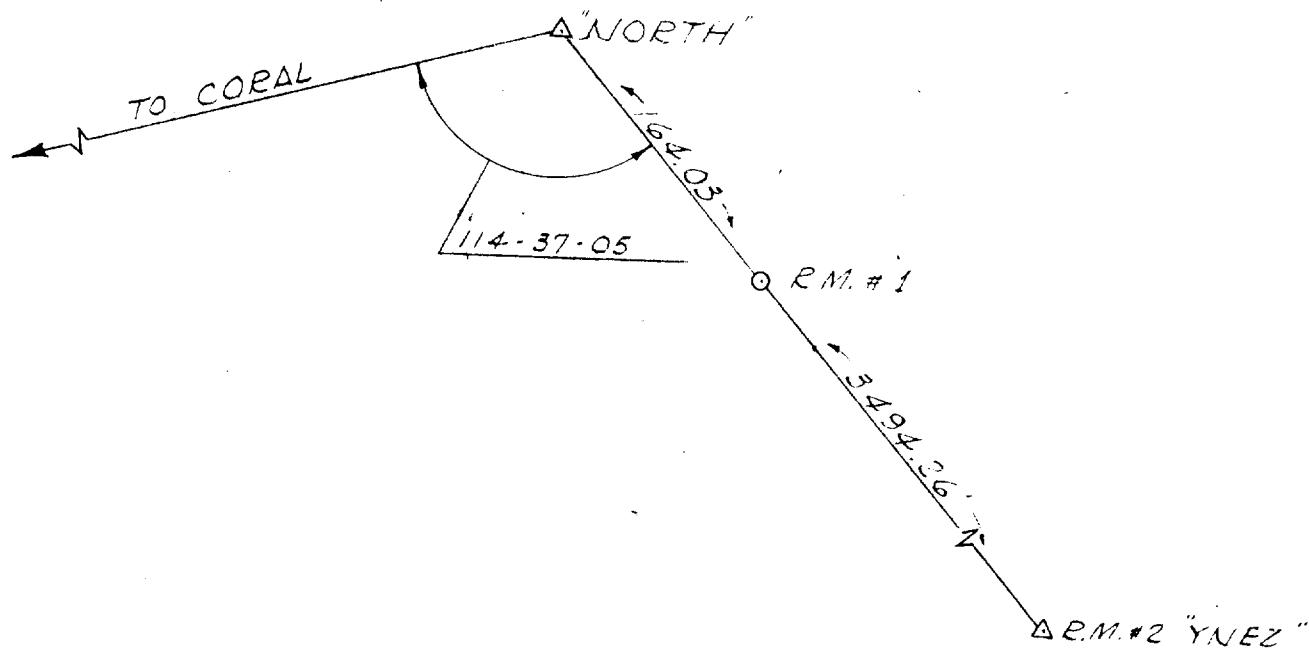
PAGE 2 - DESCRIPTION OF TRIANGULATION STATION  
STATION

STATION NORTH

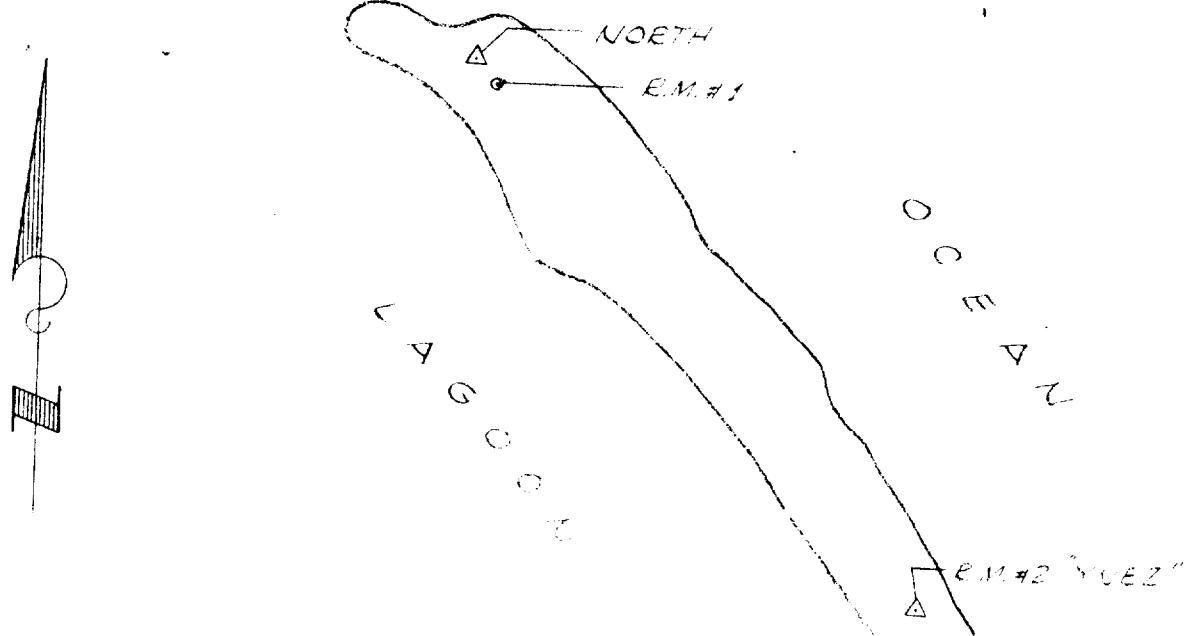
SITE X -

DETAILED DESCRIPTION OF STATION (CONT'D)  
Yvonne, Runit Island, Eniwetok Atoll, M.I.

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2000-06-15 BY 150000  
BY AUTOMATIC DECLASSIFICATION TO  
S. MILLON



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## DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION	SALLY	SITE	SALLY
CHIEF OF PARTY	H. M. Johnson		Aemon Island
DESCRIBED BY	W. Creasman	MARKED BY	Eniwetok Atoll
FIELD BOOK NO.	PAGE:	DATE:	Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS			
OBJECT	DISTANCE		ELEVATION
	FEET	METERS	
Sally			9.59
Coral		00-00-00	---
Buck #41	164.04	97-30-20	12.86
Buck #30	164.05	159-46-30	12.72
Buck #29	54.00	277-31-30	13.06

EL E V A T I O N   O F   M A R K : 9.59

**DETAILED DESCRIPTION OF STATION**

This station was established as a second order triangulation station in the Atoll Control Net by the Holmes & Narver 1957 Replacement Survey to replace triangulation station Aomon which was disturbed during Operation Redwing.

This station is located on the south east portion of the island, approximately 350 feet from the lagoon high tide line.

The station mark is a standard H & N brass cap set in a concrete filled 55 gallon drum encasing the top of a 10" H-pile. It is stamped "Sally - H & N - 1957." The mark is 6" below the ground surface.

This station is a part of the "Sally" first order Traverse.

Bucks #29, 30 and 41 are 4"x4" posts set in concrete with an aluminum strip on the top with the buck number stamped on it. They are chaining bucks in the Sally First Order Traverse.

1994

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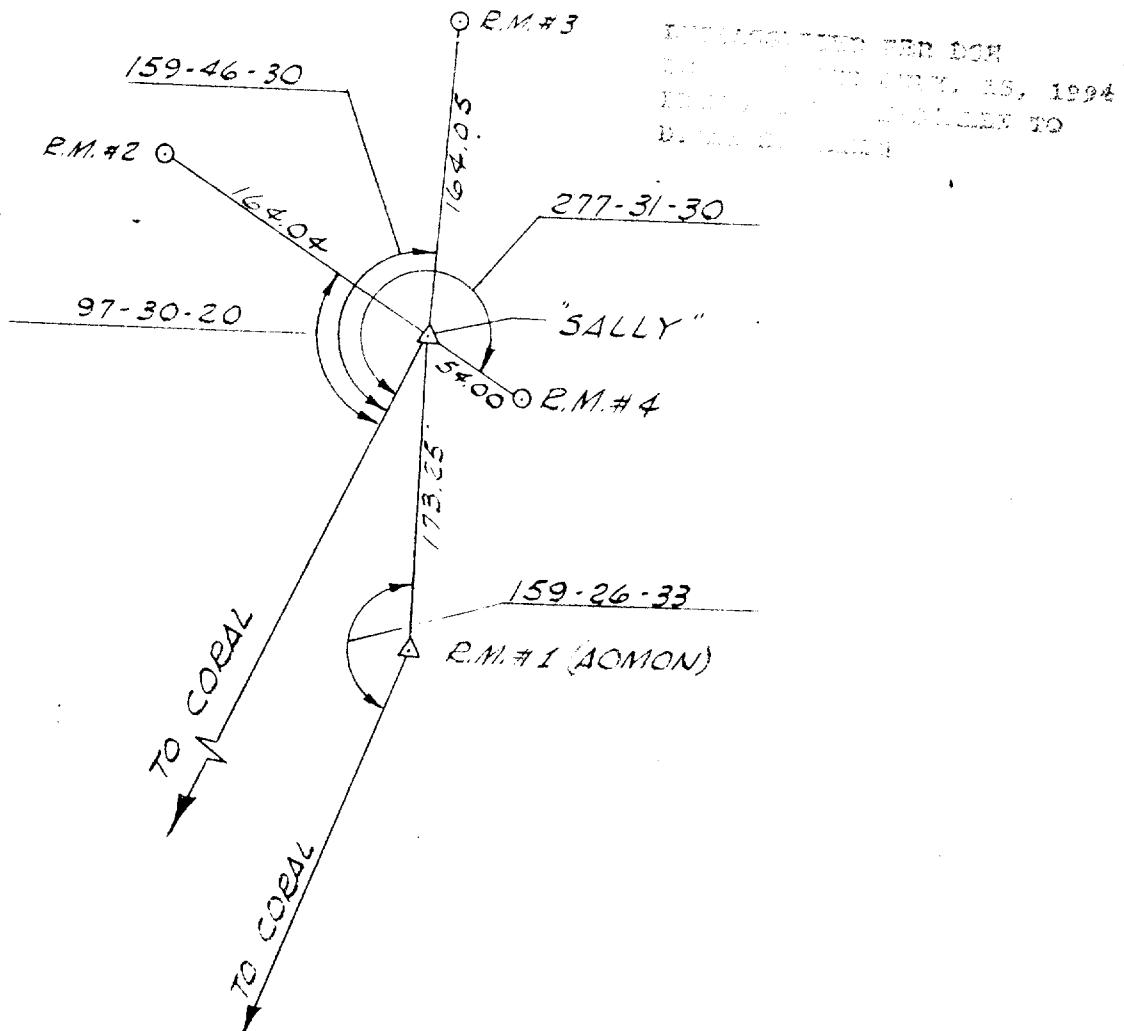
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PAGE 2 - DESCRIPTION OF TRIANGULATION STATION

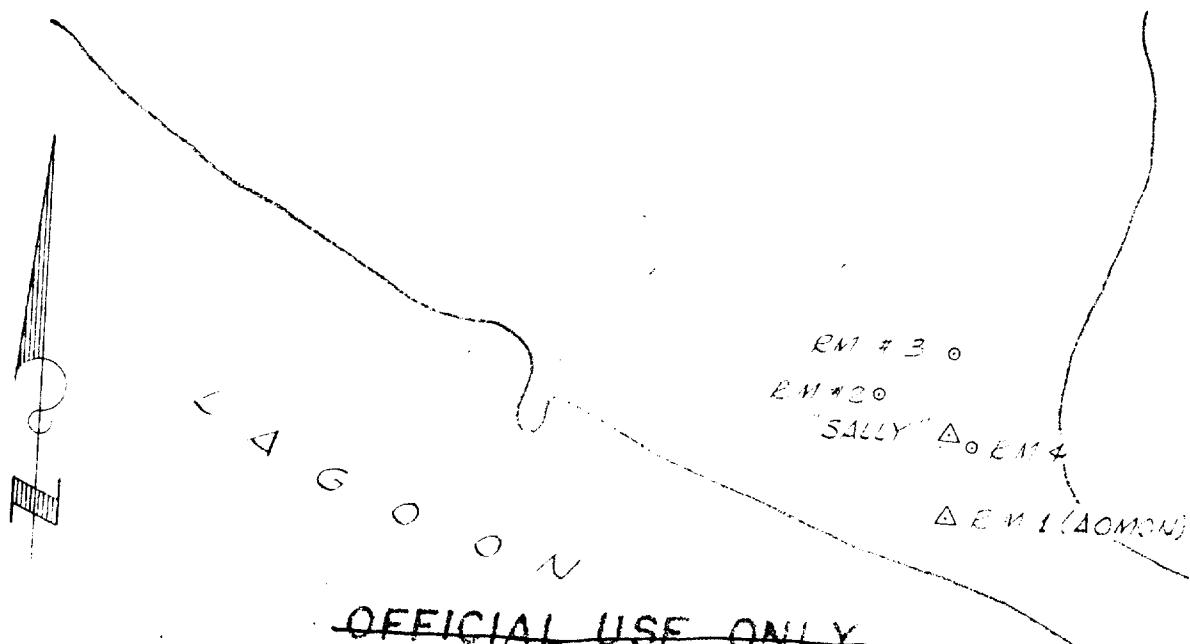
STATION Sally

SITE Sally, Aomon Island, Eniwetok Atoll, M.I.

DETAILED DESCRIPTION OF STATION (CONT'D.)



LOCATION SKETCH.



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DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION	RUJORU #2	SITE	PEARL
CHIEF OF PARTY	H. M. Johnson		Rujoru Island
DESCRIBED BY	W. Creasman	MARKED BY	Eniwetok Atoll
FIELD BOOK NO	PAGE	DATE	Marshall Islands

DISTANCES AND DIRECTIONS TO REFERENCE MARKS			
OBJECT	DISTANCE	DIRECTION	ELEVATION
	FEET	METERS	
Rujoru #2			10.66

ELEVATION OF MARK 10.66

DETAILED DESCRIPTION OF STATION

This station was established as a second order triangulation station in the Atoll Control Net by the Holmes and Narver 1957 Replacement Survey to replace Rujoru, which was disturbed during Operation Redwing.

The station mark is a standard H & N brass cap set in a mass of concrete encasing the top of a number of steel rebars driven to refusal. It is marked only by a center punch mark.

This station is located approximately 90 feet from the ocean high tide line and 115 feet from the easterly end of the island.

No reference marks were set at this station when it was established.

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PAGE 2 - DESCRIPTION OF TRIANGULATION STATION

STATION Rujoru #2

SITE: Pearl, Rujoru Island, Eniwetok Atoll, M.I.

DETAILED DESCRIPTION OF STATION (CONT'D)

DECLASSIFIED PER DDCR  
LETTER DATED JULY, 15, 1994  
FROM ANTHON S. OMORI/LAI TO  
DIANE S. NIXON

