7071

Graphic Control

Diag'd. on Diag. Ch. No. 8864

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Graphic Control

Field No. EX-C-48 Office No. T-7071

LOCALITY

State Alaska

General locality Rat Islands

Locality Tanadak Island

194 8

CHIEF OF PARTY
F.B.T.Siems

LIBRARY & ARCHIVES

DATE Nov.30,1948

B-1870-1 (1)

7071

Graphic Control

Form 537a
Ed. Nov. 1929

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 17071

Graphic Control

TOPOGRAPHIC TITLE SHEET

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. EX-C-48

REGISTER NO.

State Alaska

General Locality Rat Islands

Locality Tanadak Island

Scale 1:10,000 Date of survey September, 1948

Vessel EXPLORER

Chief of party F.B.T. Siems

Surveyed by H. D. Nygren

Inked by H. D. Nygren

Heights in feet above MLLW to ground to tops of trees

Contour, Approximate contour, Form line interval ..... feet

Instructions dated 3 February 1938, Supplements to 10 February 1948, 19

Remarks:

GPO 266853

DESCRIPTIVE REPORT

to accompany

TOPOGRAPHIC SHEET

Field No. EX-C-48

Rat Islands - Tanadak Island

1 9 4 8

Ship EXPLORER - F.B.T. Siems, Comdg.

Surveyed by: H. D. Nygren

- - - -

INSTRUCTIONS:

Original instructions for Project CS-218 dated 3 February 1938 with supplement to 10 February 1948.

LIMITS OF SURVEY:

This survey covers Tanadak Island and off-lying rocks in the area shown by air photos and vertical plane photos forwarded with this report.

PURPOSE:

The purpose of the survey was to locate a sufficient number of points pricked on air photos 27 and 28 taken by the 11th AF on sortie 105.3 of 16 March 1943, to establish the scale and orientation of the photos.

CONTROL:

Station TANADAK (USN) 1935, was the origin of the survey. The central plane-table set-up was over Reference Mark # 2 and orientation lines were drawn to whitewash KAY and triangulation station Sea Lion Rock. The original work was started on a blank sheet, and the projection added later is based on the geographic position of RM #2 and the computed azimuth from that point to Sea Lion Rock.

DATUM:

North American 1927.

SURVEY METHODS:

Standard topographic methods were used throughout. Because of very poor visibility on the first landing and in order to assure accuracy,

distances were taped from the initial set-up at RM #2 to various set-ups around the rim of the bluff, which were staked. Upon occuppying each set-up, and after orientation on RM #2, resections were made on any visible stakes of the remaining set-ups. Due to the extremely poor weather conditions several landings were necessary to accomplish the work. Triangulation station LITTLE on high ground above whitewash KAY was never visible for orientation purposes. The prominent twenty-foot rock offshore of the island was located by a rod reading and checked by intersection from other set-ups. Whitewashes were located by rod readings and checked by intersection where possible. Shore-line sections and tops and bases of the bluffs were rodded in as incidental features. Offshore rocks awash and breakers were located by intersection and are not considered suitable for compilation purposes. Pricked photo points were located by rod readings at very short distances and checked by tape in several instances.

All set-ups including RM #2 are shown as red squares on the sheet and all with two obvious exceptions are within two meters of the edge of the bluff.

ADEQUACY SURVEY:

This survey is adequate to establish the scale and orientation of the air photos, which was the desired result.

COMPARISON WITH HYDROGRAPHIC SURVEY:

Sextant cuts were taken to various offshore rocks and breakers by the hydrographic party of Shoran equipped launch number three. This information is recorded in sounding volume 21, page 4, of sheet 2248.

FEATURES FOR CHARTS:

The high rock located offshore and indicated on both horizontal and vertical photos is the last prominent rock of a series extending NW of the island. Its elevation, (20Ft) should be charted.

REMARKS:

The beacon shown is an 6" x 6" timber projecting about 6 feet from the ground and securely staked and braced. It is readily visible from Tanadak Pass and has evidently been in place many years.

The clumps of grass shown are circular hummocks of a dark green grass having longer leaves than the surrounding type. The top of the island is thickly grown with moss and short grasses to a depth of several feet.

Landings are difficult but made most easily on the large-boulder beaches to the east and west of whitewash FIN.

Vertical plane photos of the island forwarded herewith, were taken with K-20 aerial camera USC&GS 3, focal length 6.38 inches increased 0.020 by a shim to compensate for greater wave length of infra-red. Camera height was five feet above the water surface. The pictures were taken on 10 September 1948 at 1500, the day being clear with a high thin overcast of cirrus clouds. Fixes taken with hydrographic sextants on the features of the island at each photo position are recorded on the back of the print.

Respectfully submitted

H. D. Nygren
H. D. Nygren
Ensign USC&GS

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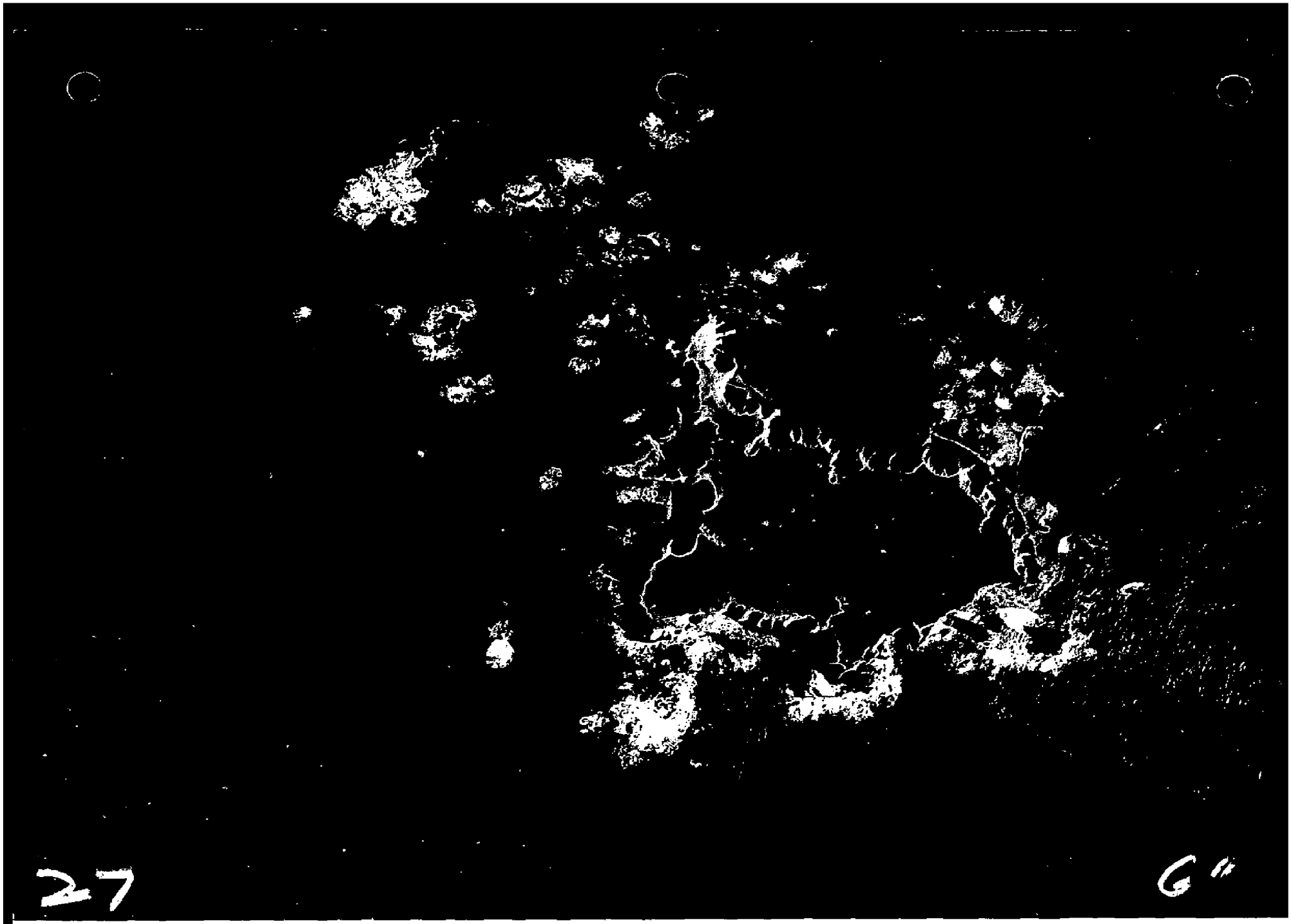
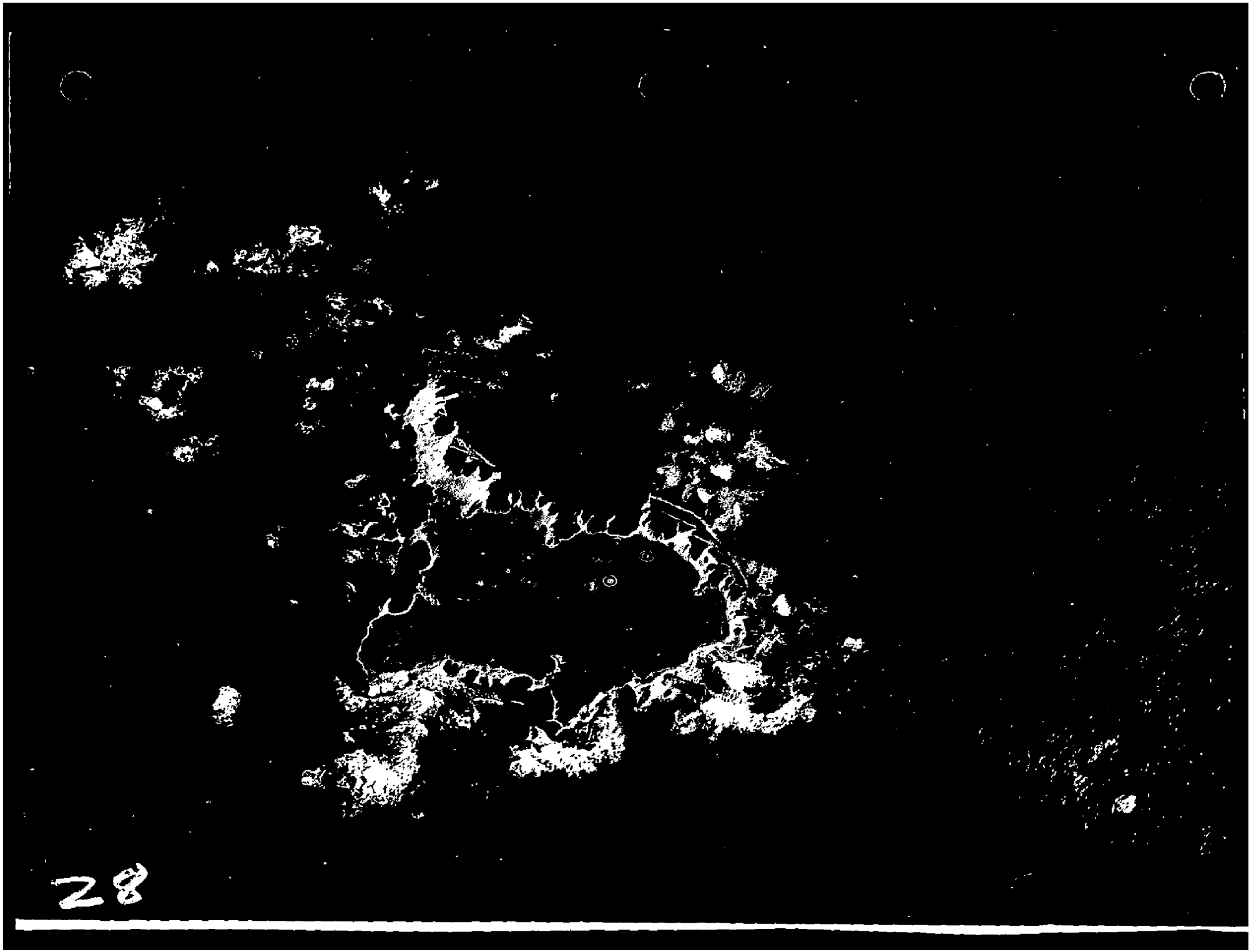
29 October 1948

Approved and forwarded.

F.B.T. Siems
F.B.T. Siems
Captain, USC&GS

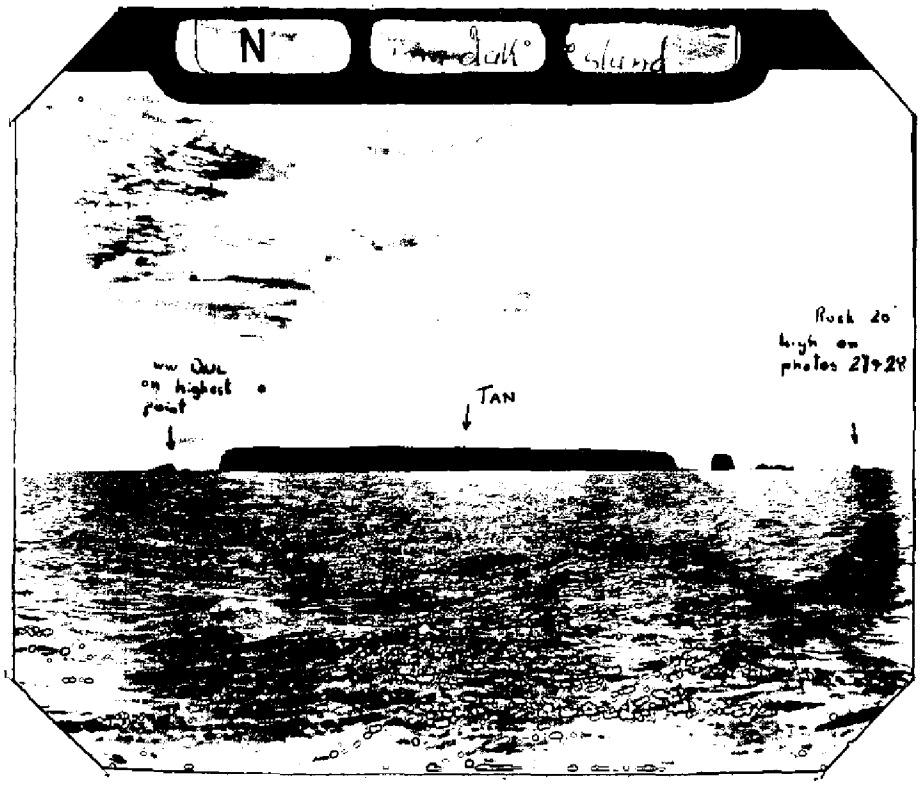


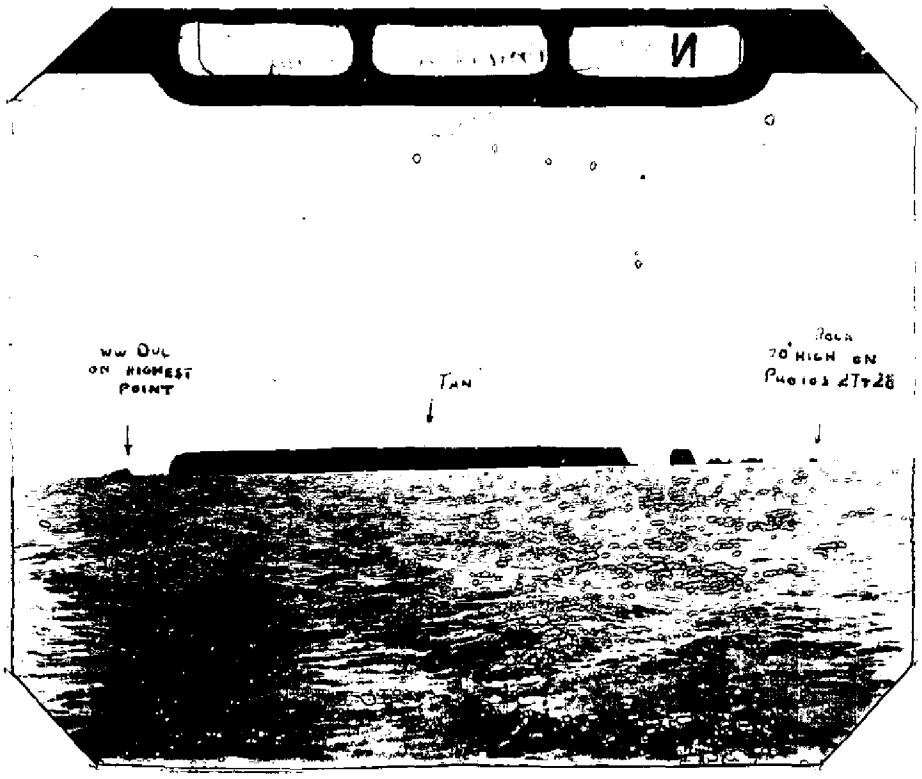
POINTS LOCATED ON PLANE TABLE SHEET Ex-C-48



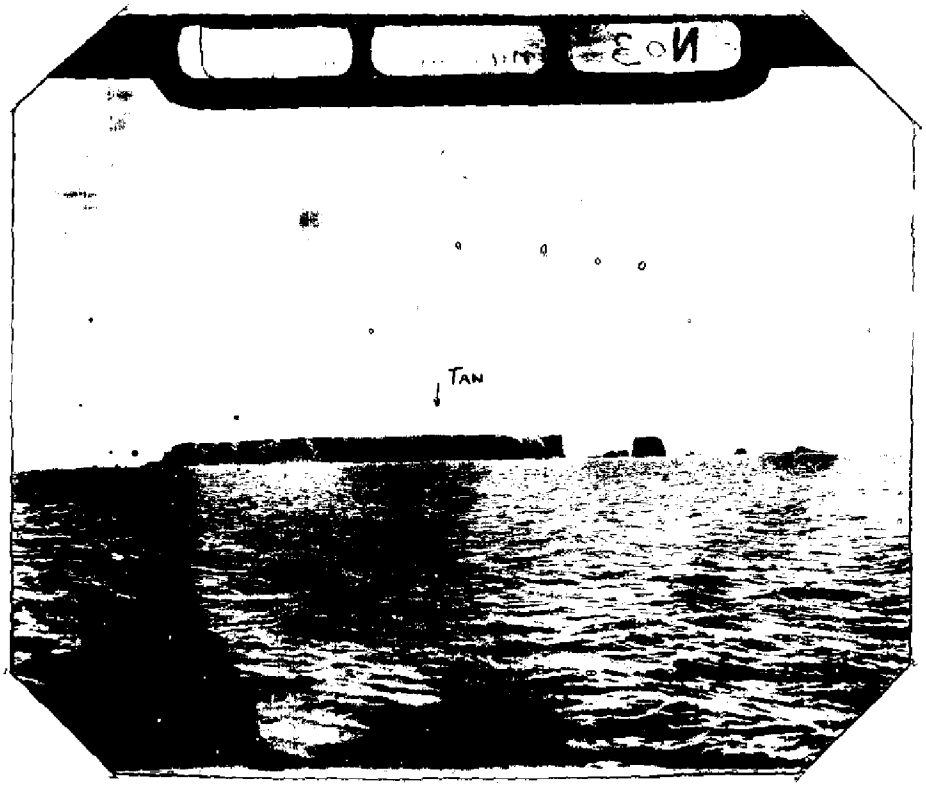
28

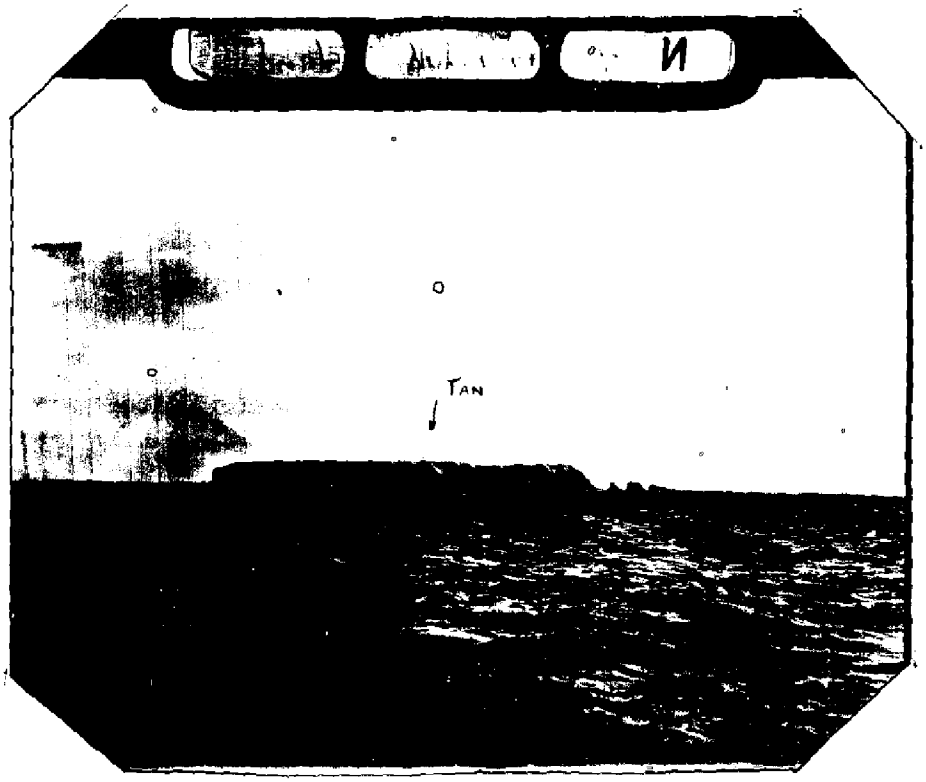
TANADAK ISLAND FROM THE NE





TANADAK ISLAND FROM NORTH





FROM NW

NAUTICAL CHARTS BRANCH

SURVEY NO. T-7071

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
8/13/51	9124	Pisegari	Before After Verification and Review Chart applied. Omitted rocks + shoals as recommended in the report.
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review
			Before After Verification and Review

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

TANADAK R.M. #2

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 27
Ed. April, 1929

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

		°	′	″			°	′	″
α	2 TANADAK USN 1935 to 3 LITTLE	93	34	47.8	α	3 to 2			
2d ∠	LITTLE & RM 2	+149	38	30.6	3d ∠	&	−		
α	2 TANADAK to 1 RM 2	243	13	18.4	α	3 to 1			
Δα			+	.7	Δα				
		180	00	00.0			180	00	00.0
α′	1 to 2	63	13	19.1	α′	1 to 3			

FIRST ANGLE OF TRIANGLE

	°	′	″			°	′	″		°	′	″			°	′	″
φ	51	56	48.762	2 TANADAK	Eλ	177	46	59.300	φ				3	λ			
Δφ			+ 0.296	S= 20.33 M	(Δλ)		−	0.950	Δφ					Δλ			
φ′	51	56	49.058	1 RM 2	Eλ′	177°	47	00.250	φ′				1	λ′			

	Logarithms	Values in seconds	
s	1.3081374		
Cos α	9.6537316		
B	8.5099367		
h	9.4718057	1st term	0.29635″ −
s²	2.61627		
Sin² α	9.90146		
C	1.50965		
	4.02738-10	2d term	+ —
h²	8.9436		
D	2.3801		
	1.3237	3d term	+ —
		−Δφ	− 0.296

	° ′ ″		
½(φ+φ′)	51 56 48.910		
		Logarithms	Values in seconds
s		1.3081374	
Sin α		9.9507333	−
A′		8.5088139	
Sec φ′		0.2101438	
Δλ		9.9778278	−0.950″
Sin ½(φ+φ′)		9.8962175	
−Δα		9.8740453	−0.748

← N.Cu.

	Logarithms	Values in seconds	
s			
Cos α			
B			
h		1st term	″
s²			
Sin² α			
C			
		2d term	+
h²			
D			
		3d term	+
		−Δφ	

	° ′ ″		
½(φ+φ′)			
		Logarithms	Values in seconds
s			
Sin α			
A′			
Sec φ′			
Δλ			″
Sin ½(φ+φ′)			
−Δα			

11—9362 U. S. GOVERNMENT PRINTING OFFICE: 1932

Comp NDH

Inverse Computation Check

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
FORM 27
Ed. April, 1929

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

		°	′	″			°	′	″
α	2 to 3				α	3 to 2			
2d ∠	&	+			3d ∠	&	−		
α	2 Sea Lion Rock to 1 Tanadale RM #2	117 242	46 05	35.91 57.31	α	3 to 1			
Δα	Quadrant	11	09	26.78	Δα				
		180	00	00.0			180	00	00.0
α′	1 Tanadale RM #2 to 2 Sea Lion Rock	297 62	56 13	02.69 24.09	α′	1 to 3			

FIRST ANGLE OF TRIANGLE

	°	′	″			°	′	″		°	′	″			°	′	″
φ	51	52	53.702	2 Sea Lion Rock	λ	177	59	00.848	φ				3	λ			
Δφ		3	55.351	S = −	Δλ		12	00.097	Δφ					Δλ			
φ′	51	36	49.059	1 Tanadale RM #2	λ′	177	47	00.251	φ′				1	λ′			

	Logarithms	Values in seconds			° ′ ″		
s	4.192 2337	1514.3 (338.1)			½(φ+φ′)	51° 54′ 51.383	
Cos α	9.670 6683	−				Logarithms	Values in seconds
B	8.509 9412	−			s	4.192 2337	4.8
h	2.372 8432	1st term	− 233.9636″		Sin α	9.946 2002	− 1141.3
s²	8.384 46				A′	8.508 8133	
Sin²α	9.892 40 −				Sec φ′	0.210 1438	
C	1.508 64				Δλ	2.857 3912	720.0970″ −
	9.785 50	2d term	+ 0.6102		Sin ½(φ+φ′)	9.896 0240	
h²	4.74 57				−Δα	2.753 4152	566.7810
D	2.3803	4th	+ 0.0010				
(E)	7.1260	3d term	+ 0.0013				
		−Δφ	− 235.3521				

	Logarithms	Values in seconds			° ′ ″		
s					½(φ+φ′)		
Cos α						Logarithms	Values in seconds
B					s		
h		1st term	″		Sin α		
s²					A′		
Sin²α					Sec φ′		
C					Δλ		″
		2d term	+		Sin ½(φ+φ′)		
h²					−Δα		
D							
		3d term	+				
		−Δφ					

−h	2.372 8
s²sin²α	8.276 9
E	6.379 5
	7.029 2

11—9362 U. S. GOVERNMENT PRINTING OFFICE: 1929

Comp. HDN

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 662
Rev. Sept. 1942

INVERSE POSITION COMPUTATION

$$s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)=\frac{\Delta\lambda_1 \cos\phi_m}{A_m}$$

$$s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)=\frac{-\Delta\phi_1 \cos\frac{\Delta\lambda}{2}}{B_m}$$

$$-\Delta\alpha=\Delta\lambda \sin\phi_m \sec\frac{\Delta\phi}{2}+F(\Delta\lambda)^3$$

in which $\log \Delta\lambda_1=\log(\lambda'-\lambda)$ − correction for arc to sin*; $\log \Delta\phi_1=\log(\phi'-\phi)$ − correction for arc to sin*; and $\log s=\log s_1+$ correction for arc to sin*.

NAME OF STATION

1. ϕ	51°	56′	49.058″	Tenaduk. RM #2	λ	177°	47′	00.250″ E
2. ϕ'	51	52	53.708	Sea Lion Rock	λ'	177	59	00.348 E
$\Delta\phi$ $(=\phi'-\phi)$		03	55.360 −		$\Delta\lambda$ $(=\lambda'-\lambda)$		12	00.098
$\frac{\Delta\phi}{2}$		01	57.675 −		$\frac{\Delta\lambda}{2}$		6	00.049
$\phi_m\left(=\phi+\frac{\Delta\phi}{2}\right)$	51	54	51.383					
$\Delta\phi$ (secs.)		235.350″ −			$\Delta\lambda$ (secs.)		720.098″ + −	

log $\Delta\phi$	2.371	7142 −			**log** $\Delta\lambda$	2.857	3916	
cor. arc−sin	−	−			cor. arc−sin	−	2	
log $\Delta\phi_1$	2.371	7142 −			log $\Delta\lambda_1$	2.857	3914 +	
log cos $\frac{\Delta\lambda}{2}$	9.999	9993			**log cos** ϕ_m	9.790	1724 +	
colog B_m	1.490	0613			**colog** A_m	1.491	1860	
log$\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.861	7748 +		(opposite in sign to $\Delta\phi$)	**log**$\left\{s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	4.138	7498 + −	
					log$\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.861	7748 +	
log $\Delta\lambda$ +	2.857	3916	3 log $\Delta\lambda$	8.572	**log tan** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	0.276	9750 + −	
log sin ϕ_m +	9.896	0236	log F	7.768	$\alpha+\frac{\Delta\alpha}{2}$	297°	51′	19.30″ ←
log sec $\frac{\Delta\phi}{2}$	0.000	0001	log b	6.340		62	08	40.70
					log sin $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.946	5161 −	
log a	2.753	4153			**log cos** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.669	5411 +	
a	566.78				**log** s_1	4.192	2337	
b	−				cor. arc−sin	+	1	
−$\Delta\alpha$ **(secs.)**	566.78 +				log s	4.192	2337	
$-\frac{\Delta\alpha}{2}$	283.39″							
	0°	04′	43.39″					
$\alpha+\frac{\Delta\alpha}{2}$	297	51	19.30					
α (1 to 2)	297	56	02.69					
$\Delta\alpha$	−	09	26.78					
	180							
α′ (2 to 1)	117°	46′	35.91					

* Use the table on the back of this form for correction of arc to sin.

Comp HDH

NOTE.—For log s up to 4.0 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 3′, omit all terms below the heavy line except those printed (in whole or in part) in heavy type or those underscored, if using logarithms to 7 decimal places.

16—31070-1

Table of arc-sin corrections for inverse position computations

log s_1	Arc-sin correction in units of seventh decimal of logarithms	log $\Delta\phi$ or log $\Delta\lambda$	log s_1	Arc-sin correction in units of seventh decimal of logarithms	log $\Delta\phi$ or log $\Delta\lambda$	log s_1	Arc-sin correction in units of seventh decimal of logarithms	log $\Delta\phi$ or log $\Delta\lambda$
4. 177	1	2. 686	5. 223	124	3. 732	5. 525	497	4. 034
4. 327	2	2. 836	5. 234	130	3. 743	5. 530	508	4. 039
4. 415	3	2. 924	5. 243	136	3. 752	5. 534	519	4. 043
4. 478	4	2. 987	5. 253	142	3. 762	5. 539	530	4. 048
4. 526	5	3. 035	5. 260	147	3. 769	5. 543	541	4. 052
4. 566	6	3. 075	5. 269	153	3. 778	5. 548	553	4. 057
4. 599	7	3. 108	5. 279	160	3. 788	5. 553	565	4. 062
4. 628	8	3. 137	5. 287	166	3. 796	5. 557	577	4. 066
4. 654	9	3. 163	5. 294	172	3. 803	5. 561	588	4. 070
4. 677	10	3. 186	5. 303	179	3. 812	5. 566	600	4. 075
4. 697	11	3. 206	5. 311	186	3. 820	5. 570	613	4. 079
4. 716	12	3. 225	5. 318	192	3. 827	5. 575	625	4. 084
4. 734	13	3. 243	5. 326	199	3. 835	5. 579	637	4. 088
4. 750	14	3. 259	5. 334	206	3. 843	5. 583	650	4. 092
4. 765	15	3. 274	5. 341	213	3. 850	5. 587	663	4. 096
4. 779	16	3. 288	5. 349	221	3. 858	5. 591	674	4. 100
4. 792	17	3. 301	5. 356	228	3. 865	5. 595	687	4. 104
4. 804	18	3. 313	5. 363	236	3. 872	5. 600	702	4. 109
4. 827	20	3. 336	5. 369	243	3. 878	5. 604	716	4. 113
4. 857	23	3. 366	5. 376	251	3. 885	5. 608	729	4. 117
4. 876	25	3. 385	5. 383	259	3. 892	5. 612	743	4. 121
4. 892	27	3. 401	5. 390	267	3. 899	5. 616	757	4. 125
4. 915	30	3. 424	5. 396	275	3. 905	5. 620	771	4. 129
4. 936	33	3. 445	5. 403	284	3. 912	5. 624	785	4. 133
4. 955	36	3. 464	5. 409	292	3. 918	5. 628	800	4. 137
4. 972	39	3. 481	5. 415	300	3. 924	5. 632	814	4. 141
4. 988	42	3. 497	5. 422	309	3. 931	5. 636	829	4. 145
5. 003	45	3. 512	5. 428	318	3. 937	5. 640	845	4. 149
5. 017	48	3. 526	5. 434	327	3. 943	5. 644	861	4. 153
5. 035	52	3. 544	5. 440	336	3. 949	5. 648	877	4. 157
5. 051	56	3. 560	5. 446	345	3. 955	5. 652	893	4. 161
5. 062	59	3. 571	5. 451	354	3. 960	5. 656	909	4. 165
5. 076	63	3. 585	5. 457	364	3. 966	5. 660	925	4. 169
5. 090	67	3. 599	5. 462	373	3. 971	5. 663	941	4. 172
5. 102	71	3. 611	5. 468	383	3. 977	5. 667	957	4. 176
5. 114	75	3. 623	5. 473	392	3. 982	5. 671	973	4. 180
5. 128	80	3. 637	5. 479	402	3. 988	5. 674	989	4. 183
5. 139	84	3. 648	5. 484	412	3. 993	5. 678	1005	4. 187
5. 151	89	3. 660	5. 489	422	3. 998			
5. 163	94	3. 672	5. 495	433	4. 004			
5. 172	98	3. 681	5. 500	443	4. 009			
5. 183	103	3. 692	5. 505	453	4. 014			
5. 193	108	3. 702	5. 510	464	4. 019			
5. 205	114	3. 714	5. 515	474	4. 024			
5. 214	119	3. 723	5. 520	486	4. 029			

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