5642

5642

Form 504
Rev. Dec. 1933

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

AIR PHOTO

Topographic } FIELD 9
~~*Hydrographic*~~ } *Sheet No.* REG 5642

State NEW JERSEY

LOCALITY

Atlantic
OUTSIDE COAST ~~SOUTH OF GREAT EGG~~

~~HARBOR~~

PECK BAY TO CORSON INLET

193 6

CHIEF OF PARTY

E. H. Kirsch

U.S. GOVERNMENT PRINTING OFFICE: 1934

T-5642 (Corrected to May 12, 1938) applied to Chart 1217 - May 18, 1938 - J.F.W.
Applied to compilation of New Chart 827 July 1939 S.R.

SHEET NO. 9

REGISTER NO. 5642

PHOTO NOS.		DATE
66-13-26 to 24	Along Long 74° 37'	4-22-32
66-55-17 to 23	Along Long. 74° 39'	8-1-32

PROJECTION BY L. C. RIPLEY 4-26-35

PROJECTION CHECKED BY T. B. NUTTING 4-26-35

CONTROL PLOTTED BY E. J. ANDERSON

CONTROL PLOTTING CHECKED BY W. W. KING

CONTROL PLOTTED ON PHOTOS BY J. F. RICHARDSON

CONTROL PLOTTING CHECKED BY W. W. KING

SMOOTH RADIAL PLOT BY E. H. Kirsch E. H. KIRSCH APR. 1936

SMOOTH RADIAL PLOT CHECKED BY W. W. KING MAY 1936

DETAILED BY W. W. KING June 1936

All others discharged
E.H.K.

LAND AREA 18 sq. statute miles

Coast line 5 statute miles

Shoreline 13.5 statute miles (more than 200 meters wide)

Length of streams 55 statute miles (less than 200 meters wide).

Ref. Sta. Beesleys, 1935 39° 16' 59.489 (1834.5 m.)
74° 37' 50.846 (1218.6 m) (unadjusted)

N.J. Grid x = 2,010,155.47
y = 163,845.12

Form 537a
Ed. Nov. 1929

DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY

REG. NO.

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. 9 **T5642**

REGISTER NO. 5642

State NEW JERSEY

General locality Atlantic ~~OUTSIDE~~ COAST ~~SOUTH OF GREAT EGG HARBOR~~

Locality PECK BAY TO CORSON INLET

Photographs April & Aug. 1932

Scale 1:10 000 Date of survey Compilation June, 1936

Vessel Air Photo Party No. 21.

Chief of party E. H. Kirsch

Surveyed by See data sheet in descriptive report.

Inked by W. W. King

Heights in feet above --- to ground to tops of trees

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

Instructions dated May 16th, 1935, 19

Remarks: NONE.

GENERAL INFORMATION

STATISTICS:

This compilation covers 18 square statute miles of land area, 5 statute miles of coast line, 13.5 statute miles of shoreline over 200 meters wide, and 55 statute miles of streams less than 200 meters wide.

GENERAL REPORT:

The area covered by this sheet is of the low coastal type with very little relief. Along the coast line lies a narrow strip of low sandy area which is subdivided into a street system and known as Peck Beach. BEESLEYS POINT comprises the only piece of high ground on the sheet. This area is divided into small farms with numerous houses along the highway. The vegetation is generally deciduous. The vast expanse of marsh area is interspersed with many ponds, streams and bays and is drained by ditches dug by the N. J. mosquito and Pest control. Just back of Peck Beach runs the intracoastal waterway on both sides of which are numerous spoil banks.

PHOTOGRAPHS:

There are portions of two flights over this compilation, both of which run generally north and south. The exact time the photographs were taken is not available.

Photo No.	Date
66-13-26 to 24	Apr. 22, 1932
66-55-17 to 23	Aug. 1 1932

CONTROL

SOURCES:

Triangulation, first order, by Lieut. C. D. Meaney in 1932. Triangulation, second order, by B. H. Rigg in 1935. Triangulation, second order, by Lieut. John A. Bond, in 1936.

N. J. Geod. S. No. 2703, 2704, 2705, 2706, and 2719 were field inspected, radials plotted and reported on form 524. There are no G. C. sheets for this area, and none will be started during the 1936 season.

All control is on N. A. 1927 datum.

ERRORS:

No errors in the control were found.

COMPILATION:

METHOD:

The usual radial line method as described in "Notes on the compilation of planimetric line maps from 5 lens aerial photographs" was used in compiling this sheet.

ADJUSTMENTS OF THE PLOT:

No unusual adjustments of the plot were necessary.

INTERPRETATION:

All photos used in the compilation of this sheet are fairly true to scale, however some of the pictures in the flight 66-55-17 to 23 are blurred and indistinct. This difficulty was overcome by using other pictures wherever possible and by field inspection by the compiler. The ditches in the marsh along the intracoastal waterway appear to have been filled or partially filled by the pumping of spoils into the marsh. This accounts for some of the difficulties encountered in interpreting the pictures in these areas. In some cases it was necessary to trace the detail on the pictures before it could be transferred to the celluloid.

INFORMATION FROM OTHER SOURCES:

The high water line along Ocean City was established by actual field inspection on the photos by the compiler during June 1936. It will be found that considerable erosion has taken place. The new fishing pier, 59th street, Lat 39° 13' Long. 74° 38' has been extended since the photos were taken. This extension has been shown according to information from the N. J. Riparian Survey. All names on the overlay sheet are taken from U. S. C. & G. Survey chart No. 1217, and a map published by the State of N. J. Dept. of conservation and development, and from highway maps.

CONFLICTING NAMES:

The thorofare named "Main Thorofare" on U. S. C. &. G. Survey chart No 1217 at Corson Inlet is called "Middle Thorofare" on the State of N. J. Dept. of Conservation and Development. * Geological quad., Sea Isle, names it "Middle Thorofare". Middle Thorofare has been used on the overlay.

* Nos. 36, 37 on file in Geog. Names

COMPARISON WITH OTHER SURVEYS:

JUNCTIONS: Satisfactory junctions have been made with sheet No. 8 - Reg. 5641 on the north, sheet No. 6 - Reg. No. 5639 on the Northeast, sheet No. 10- Reg No. 5643 on the west, and sheet No. 11 - Reg. No. 5644 on the south.

LANDMARKS:

A list of recoverable marked stations is submitted with this report. A list of landmarks for charts will be submitted as a separate report for the project at the close of the season.

BRIDGES:

The following data is obtained from the field inspection report of Lieut. R. C. Bolstad:

LOCALITY	LAT.	LONG.	TYPE	VERT. CLEAR M. H. W.	HOR CLEAR
PECK BEACH HIGHWAY	39° 15'	74° 37'	Swing	6.7'	50' Both Chan.
CROOK HORN	39° 13'	74° 38'	Swing	1.5'	60' Both Chan.
Middle Thoro R. R.	39° 12'	74° 38'	Fixed	6.5	11'
Middle Thoro Highway	39° 12'	74° 38'	Fixed	6.2'	11'

RECOMMENDATION FOR FURTHER SURVEYS:

This compilation is believed to have a probable error of not more than .3 MM in position of well defined detail of importance for charting purposes, and not more than .6 MM for other detail.

To the best of my knowledge this sheet is comp.lete in all detail of importance for charting, within the accuracy stated above and no additional surveys are necessary.

Submitted by

E. H. Kirsch

E. H. Kirsch
Chief of Party No. 21.

Sheets 9 and 11 were smooth radial plotted before Lieut. J. A. Bonds triangulation was available. Four three point fixes were observed with a 7" theodolite and the positions computed to strengthen the plots. The points are not marked. The computations for these fixes are enclosed with this report.

REVIEW OF AIR PHOTO COMPILATION T-5642

Scale 1:10,000

Data Record

Triangulation to 1936.
Photographs to 1932.
Field inspection to June 1936.

There are no recent Graphic Control or hydrographic surveys at present within the limits of this compilation.

Comparison with Former Topographic Surveys.

T-146 (1842) 1:10,000; T-147 (1842) 1:10,000;
T-1597 (1885) 1:20,000; T-1744 (1886) 1:20,000;
T-2054 (1891) 1:20,000; T-2453 (1899) 1:20,000;
T-2454 (1899) 1:20,000.

The shoreline agreement between the above surveys and the compilation is good but there has been numerous changes in detail.

The compilation is complete and adequate to supersede the portions of the above surveys which it covers.

Comparison with Charts 1217 and 3248.

In the vicinity of Corson Inlet latitude 39° 12.8', longitude 74° 38.7', the compilation shows considerable beach erosion from the above charts.

L. C. Lundy

V B Gomes

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 662
Rev. April, 1931

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			NAME OF STATION	
1. ϕ	39-09-25.591	Sea Isle S.P.	λ	74-41-33.071	
2. ϕ'	39-06-22.554	Avalon S.P.	λ'	74-42-49.631	
$\Delta\phi\ (=\phi'-\phi)$	− 3-03.037		$\Delta\lambda\ (=\lambda'-\lambda)$	+ 1-16.560	
$\frac{\Delta\phi}{2}$	1-31.518		$\frac{\Delta\lambda}{2}$	38.280	
$\phi_m\left(=\phi+\frac{\Delta\phi}{2}\right)$	39-07-54.072				
$\Delta\phi$ (secs.)	183.037		$\Delta\lambda$ (secs.)	76.560	
log $\Delta\phi$	2.262 5390		**log** $\Delta\lambda$	1.8840019	
cor. arc−sin			cor. arc−sin		
log $\Delta\phi_1$	2.262 5390		log $\Delta\lambda_1$	1.884 0019	
log cos $\frac{\Delta\lambda}{2}$			**log cos** ϕ_m	9.889 6925	
colog B_m	1.489 0826		**colog** A_m	1.490 8597	
log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.751 6216	(opposite in sign to $\Delta\phi$)	**log** $\left\{s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	+ 3.264 3541	
			log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	+ 3.751 6216	
log $\Delta\lambda$	+ 1.884 0019 (3 log $\Delta\lambda$)		**log tan** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	+ 9.513 9325	
log sin ϕ_m	9.800 1014 (log F)		$\alpha+\frac{\Delta\alpha}{2}$	18-02-41.6	
log sec $\frac{\Delta\phi}{2}$	(log b)		**log sin** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.491 0281	
			log cos $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.978 0955	
log a	1.684 1033		**log** s_1	3.773 5260	
a	4831 +		cor. arc−sin	+	
b			log s	3.773 5260	
$-\Delta\alpha$ **(secs.)**	+ 24.2				
$-\frac{\Delta\alpha}{2}$	18-02-41.6				
$\alpha+\frac{\Delta\alpha}{2}$					
α (1 to 2)	18-03-05.8				
$\Delta\alpha$	− 48.3				
	180				
α' (2 to 1)	198-02-17.5				

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

Sea Isle S.P. to Avalon S.P.

Avalon S.P. to Sea Isle S.P.

NOTE.—For log s up to 4.52 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 10′, 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 6 decimal places. 11—9810

U. S. GOVERNMENT PRINTING OFFICE: 1931

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			

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 662
Rev. April, 1931

INVERSE POSITION COMPUTATION

Stack to Strathmere
31-01-06.4
3.913867

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

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

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

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	39° 15′ 43.470″	Stack	λ	74° 36′ 26.773″
2. ϕ'	39 11 55.989	Flagpole.	λ'	74 39 22.591
$\Delta\phi\ (=\phi'-\phi)$	− 3 47.481		$\Delta\lambda\ (=\lambda'-\lambda)$	+ 2 55.818
$\frac{\Delta\phi}{2}$	1 53.740		$\frac{\Delta\lambda}{2}$	87.909
$\phi_m\left(=\phi+\frac{\Delta\phi}{2}\right)$	39 13 49.729			
$\Delta\phi$ (secs.)	227.481		$\Delta\lambda$ (secs.)	+ 175.818
log $\Delta\phi$	v.3569451		log $\Delta\lambda$	+ v.2450635
cor. arc−sin	−		cor. arc−sin	−
log $\Delta\phi_1$	2.3569451		log $\Delta\lambda_1$	2.2450635
log cos $\frac{\Delta\lambda}{2}$			log cos ϕ_m	9.889 0821
colog B_m	1.489 0899		colog A_m	1.490 8621
log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.846 0350	(opposite in sign to $\Delta\phi$)	log $\left\{s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	+ 3.625 0077
			log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	+ 3.846 0350
log $\Delta\lambda$ +	2.245 0635 — 3 log $\Delta\lambda$		log tan $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.778 9717
log sin ϕ_m	9.801 0207 — log F		$\alpha+\frac{\Delta\alpha}{2}$	31-00-41.72″
log sec $\frac{\Delta\phi}{2}$	— log b		log sin $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.711 9855
			log cos $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.933 0128
log a +	v.0460837		log s_1	3.913 0222
a	+ 111.19		cor. arc−sin	+
b			log s	3.913 0222
$-\Delta\alpha$ (secs.)	+ 111.2			
$-\frac{\Delta\alpha}{2}$	+ 55.6			
$\alpha+\frac{\Delta\alpha}{2}$	31-00-41.7			
α (1 to 2)	31-01-37.3			
$\Delta\alpha$	− 01 51.2			
	180			
α' (2 to 1)	v10 59 461			

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

Stack to Flagpole

Flagpole to Stack

NOTE.—For log s up to 4.52 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 10′, 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 6 decimal places. 11—9810

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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 $\Delta\lambda$
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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
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4. 599	7	3. 108	5. 279	160	3. 788	5. 553	565	4. 062
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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			

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 662
Rev. April, 1931

INVERSE POSITION COMPUTATION

Sea Isle City S.P. to Strathmere
214-02-24.2
3.746678

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

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

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

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	39° - 11' - 55.989"	Flagpole	λ	74° - 39' - 22.591"
2. ϕ'	39 - 09 - 25.591	Sea Isle City S.P.	λ'	74 - 41 - 33.071
$\Delta\phi\ (=\phi'-\phi)$	- 2 - 30.398		$\Delta\lambda\ (=\lambda'-\lambda)$	+ 2 - 10.480
$\frac{\Delta\phi}{2}$	1 - 15.199		$\frac{\Delta\lambda}{2}$	1 - 05.240
$\phi_m\left(=\phi+\frac{\Delta\phi}{2}\right)$	39 - 10 - 40.790			
$\Delta\phi$ (secs.)	150.398		$\Delta\lambda$ (secs.)	130.480
log $\Delta\phi$	2.177 2422		**log** $\Delta\lambda$	2.115 5439
cor. arc—sin			cor. arc—sin	
log $\Delta\phi_1$	2.177 2422		log $\Delta\lambda_1$	2.115 5439
log cos $\frac{\Delta\lambda}{2}$	1.489 0859		**log cos** ϕ_m	9.889 4065
colog B_m			**colog** A_m	1.490 8608
log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.666 3281	(opposite in sign to $\Delta\phi$)	**log** $\left\{s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.495 8112
			log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.666 3281
			log tan $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.829 4831
log $\Delta\lambda$	2.115 5439 — 3 log $\Delta\lambda$		$\alpha+\frac{\Delta\alpha}{2}$	34° - 01' - 49.155"
log sin ϕ_m	9.800 5327 — log F		**log sin** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.747 9022
log sec $\frac{\Delta\phi}{2}$	— log b		**log cos** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.918 4191
log a	+ 1.916 0766		**log** s_1	3.747 9090
a	+82.428		cor. arc—sin	+
b			log s	3.747 9090
$-\Delta\alpha$ **(secs.)**	+824.28"			
$-\frac{\Delta\alpha}{2}$	+41.214"			
$\alpha+\frac{\Delta\alpha}{2}$	34° - 01-49.155"			
α **(1 to 2)**	34 - 02-30.369	Flagpole to SIC. S.P.		
$\Delta\alpha$	- 1 - 22.428			
	180			
α' **(2 to 1)**	214-01-07.541	SIC. S.P. to Flagpole.		

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

NOTE.—For log s up to 4.52 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 10', 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 6 decimal places. 11—9810

U. S. GOVERNMENT PRINTING OFFICE: 1931

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			

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 662
Rev. April, 1931

INVERSE POSITION COMPUTATION

Whale to Strathmere ✓
214-16-37.13 ✓
34-17-21.10

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

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

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

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	39° 11' 55.989" ✓	Flagpole	λ	74° 39' 22.591"	✓
2. ϕ'	39 10 36.081 ✓	Whale.	λ'	74 40 32.480	✓
$\Delta\phi\ (=\phi'-\phi)$	− 1 19.908 ✓		$\Delta\lambda\ (=\lambda'-\lambda)$	+ 1 09.889	✓
$\frac{\Delta\phi}{2}$	39.954 ✓		$\frac{\Delta\lambda}{2}$	34.944	✓
$\phi_m\left(=\phi+\frac{\Delta\phi}{2}\right)$	39 11 16.035 ✓				
$\Delta\phi$ (secs.)	79.908 ✓		$\Delta\lambda$ (secs.)	+ 69.889	✓
log $\Delta\phi$	1.902 5903 ✓		**log** $\Delta\lambda$	1.844 4088	✓
cor. arc−sin			cor. arc−sin		
log $\Delta\phi_1$	1.902 5903 ✓		log $\Delta\lambda_1$	1.844 4088	✓
log cos $\frac{\Delta\lambda}{2}$	1.489 0867 ✓		**log cos** ϕ_m	9.889 3461	✓
colog B_m			**colog** A_m	1.490 8610	✓
log $\{s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\}$			**log** $\{s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\}$	+3.224 6159	✓
log $\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\}$	3.391 6770 − (opposite in sign to $\Delta\phi$)		**log** $\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\}$	+3.391 6770	✓
log $\Delta\lambda$	1.844 4088 ✓	3 log $\Delta\lambda$	**log tan** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	+ 9.832 9389	
log sin ϕ_m	9.800 6236	log F	$\alpha+\frac{\Delta\alpha}{2}$	34-14-31.5	✓
log sec $\frac{\Delta\phi}{2}$		log b	**log sin** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.750 2697	✓
log a	1.645 0324 +		**log cos** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.917 3309	✓
a	44.160 ✓		**log** s_1	3.474 3467	✓
b			cor. arc−sin	+	
$-\Delta\alpha$ **(secs.)**	44.160+ ✓		log s	3.474 3467	✓ ✓
$-\frac{\Delta\alpha}{2}$	22.080+				
$\alpha+\frac{\Delta\alpha}{2}$	34 - 14 - 31.5 ✓				
α (1 to 2)	34 - 14 - 53.6 ✓				
$\Delta\alpha$	− 44.1 ✓				
	180				
α' (2 to 1)	214 - 14 - 09.4 ✓	Whale to Flagpole.			

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

Flag pole to whale

NOTE.—For log s up to 4.52 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 10', 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 6 decimal places. 11—9810

U. S. GOVERNMENT PRINTING OFFICE: 1931

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			

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 662
Rev. April, 1931

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	39-13-35.271"	Curve	λ	74°-38'-20.608"	
2. ϕ'	39-15-43.470	Large Stack	λ'	74-36-26.773	
$\Delta\phi\ (=\phi'-\phi)$	+ 2-08.199		$\Delta\lambda\ (=\lambda'-\lambda)$	- 1-53.835	
$\frac{\Delta\phi}{2}$	64.099		$\frac{\Delta\lambda}{2}$		
$\phi_m\left(=\phi+\frac{\Delta\phi}{2}\right)$	39-14-39.370				
$\Delta\phi$ (secs.)	128.199		$\Delta\lambda$ (secs.)	113.835	
log $\Delta\phi$	2.107 8846		**log** $\Delta\lambda$	-2.056 2757	
cor. arc−sin			cor. arc−sin		
log $\Delta\phi_1$	2.107 8846		log $\Delta\lambda_1$	2.056 2757	
log cos $\frac{\Delta\lambda}{2}$			**log cos** ϕ_m	9.888 9966	
colog B_m	1.489 0910		**colog** A_m	1.490 8624	
log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	3.596 9756	(opposite in sign to $\Delta\phi$)	**log** $\left\{s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	-3.436 1347	
			log $\left\{s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right\}$	-3.596 9756	
log $\Delta\lambda$	2.056 2757	3 log $\Delta\lambda$	**log tan** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.839 1591	
log sin ϕ_m	9.801 1484	log F	$\alpha+\frac{\Delta\alpha}{2}$	214-37-29.26	
log sec $\frac{\Delta\phi}{2}$		log b	**log sin** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.754 5011	
			log cos $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.915 3419	
log a	1.857 4241				
a	72.015 m		**log** s_1	3.681 6336	
b			cor. arc−sin	+	
$-\Delta\alpha$ **(secs.)**	72.0 m		log s		
$-\frac{\Delta\alpha}{2}$	36.0 m				
$\alpha+\frac{\Delta\alpha}{2}$	214-37-29.26				
α **(1 to 2)**	214-36-53.26	Curve to L. Stack			
$\Delta\alpha$	1-12.0				
	180				
α' **(2 to 1)**	34-38-05.26	L. Stack to Curve.			

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

NOTE.—For log s up to 4.52 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 10′, 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 6 decimal places. 11—9810

U. S. GOVERNMENT PRINTING OFFICE: 1931

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			

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 662
Rev. April, 1931

INVERSE POSITION COMPUTATION

Curve to Strathmere
25-54-51.95
3.533 9857

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

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

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

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	39°-13-35.271"	Curve	λ	74°-38-20.608"
2. ϕ'	39-11-55.989	Flagpole.	λ'	74-39-22.591
$\Delta\phi\ (=\phi'-\phi)$	− 1-39.282		$\Delta\lambda\ (=\lambda'-\lambda)$	+ 1-01.983
$\frac{\Delta\phi}{2}$	49.641		$\frac{\Delta\lambda}{2}$	30.992
$\phi_m\left(=\phi+\frac{\Delta\phi}{2}\right)$	39-12-45.630			
$\Delta\phi$ (secs.)	99.282		$\Delta\lambda$ (secs.)	61.983
log $\Delta\phi$	1.9968705		**log** $\Delta\lambda$	1.7922726
cor. arc−sin			cor. arc−sin	
log $\Delta\phi_1$	1.9968705		log $\Delta\lambda_1$	1.7922726
log cos $\frac{\Delta\lambda}{2}$			**log cos** ϕ_m	9.8891923
colog B_m	1.4890885		**colog** A_m	1.4908617
log $\left[s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right]$	3.4859590	(opposite in sign to $\Delta\phi$)	**log** $\left[s_1 \sin\left(\alpha+\frac{\Delta\alpha}{2}\right)\right]$	+3.1723266
			log $\left[s_1 \cos\left(\alpha+\frac{\Delta\alpha}{2}\right)\right]$	+3.4859590
log $\Delta\lambda$	1.7922726 | 3 log $\Delta\lambda$		**log tan** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	+9.6863676
log sin ϕ_m	9.8008549 | log F		$\alpha+\frac{\Delta\alpha}{2}$	25°-54-21.0"
log sec $\frac{\Delta\phi}{2}$	| log b		**log sin** $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.6403755
			log cos $\left(\alpha+\frac{\Delta\alpha}{2}\right)$	9.9540076
log a	1.5931275		**log** s_1	3.5219517
a	39.185		cor. arc−sin	+
b			log s	3.5219517
$-\Delta\alpha$ **(secs.)**	+ 39.185			
$-\frac{\Delta\alpha}{2}$	+ 19.597			
	25°-54-21.0			
$\alpha+\frac{\Delta\alpha}{2}$				
α (1 to 2)	25-54-40.59			
$\Delta\alpha$	− 39.18			
	180			
α' (2 to 1)	N05 54 01.41	Flagpole to Curve.		

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

Curve to Flagpole

NOTE.—For log s up to 4.52 and for $\Delta\phi$ or $\Delta\lambda$ (or both) up to 10', 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 6 decimal places. 11—9810

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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			

DEPARTMENT OF COMMERCE
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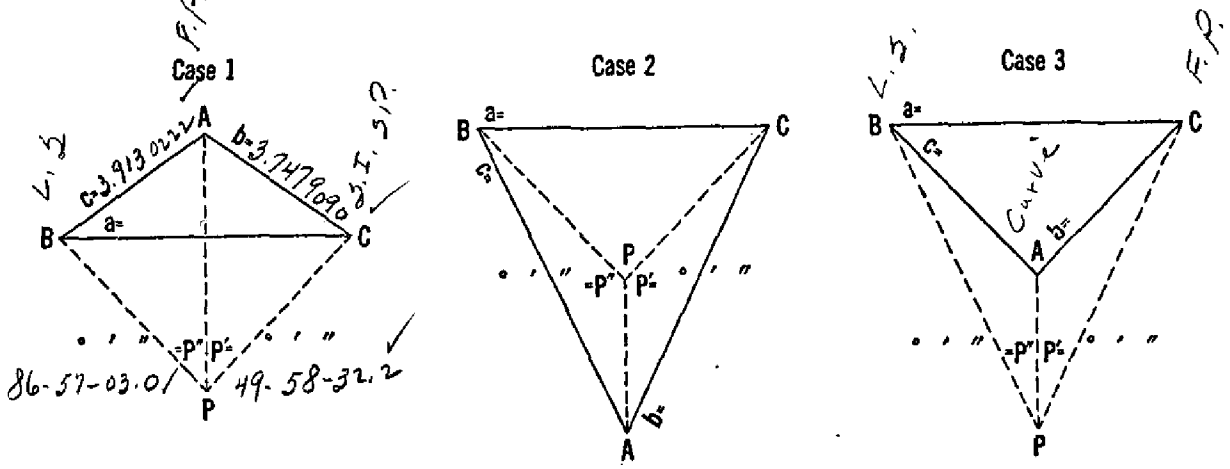
Form 655
Ed. Sept., 1929

F 1

COMPUTATION OF THREE-POINT PROBLEM



Cases 1 and 2		Case 3	
P′	49-58-32.2	P′	
P″	86-57-03.0	P″	
A	176-57-15.7		
Sum	313 52 50.9	Sum A	
½ Sum	156-56-25.4		
S=180°−½ sum=	23-03-34.6	S=½ (A−sum)=	A−sum
Log c =	3.9130222		
Log sin P′ =	9.8840988		
Colog b =	6.2520910		
Colog sin P″ =	0.0006153		
Sum=log tan Z=	0.0498273		
Z=	48-16-46.7		
Z+45°=	93-16-46.7		
Log cot (Z+45°) =	− 8.7581781		
Log tan S =	+ 9.6291069		
Sum=log tan ϵ=	8.3872850 (sign −)		
ϵ	1-23-50.6		
S	23-03-34.6		

(Tan ϵ+)		(Tan ϵ−)
S+ϵ=angle ABP	21-39-44.0	S−ϵ=angle ABP
S−ϵ=angle ACP	24-27-25.2	S+ϵ=angle ACP

BPA	86-57-03.0	APC	49-58-32.2	PCB	
ABP	21-39-44.0	PCA	24-27-25.2	CBP	
PAB	71-23-13.0	CAP	105 34-02.6	BPC	
	180 00 00.0		180 00 00.0		

(For explanation of this form see Special Publication No. 138, pages 191 and 192, or Special Publication No. 145, pages 98–100)

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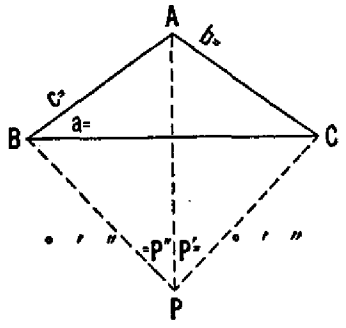
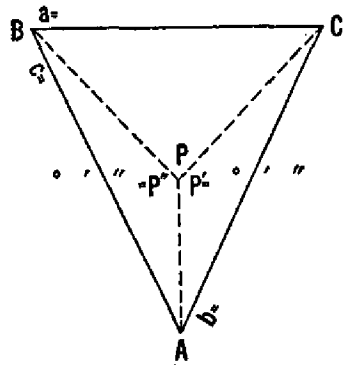
F 2

COMPUTATION OF THREE-POINT PROBLEM

Case 1



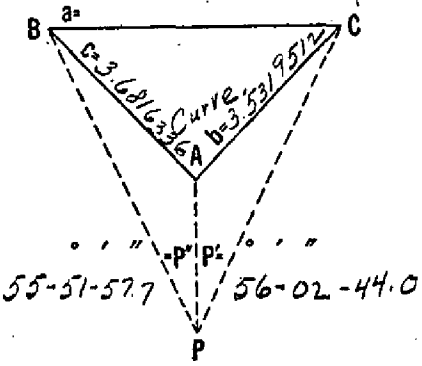
Case 2



v. 2.

Case 3

F. P.



Cases 1 and 2

P' 56-02-44.0
P'' 55-51-57.7
A 171-17-47.3

Sum ~~283 12 29.0~~
½ Sum ~~141-36-14.5~~

S=180°−½ sum=

Case 3

P' 56-02-44.0
P'' 55-51-57.7

Sum 111-54-41.7
A 171-17-47.3

A−sum 59-23-05.6
S=½ (A−sum)= 29-41-32.8

Log c = 3.6816336
Log sin P' = 9.9188069
Colog b = 6.4680488
Colog sin P'' = 0.0821125
Sum=log tan Z = 0.1506018

Z= 54-44-27.5
Z+45°= 99-44-27.5

Log cot (Z+45°) = − 9.2346924
Log tan S = + 9.7560387

Sum=log tan ε = 8.9907311 (sign −)

ε 5-35-26.8
S 29-41-32.8

(Tan ε+)
S+ε=angle ABP
S−ε=angle ACP

(Tan ε−)
S−ε=angle ABP
S+ε=angle ACP

BPA	55-51-57.7	APC	56-02-44.0	PCB	
ABP	24-06-06.0	PCA	35 16 59.6	CBP	
PAB	100-01-56.3	CAP	88-40-16.4	BPC	
	180 00 00.0		180 00 00.0		

(For explanation of this form see Special Publication No. 138, pages 191 and 192, or Special Publication No. 145, pages 98–100)

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U. S. COAST AND GEODETIC SURVEY
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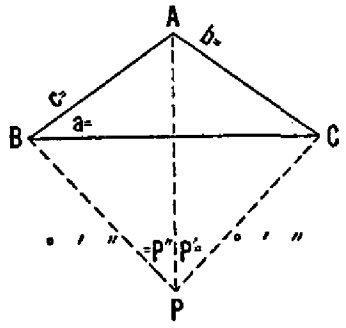
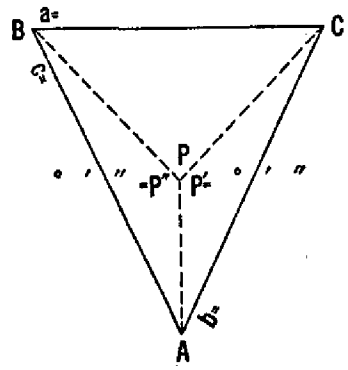
P3

COMPUTATION OF THREE-POINT PROBLEM

Case 1

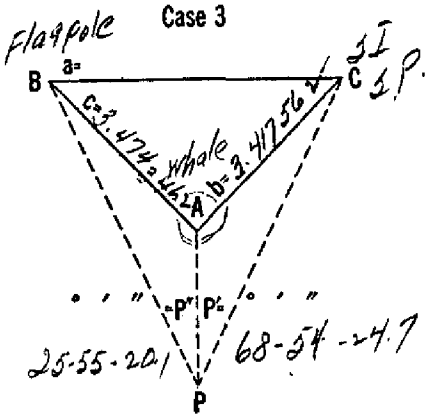


Case 2



Flagpole

Case 3



Cases 1 and 2		Case 3	
P'		P'	68-54-24.7 ✓
P''		P''	25-55-20.1 ✓
A			94-49-44.8 ✓
		Sum A	179-33-29.5 ✓
Sum			
½ Sum			
		A − sum	84-43-44.7
S = 180° − ½ sum =		S = ½ (A − sum) =	42-21-52.3
Log c =	3.4743446 ✓		
Log sin P' =	9.9698800		
Colog b =	6.5824438 ✓		
Colog sin P'' =	0.3593685 ✓		
Sum = log tan Z =	0.3860327 ✓		
Z =	67-39-05.5		67-39-05.5
Z + 45° =	112-39-05.5		
Log cot (Z+45°) =	− 9.6204644		
Log tan S =	9.9599905		
Sum = log tan ε =	9.5804549 (sign −)		
ε	20-50-10.4		
S	42-21-52.3		

(Tan ε +)	(Tan ε −)
S + ε = angle ABP	S − ε = angle ABP
S − ε = angle ACP	S + ε = angle ACP

BPA	25-55-20.1	APC	68-54-24.7	PCB	
ABP	21-31-41.9	PCA	63-12-02.7	CBP	
PAB	132-33-58.0	CAP	47-53-32.6	BPC	
	180-00-00.0		180-00-00.0		

(For explanation of this form see Special Publication No. 138, pages 191 and 192, or Special Publication No. 145, pages 98–100)

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11—0012

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
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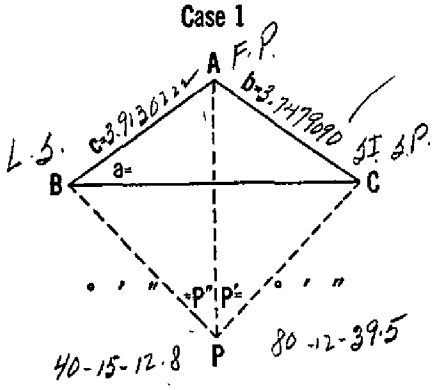
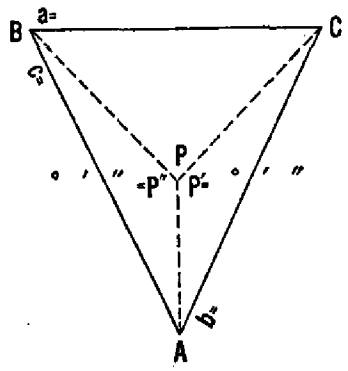
P4

COMPUTATION OF THREE-POINT PROBLEM

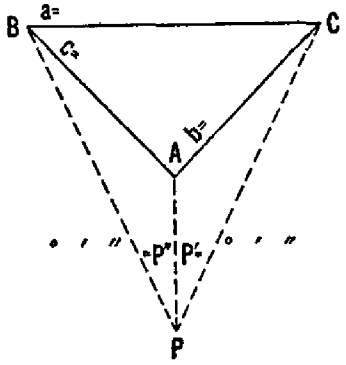
Case 1



Case 2



Case 3



Cases 1 and 2		Case 3	
P'	80-12-39.5 ✓	P'	
P"	40-15-12.8 ✓	P"	
A	176-57-15.7 ✓		
Sum	297-45-08.0 ✓	Sum	
½ Sum	148-42-34.0 ✓	A	
S=180°−½ sum =	31-17-26.0 ✓	A−sum	
		S=½ (A−sum) =	
Log c =	3.9130222 ✓		
Log sin P' =	9.9936304 ✓		
Colog b =	6.2520910 ✓		
Colog sin P" =	0.1896523 ✓		
Sum=log tan Z=	0.3483959 ✓		
Z=	65-51-05.8 ✓		
Z+45° =	110-51-05.8 ✓		
Log cot (Z+45°) =	−9.5808058 ✓		
Log tan S =	+9.7837491 ✓		
Sum=log tan ϵ =	9.3645549 ✓ (sign −)		
ϵ	13-02-04.1 ✓		
S	31-17-26.0 ✓		

(Tan ϵ+)	(Tan ϵ−)
S+ϵ=angle ABP	S−ϵ=angle ABP
S−ϵ=angle ACP	S+ϵ=angle ACP

BPA 40-15-12.8 ✓	APC 80-12-39.5 ✓	PCB
ABP 18-15-21.9 ✓	PCA 44-19-30.1 ✓	CBP
PAB 121-29-25.3	CAP 55-27-50.4	BPC
180-00-00.0	180-00-00.0	

(For explanation of this form see Special Publication No. 138, pages 191 and 192, or Special Publication No. 145, pages 98–100)

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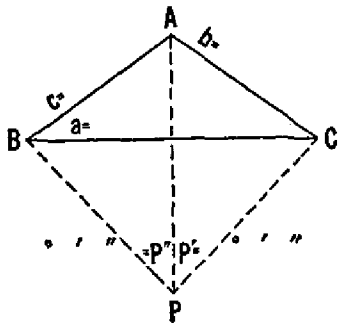
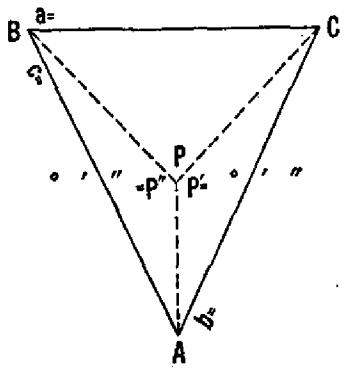
COMPUTATION OF THREE-POINT PROBLEM

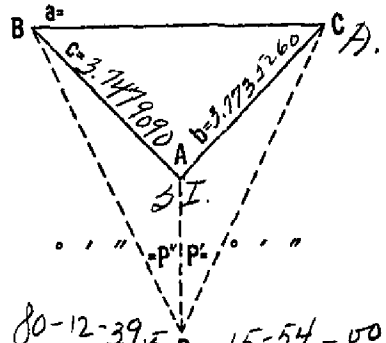
Case 1



Case 2



F.P. Case 3



Cases 1 and 2		Case 3	
P′		P′	15-54-00
P″		P″	80-12-39.5
A		Sum	96 06 39.5
Sum		A	164-01-58.3
½ Sum		A − sum	67-55-18.8
S = 180° − ½ sum =		S = ½ (A − sum) =	33-57-39.4

Log c =	3.747 9090
Log sin P′ =	9.437 6859
Colog b =	6.226 4740
Colog sin P″ =	0.000 3696
Sum = log tan Z =	9.418 4385
Z =	14-41-09.4
Z + 45° =	59-41-09.4
Log cot (Z + 45°) =	+ 9.766 9197
Log tan S =	+ 9.828 3487
Sum = log tan ϵ =	9.595 2684 (sign +)
ϵ	21-29-39.0
S	33-57-39.4

(Tan ϵ +)	(Tan ϵ −)
S + ϵ = angle ABP	S − ϵ = angle ABP
S − ϵ = angle ACP	S + ϵ = angle ACP

BPA	80-12-39.5	APC	15-54-00	PCB	
ABP	55-27-18.4	PCA	12-28-00.4	CBP	
PAB	44-20-02.1	CAP	151-37-59.6	BPC	
	180-00-00.0		180 00 000		

(For explanation of this form see Special Publication No. 138, pages 191 and 192, or Special Publication No. 145, pages 98–100)

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 25
Ed. Jan., 1929

COMPUTATION OF TRIANGLES

State: _____

11—0121

NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3						3.913 0222 ✓
	1 P.1	86-57-03.0	G.P.				0.000 6153 ✓
	2 L.S.	21-39-44.0					9.567 1841 ✓
	3 F.P.	71-23-13.0					9.976 6689
	1-3					—	3.480 8216
	1-2						3.890 3064
	2-3						3.747 9090 ✓
	1 P.1	49-58-32.2 ✓					0.115 9013 ✓
	2 F.P.	105-34-02.6					9.983 1.685
	3 S.P.	24-27-25.2					9.617 0110 ✓
	1-3						3.847 5788
	1-2					—	3.480 8213
	2-3						3.681 6336
	1 P2	55-51-57.7					0.082 11 25
	2 L.S	24-06-06.0					9.611 0400
	3 Curve	100-01-56.3					9.993 3082
	1-3						3.374 7861
	1-2						3.757 0543
	2-3						3.531 9512 ✓
	1 P2	56-02-44.0		G.P.			0.081 1931
	2 Curve	88-40-16.4					9.999 8832
	3 F.P.	35-16-59.6					9.761 6412 ✓
	1-3						3.613 0275
	1-2					—	3.374 7855

Do not write in this margin

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 25
Ed. Jan., 1929

COMPUTATION OF TRIANGLES

State: _____

11—9121

NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3						3.9130222
	1 PY	40-15-12.8					0.1896523
	2 L.S	18-15-21.9					9.4955114
	3 F.P	121-29-25.3					9.9308105
	1-3					—	3.5985859
	1-2						4.0334850
	2-3						3.7479090
	1 PY	80-12-39.5					0.0063696
	2 F.P.	55-27-50.4		G.P.			9.9158061
	3 SI. SP.	44-19-30.1					9.8443080
	1-3						3.6700847
	1-2					—	3.5485866
	2-3						3.4743462 ✓
	1 P3	25-55-20.1	✓				0.3593685 ✓
	2 Flagpole	21-31-41.9					9.5646197 ✓
	3 Whale	132-32-58.0					9.8671712 ✓
	1-3					—	3.3983344 ✓
	1-2						3.7008859 ✓
	2-3						3.4173562 ✓
	1 P.3	68-54-24.7					0.0301200 ✓
	2 Whale	47-53-32.6		G.P.			9.8703377 ✓
	3 SI.C. S.P.	63-12-02.7					9.9506528 ✓
	1-3						3.3180197
	1-2					—	3.3983348

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DEPARTMENT OF COMMERCE
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Form 25
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COMPUTATION OF TRIANGLES

11—9121

State: _____

NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3						3.7479090
	1 P4	80-12-39.5					0.0063696
	2 F.P.	55-27-18.4					9.9157596
	3 SI.	44-20-02.1					9.8443770
	1-3						3.6700382
	1-2						3.5986556
	2-3						3.7735260
	1 P.4	15-54-00					0.5623141
	2 S.I.	151-37-59.6					9.6767975
	3 A.SP.	12-28-00.4					9.3342000
	1-3						4.0126376
	1-2						3.6706401
	2-3						
	1						
	2						
	3						
	1-3						
	1-2						
	2-3						
	1						
	2						
	3						
	1-3						
	1-2						

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DEPARTMENT OF COMMERCE
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Form 25
Ed. Jan., 1929

COMPUTATION OF TRIANGLES

11—9121

State: _____

NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3						3.495 4361
	1 Vinal	43-40-46.9					0.160 7570
	2 Whale	42-34-56.9					9.830 3646
	3 S.I.	93-44-16.2					9.999 0752
	1-3	180 00 00 0					3.486 5577
	1-2						3.655 2683
	2-3						3.495 4361
	1 P3	(82-50-07.5)					0.003 4043
	2 Whale	44-39-25					9.846 8691
	3 S.I.	52-30-27.5					9.899 5111
	1-3	180 00 00 0				2216.714	3.345 7095
	1-2					2502.37	3.398 3515
						2502.27	3.398 3344
	2-3						3.486 5577
	1 P3	(92-30-58.1)					0.000 4189
	2 S.I.	41-13-51.9					9.818 9497
	3 Vinal	46-15-10					9.858 7762
	1-3	180 00 00.0					3.305 9263
	1-2					2216.935	3.345 7528
	2-3						
	1						
	2						
	3						
	1-3						
	1-2						

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POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

		°	′	″
α	2 Strathmere to 3 R.M	29	46	20.9 / 21.1
2d ∠	&	+176	50	52.
α	2 " to 1 Flagpole.	206	37	13
Δα				
		180	00	00.0
α′	1 to 2			

		°	′	″
α	3 to 2			
3d ∠	&	−		
α	3 to 1			
Δα				
		180	00	00.0
α′	1 to 3			

First Angle of Triangle

	°	′	″			°	′	″
φ	39	11	55.526	2 Strathmere	λ	74	39	22.889
Δφ		+	.463	15.972	Δλ		−	.298
φ′	39	11	55.989	1 Flagpole	λ′	74	39	22.591

		°	′	″			°	′	″
φ				3	λ				
Δφ					Δλ				
φ′				1	λ′				

	Logarithms	Values in seconds
s	1.203359	1726.67
Cos α	9.951 3335	− (123.70)
B	8.510 912	
h	9.665 606	1st term . 4630
s²	2.40672	
Sin²α	9.30270	
C	1.31604	
	3.0755 4.6	2d term +
h²		
D	2.3833	
		3d term +
		−Δφ− .463

	°	′	″	Logarithms	Values in seconds
½(φ+φ′)	39-11-55.757				
s				1.203359	
Sin α				9.651.351	− 542.06
A′				8.509 139	(897.68)
Sec φ′				0.110 712	
Δλ				9.474 571	.298
Sin ½(φ+φ′)				9.800 725	
−Δα				9.275 296	.

	Logarithms	Values in seconds
s		
Cos α		
B		
h		1st term "
s²		
Sin²α		
C		
		2d term +
h²		
D		
		3d term +
		−Δφ

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

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POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

		°	′	″
α	2 Large Stack to 3 Flag Pole	31	01	37.3
2d ∠	Flag Pole & Pt. # 1	+ 21	39	44.0
α	2 Large Stack to 1 Pt. # 1	52	41	21.3
Δα			−	42.9
		180	00	00.0
α′	1 Pt # 1 to 2 Large Stack	352	38	38.3
		86	57	03.0
		319	35	41.3

FIRST ANGLE OF TRIANGLE

		°	′	″			°	′	″
φ	39	15	43.470	2 Large Stack	λ	74	36	26.773
Δφ		−7	32.761		Δλ		+ 4	17.548
φ′	39	13	10.709	1 Pt. # 1	λ′	74	40	44.321

	Logarithms	Values in seconds
s	3.890 306	33027 (1520.09)
Cos α	9.782 571	
B	8.510 908	
h	2.183785	1st term 152.6810
s²	7.78061	
Sin²α	9.80113	
C	1.31701	
	8.89875	2d term + .0797
h²	4.36761	
D	2.3835	
	6.7511	3d term +.0006
		−Δφ+ 152.761

	°	′	″
½(φ+φ′)	39	14	27.089

	Logarithms	Values in seconds
s	3.890 306	
Sin α	9.900 563	+ 1063.26 (375.94)
A′	8.509 138	
Sec φ′	0.110 851	
Δλ	2.410 858	257.5481
Sin ½(φ+φ′)	9.801 116	
−Δα	2.211974	162.92

		°	′	″
α	3 F.P to 2 L.S	210	59	46.1
3d ∠	&	− 71	23	13.0
α	3 F.P. to 1 P.1	139	36	33.1
Δα		−		51.7
		180	00	00.0
α′	1 P. to 3 F.P.	319	35	41.4

		°	′	″			°	′	″
φ	39	11	55.989	3 F.P.	λ	74	39	22.591
Δφ		+1	14.720		Δλ		1	21.730
φ′	39	13	10.709	1 P.#	λ′	74	40	44.321

	Logarithms	Values in seconds
s	3.480822	—
Cos α	9.881 751	
B	8.510 912	
h	1.873485	1st term 74.7283
s²	6.96164	
Sin²α	9.62314	
C	1.31604	
	7.90082	2d term + .0080
h²	3.7469	
D	1.3833	
	6.1302	3d term +.0001
		−Δφ− 74.720

	°	′	″
½(φ+φ′)	39	12	32.349

	Logarithms	Values in seconds
s	3.480822	
Sin α	9.811 573	+
A′	8.509 138	
Sec φ′	0.110 851	
Δλ	1.912384	81.7305
Sin ½(φ+φ′)	9.800 823	
−Δα	1.713207	51.666

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DEPARTMENT OF COMMERCE
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POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

			°	′	″
α	2 Curve	to 3 F.P.	25	54	40.6
2d ∠		&	+88	40	16.4
α	2 Curve	to 1 P.v	114	34	57.0
Δα				−	56.8
			180	00	00.0
α′	1 P.v	to 2 Curve	294	34	00.v
			56	0v	44.0
		FIRST ANGLE OF TRIANGLE	350	36	44.2

			°	′	″
α	3 F.P	to 2 Curve	205	54	01.4
3d ∠		&	−35	16	59.6
α	3 F.P	to 1 P.v	170	37	01.8
Δα				−	17.6
			180	00	00.0
α′	1 P.v	to 3 F.P.	350	36	44.2

	°	′	″			°	′	″			°	′	″
φ	39	13	35.271	2 Curve	λ	74	38	20.608	φ	39	11	55.989	3 F.P.	λ	74	39	22.591
Δφ		+	31.964	3.374786	Δλ		+1	29.869	Δφ		+v	11.246	3.613028	Δλ		+	27.886
φ′	39	14	07.235	1 P.v	λ′	74	39	50.477	φ′	39	14	07.235	1 P.v	λ′	74	39	50.477

	Logarithms	Values in seconds
s	3.374786	−223.1v
Cos α	9.619096	(1627.26) ć
B	8.510910	
h	1.504792	1st term 31.9736
s²	6.749574	
Sin²α	9.991747	
C	1.316420	
	7.98346	2d term +.0096
h²	3.4991	
D	2.3835	
	5.7826	3d term +—
		−Δφ 31.964

	°	′	″
½(φ+φ′)	39	13	51.253

	Logarithms	Values in seconds
s	3.374786	
Sin α	9.958727	+1210.63
A′	8.509138	(228.40)
Sec φ′	0.110948	
Δλ	1.953609	89.8688
Sin ½(φ+φ′)	9.801024	
−Δα	1.754633	56.837

	Logarithms	Values in seconds
s	3.613028	—
Cos α	9.994150	
B	8.510912	
h	2.118090	1st term 131.2472
s²	7.226058	
Sin²α	8.424453	
C	1.316040	
	6.966620	2d term +.0009
h³	4.236v	
D	2.2833	
	6.6195	3d term +.0004
		−Δφ 131.246

	°	′	″
½(φ+φ′)	39	13	01.6v

	Logarithms	Values in seconds
s	3.613028	+
Sin α	9.212268	
A′	8.509138	
Sec φ′	0.110948	
Δλ	1.445382	27.8857
Sin ½(φ+φ′)	9.800896	
−Δα	1.246v78	17.63

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POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

			°	′	″
α	2 Whale	to 3 J. P.	33	47	38.9
2d ∠		&	+47	53	32.6
α	2 "	to 1 P. 3	81	41	11.5
Δα					
			180	00	00.0
α′	1 P. 4	to 2 Whale			

			°	′	″
α	3 J. P.	to 2 Whale	213	47	00.6
3d ∠		&	−63	12	02.7
α	3 J. P.	to 1 P 3	150	34	57.9
Δα					
			180	00	00.0
α′	1 P. 4	to 3 J. P.			

First Angle of Triangle

	°	′	″			°	′	″
						68	54	24.7
φ	39	10	36.081	2 Whale	λ	74	40	32.480
Δφ		−	11.745	3.398335	Δλ		+1	43.146
φ′	39	10	24.336	1 P 3	λ′	74	41	15.626

	°	′	″			°	′	″
φ	39	09	25.591	3 J. P.	λ	74	41	33.071
Δφ		+	58.745	3.318020	Δλ		+	42.555
φ′	39	10	24.336	1 P 3	λ′	74	42	15.626

	Logarithms	Values in seconds
s	3.398335	750.51 −
Cos α	9.160130	+ (1099.86)′
B	8.510914	
h	1.069379	1st term 11.7327
s²	6.79867	
Sin²α	9.99082	
C	1.31571	
	8.10520	2d term +.0127
h²	2.1387	
D	2.3832	
	4.5219	3d term +
		−Δφ 11.745

	°	′	″
½(φ+φ′)	39	10	30.2

	Logarithms	Values in seconds
s	3.398335	375.10
Sin α	9.995412	+ (1065.20)
A′	8.509139	
Sec φ′	0.110565	
Δλ	2.013451	103.146
Sin ½(φ+φ′)	9.800505	
−Δα	1.813956	65.156

	Logarithms	Values in seconds
s	3.318020	
Cos α	9.940051	−
B	8.510915	
h	1.768986	1st term 58.7470
s²	6.63604	
Sin²α	9.38246	
C	1.31540	
	7.33390	2d term +.0022
h²	3.5380	
D	2.3832	
	5.9212	3d term +
		−Δφ − 58.745

	°	′	″
½(φ+φ′)	39	09	54.96

	Logarithms	Values in seconds
s	3.318020	
Sin α	9691 230	+
A′	8.509 139	
Sec φ′	0.110 565	
Δλ	1.628954	42.5553
Sin ½(φ+φ′)	9.800414	
−Δα	1.439368	26.87

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POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

				°	′	″
α	2 F.P.	to 3	J. I.	34	02	30.4
2d ∠		&		+55	27	18.4
α	2 F.P.	to 1	P.4	89	29	48.8
Δα					−1	44.5
				180	00	00.0
α′	1 P.4	to 2	F.P.	269	28	043

				°	′	″
α	3 J.I.	to 2	F.P.	214	01	07.54
3d ∠		&		−44	20	02.1
α	3 J.I.	to 1	P.4	169	41	05.4
Δα					−	22.0
				180	00	00.0
α′	1 P.4	to 3	J.I.	349	40	43 5

First Angle of Triangle

	°	′	″			λ	°	′	″
φ	39	11	55.989	2	F.P.	λ	74	39	22.591
Δφ		−	1.163	3.598656		Δλ		+2	45.386
φ′	39	11	54.826	1	P.4	λ′	74	42	07977

	°	′	″			λ	°	′	″
φ	39	09	25.591	3	J.I.	λ	74	41	33.071
Δφ		+2	29.236	3.670038		Δλ		+	34.906
φ′	39	11	54.827	1	P.4	λ′	74	42	07977

	Logarithms	Values in seconds
s	3.598656	
Cos α	7.943536	+
B	8.510912	
h	0.053104	1st term 113″07
s²	7.19731	
Sin² α	9.99996	
C	1.31606	
	8.51353	2d term +.0326
h²		
D	2.3833	
		3d term +
		−Δφ T 1.162

	°	′	″	Logarithms	Values in seconds
½(φ+φ′)	39-11-55.4				
s				3.598656	
Sin α				9.999983	+
A′				8.509139	
Sec φ′				0.110721	
Δλ				2.218499	165386
Sin ½(φ+φ′)				9800724	
−Δα				2.019223	104.52

	Logarithms	Values in seconds
s	3.670038	
Cos α	9.992923	−
B	8.510916	
h	2.173877	1st term 149″37
s²	7.34007	
Sin² α	8.50601	
C	1.31340	
	7.16148	2d term +.001
h²		
D	2.3832	
		3d term +
		−Δφ− 149.236

	°	′	″	Logarithms	Values in seconds
½(φ+φ′)	39-10-40.2				
s				3670038	
Sin α				1.253005	+
A′				8.509139	
Sec φ′				0.110721	
Δλ				1.542903	34.9063
Sin ½(φ+φ′)				9800530	
−Δα				1.343433	22.05

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POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

			°	′	″
α	2 F.P. to 3 J.I. SP.		34	0V	30.4
2d ∠	&		+55	27	50.4
α	2 " " to 1 PK		89	30	V0.8
Δα				−1	44.5
			180	00	00.0
α′	1 PK to 2 F.P.		V69	V8	363
	FIRST ANGLE OF TRIANGLE		80 349	12 41	39.5 17.8

	°	′	″			°	′	″
φ	39	11	53.989	2 F.P.	λ	74	39	22.591
Δφ		−	1.14V	3.598581.6	Δλ		+V	45.360
φ′	39	11	54.847	1 PK	λ′	74	4V	07.951

	Logarithms	Values in seconds
s	3.598587	1691.46
Cos α	7.935794	+ (158.91)
B	8.510917	
h	0.045293	1st term 110.99
s²	7.19717	
Sin²α	9.99996	
C	1.31604	
	8.51317	2d term +.0326
h²	0.0906	
D	2.3833	
	~	3d term + ~
		−Δφ + 1.14V

	°	′	″	Logarithms	Values in seconds
½(φ+φ′)	39	11	55.4		
s				3.598587	190.77
Sin α				9.999984	+ (1248.87)
A′				8.509139	
Sec φ′				0.110721	
Δλ				V.V18431	165.360
Sin ½(φ+φ′)				9.800725	
−Δα				V.01915 6	104.5

	°	′	″			°	′	″
α	3 JI. SP	to 2 F.P.		214	01	07.5
3d ∠	&			−44	19	30.1
α	3 "	to 1 PK.		169	41	37.4
Δα					−	22.0
				180	00	00.0
α′	1 PK	to 3 JI. SP.		349	41	15.4

	°	′	″			°	′	″
φ	39	09	25.591	3 JI. SP.	λ	74	41	33.071
Δφ		+V	29.256		Δλ		+	34.880
φ′	39	11	54.847	1 PK	λ′	74	4V	07.951

	Logarithms	Values in seconds
s	3.670085	—
Cos α	9.99V936	
B	8.510916	
h	V.173937	1st term 149.2578
s²	7.34017	
Sin²α	8.50526	
C	1.31539	
	7.16087	2d term +.0014
h²	4.3478	
D	2.3832	
	6.7310	3d term +.0005
		−Δφ − 149.256

	°	′	″	Logarithms	Values in seconds
½(φ+φ′)	39	10	40.V		
s				3.670085	
Sin α				9.25V634	+
A′				8.509139	
Sec φ′				0.110721	
Δλ				1.54V579	34.880V
Sin ½(φ+φ′)				9.800532	
−Δα				1.343111	V2.03

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POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

			°	′	″
α	2 Whale	to 3 J. I	37	01	17.6
2d ∠		&	+ 47	34	56.9
α	2 Whale	to 1 View	79	36	14.5
Δα				− 1	57.0
			180	00	00.0
α′	1 View	to 2 Whale	259	34	17 5

First Angle of Triangle: 43 40 46.9 − 38 25 15 04.4

	°	′	″			°	′	″
φ	39	10	36.081	2 Whale	λ	74	40	32.480
Δφ		−	26.498	3.655 2683	Δλ		+ 3	05.250
φ′	39	10	09.583	1 View	λ′	74	43	37.730

	Logarithms	Values in seconds
s	3.655 268	295.53 + (1554.84)
Cos α	9.256 355	
B	8.510 914	
h	1.422 537	1st term 26.″568
s²	7.310 53	
Sin²α	9.985 62	
C	1.315 67	
	8.611 82	2d term + .0409
h²	2.8450	
D	2.3832	
	5.2282	3d term + —
		−Δφ+ 26.498

	°	′	″
½(φ+φ′)	39	10	22.83

	Logarithms	Values in seconds
s	3.655 268	
Sin α	9.992 811	+ 905.77 (534.59)
A′	8.509 139	
Sec φ′	0.110 540	
Δλ	2.267 758	185.″250
Sin ½(φ+φ′)	9.800 486	
−Δα	2.068 244	117.01

						°	′	″
α	3 J. F.	to 2 Whale				217	00	28.1
3d ∠		&				− 93	44	16.2
α	3 J. F.	to 1 View				123	16	11.9
Δα							− 1	07.4
						180	00	00.0
α′	1 View	to 3 J. I.				303	15	04.5

	°	′	″			°	′	″
φ	39	09	15.057	3 J. I.	λ	74	41	50.950
Δφ		+	54.527	3.486 5577	Δλ		+ 1	46.781
φ′	39	10	09.584	1 View	λ′	74	43	37.731

	Logarithms	Values in seconds
s	3.486 558	—
Cos α	9.739 244	
B	8.510 916	
h	1.736 718	1st term 54.″404
s²	6.972 11	
Sin²α	9.844 51	
C	1.315 26	
	8.132 98	2d term + .0134
h²	3.4734	
D	2.3832	
	5.8566	3d term + —
		−Δφ− 54.527

	°	′	″
½(φ+φ′)	39	09	42.32

	Logarithms	Values in seconds
s	3.486 558	
Sin α	9.922 255	+
A′	8.509 139	
Sec φ′	0.110 540	
Δλ	2.018 493	106.″781
Sin ½(φ+φ′)	9.800 381	
−Δα	1.818 873	67.433

11—9382 U. S. GOVERNMENT PRINTING OFFICE 1936

	Remarks	Decisions
1		
2		
3		
4		drop s
5		
6		
7		Add s Note - This is name of settlement
8		
9		
10		
11		
12		
13		Drop S
14	App'd 4/16/38	Hold for later decision - Not app.
15		
16		on adjoining sheet
17		
18		
19	"Upland Thoro." on (T-2054 aH)	
20	Called "Blackman I" on Prog. Mil. Map "SEA ISLE" "Blackmans I" on T-2054 (1891) First used on USCGS sheet	
21	* Upper End is called "Beach Thoro."	
22	Called Pecks Beach on USGS "SEA ISLE" " PECK BEACH on " "GREAT EGG HARBOR" & Proj. Mil. Map. "Pecks Beach" used for Δ on T-2054	
23		
24		
25		
26		

GEOGRAPHIC NAMES

Survey No. T-5642

Name on Survey	A On Chart No. 1217	B On previous survey No. T-147	C On U.S. quadrangle Maps	D From local information T-174	E State of N.J. On local Maps Cons & Devel Nos 36, 37	F P.O. Guide or Map	G Rand McNally Atlas	H City Engr Map of Ocean City File T-5642	K B.P. 14914	
Rock Point	✓	✓	✓		✓					1
Tuckahoe River	Tuckahoe R.	✓	✓		✓					2
Willis Thorofare	✓		✓		—					3
Joby Creek			Job Cr.		✓					4
Schooner Creek			✓		✓					5
Flat Creek			✓		—					6
Beesleys Point	✓	Beesley's Pt.	✓		Beesley's Pt.	Beesley's Pt (the P.O.)	Beesley's Pt (settlement)		Beesley's Pt.	7
Eddy Creek			✓		✓					8
Peck Bay	✓	Peck's Bay	✓		Peck's Bay					9
Back Thorofare	✓	✓	✓		✓			Beach Thoro.		10
Marmora					✓	✓	✓			11
Mill Creek					✓					12
Miller Creek			Miller Cr.		✓					13
Ben Elders Creek			Ben's Elders Cr.		✓					14
Atlantic Ocean			✓							15
Palerma	✓		✓		—					16
Crook Horn Creek	✓	Main Thoro.	✓	✓	✓			Crook Horn Creek		17
Run Creek			✓		✓					18
Upland Thorofare		Land Thoro.	✓		—					19
Blackman Island	✓		Blackmans Island		Blackmans Id.				Blackmans Id.	20
Beach Creek	✓	Beach Thoro.	✓		—			✓ see *	✓	21
Peck Beach	✓		✓		Pecks Beach				Pecks Beach	22
Corson Sound	✓	Corsons Sd.	✓		Corsons Sd					23
Devils Island	✓			H-2165						24
Middle Thorofare	Main Thoro.	✓	✓		✓					25
Weakfish Creek		Main Thoro.	✓		✓					26
Corson Inlet	✓	Corsons Inlet	✓		Corsons Inlet					27

M 234

	Remarks	Decisions
1		
2		filled in - no creek
3		drops
4		unimportant not a thoro fare.
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		

M 234

GEOGRAPHIC NAMES

Survey No. T-5642

Name on Survey	A	On Chart No. B	On previous survey No. T-147 C	On U.S. quadrangle Maps D	~~Previously~~ H-2165 information E	On local Maps N.J. No. 36, 37 F	P.O. Guide or Map G	~~Previously~~ T-2054 H	U.S. Light List K	BP 149/4
										1
Hubbard Creek			✓		Hubbards Cr.					2
Edward's Creek		✓					✓			3
Edward's Thara.		✓					✓			4
										5
Devils Thorofare				✓					✓	6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26
										27

not in existence

Names underlined in red approved
by GYE on 12/12/36

M 234

M-350

T-5642

PLANE COORDINATE GRID SYSTEM

Positions of grid intersections used for fitting the grid to this compilation were computed by Division of Geodesy and the computation forms are included in this report.

Positions plotted by R. E. Ask

Positions checked by R. E. Ask

Grid inked on machine by R. E. Ask

Intersections inked by W. H. Schleiter

Points used for plotting grid:

x 2,000,000 ft y 140,000	x 2,015,000 y 140,000
x 2,015,000 y 155,000	x 2,015,000 y 170,000
x 2,000,000 y 155,000	x y
x 2,000,000 y 170,000	x y

Triangulation stations used for checking grid:

X = 2,010,155.47' y = 163,845.12'

1. Beesleys 1935 (Field pos.) (ref. sta.)
2. Marmora 1932
3. Stack, large 1932
4. Sunoco 1932
5. Curve 1932
6.
7.
8.

Form No. 743
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1945

T-5642

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION

x	2,000,000.00	$\log S_g$	-∞.
K	2,000,000.00	$\log (1200/3937)$	9.4840158 3
x' $(=x-K)$	0.00	$\log (1/R)$	1086
$x'^3/(6\rho_o^2)_g$	— 0.00	$\log S_m$	-∞.4840266 9
S_g	0.00	cor. arc to sine	— 0
		$\log S_1$	-∞.4840266 9
3 log x'	-∞.	$\log A$	8.5041359 5
$\log 1/(6\rho_o^2)_g$	4.5610213	$\log \sec \phi$	0.1108338 8
$\log x'^3/(6\rho_o^2)_g$	-∞.5610213	$\log \Delta\lambda_1$	-∞.1039965 2
		cor. sine to arc	+ 0
$\log S_m^2$	-∞.9680533 8	$\log \Delta\lambda$	-∞.1039965 2
$\log C$	1.3163333	$\Delta\lambda$	0
$\log \Delta\phi$	-∞.2843866		
y	140,000.00		
ϕ' (by interpolation)	39° 13′ 03.8223″	λ (central mer.)	74° 40′ 00.0000″
$\Delta\phi$	— 0.0	$\Delta\lambda$	0.
ϕ	39 13 03.8223	λ	74 40 00.0000
	11.79 mm		

Explanation of form:

$x'=x-K$

$S_g=x'-\frac{x'^3}{(6\rho_o^2)_g}$

$S_m=\frac{1}{R}\left(\frac{1200}{3937}\right)S_g$

R=scale reduction factor

ϕ' is interpolated from table of y

$\Delta\phi=C\,S_m^2$

$\phi=\phi'-\Delta\phi$

$\Delta\lambda_1=S_1 A \sec\phi$

$\log S_1=\log S_m-$cor. arc to sine

$\log \Delta\lambda=\log \Delta\lambda_1+$cor. arc to sine

$\lambda=\lambda$ (central mer.)$-\Delta\lambda$

U. S. GOVERNMENT PRINTING OFFICE 11—11621

T-5642

Form No. 743
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1935

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION

x	2,015,000.00	$\log S_g$	4.176049126
K	2,000,000.00	$\log (1200/3937)$	9.484015833
x' $(=x-K)$	+15,000.00	$\log (1/R)$	.1086
$x'^3/(6\rho_o^2)_g$	−.00	$\log S_m$	4.660117995
S_g	+15,000.00	cor. arc to sine	−4
		$\log S_1$	3.660117991
3 log x'	12.528273278	$\log A$	4.509137116
$\log 1/(6\rho_o^2)_g$	4.581021 3	$\log \sec \phi$	0.111093691
$\log x'^3/(6\rho_o^2)_g$	7.109295 1	$\log \Delta\lambda_1$	2.280348998
		cor. sine to arc	+6
$\log S_m^2$	4.320235990	$\log \Delta\lambda$	2.280349004
$\log C$	1.316966	$\Delta\lambda$	190.6993
$\log \Delta\phi$	8.637202		
y	155,000.00		
ϕ' (by interpolation)	39° 15′ 32.0835″	λ (central mer.)	74° 40′ 00.0000″
$\Delta\phi$	−.1043 4	$\Delta\lambda$	−3′ 10.6993
ϕ	39 15 32.0401	λ	74 36 49.3007
	98.81 mm		118.22 mm

Explanation of form:

$x'=x-K$

$S_g=x'-\frac{x'^3}{(6\rho_o^2)_g}$

$S_m=\frac{1}{R}\left(\frac{1200}{3937}\right)S_g$

R=scale reduction factor

ϕ' is interpolated from table of y

$\Delta\phi=C\,S_m^2$

$\phi=\phi'-\Delta\phi$

$\Delta\lambda_1=S_1 A \sec\phi$

$\log S_1=\log S_m-$cor. arc to sine

$\log \Delta\lambda=\log \Delta\lambda_1+$cor. arc to sine

$\lambda=\lambda$ (central mer.)$-\Delta\lambda$

U. S. GOVERNMENT PRINTING OFFICE 11—11521

Form No. 743
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1935

T-5642

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION

x	2,000,000.00	$\log S_g$	-∞.
K	2,000,000.00	log (1200/3937)	9.48401583
x' (=$x-K$)	0.00	log (1/R)	.1086
$x'^3/(6\rho_o^2)_g$	— 0.00	log S_m	-∞.44402669
S_g	0.00	cor. arc to sine	— 0
		log S_1	-∞.44402669
3 log x'	-∞.	log A	8.50913716
log $1/(6\rho_o^2)_g$	4.5810213	log sec ϕ	0.11109398
log $x'^3/(6\rho_o^2)_g$	-∞.5810213	log $\Delta\lambda_1$	-∞.10425743
		cor. sine to arc	+ 0
log S_m^2	-∞.96805338	log $\Delta\lambda$	-∞.10425783
log C	1.3169966	$\Delta\lambda$	0 "
log $\Delta\phi$	-∞.2850149		
y	155,000.00		
ϕ' (by interpolation)	39 15 32.0835	λ (central mer.)	74 40 00.0000
$\Delta\phi$	— 0.0	$\Delta\lambda$	0
ϕ	39 15 32.0835	λ	74 40 00.0000
	98.94 mm		

Explanation of form:

$x'=x-K$

$S_g=x'-\frac{x'^3}{(6\rho_o^2)_g}$

$S_m=\frac{1}{R}\left(\frac{1200}{3937}\right)S_g$

R=scale reduction factor

ϕ' is interpolated from table of y

$\Delta\phi=C\,S_m^2$

$\phi=\phi'-\Delta\phi$

$\Delta\lambda_1=S_1 A \sec\phi$

$\log S_1=\log S_m-$cor. arc to sine

$\log\Delta\lambda=\log\Delta\lambda_1+$cor. arc to sine

$\lambda=\lambda$ (central mer.)$-\Delta\lambda$

U. S. GOVERNMENT PRINTING OFFICE 11—11531

T-5642

Form No. 743
DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Ed. May 1935

GEODETIC POSITIONS FROM TRANSVERSE MERCATOR COORDINATES

STATE N. J. STATION

x	2,000,000.00	$\log S_g$	-∞.
K	2,000,000.00	$\log (1200/3937)$	9.484015833
x' $(=x-K)$	0.00	$\log (1/R)$	1086
$x'^3/(6\rho_o^2)_g$	— 0.00	$\log S_m$	-∞.4840 2669
S_t	0.00	cor. arc to sine	— 0
		$\log S_1$	-∞.4840 2669
3 log x'	-∞.	$\log A$	8.5091 3612
$\log 1/(6\rho_o^2)_g$	4.5810213	$\log \sec \phi$	0.1113 4830
$\log x'^3/(6\rho_o^2)_g$	-∞.5810213	$\log \Delta\lambda_1$	-∞.2045 1211
		cor. sine to arc	+ 0
$\log S_m^2$	-∞.9680 5338	$\log \Delta\lambda$	-∞.2045 1211
$\log C$	1.3176 130	$\Delta\lambda$	0″
$\log \Delta\phi$	-∞.2856 66		
y	170,000.00		
ϕ' (by interpolation)	39° 14′ 00.3436	λ (central mer.)	74° 40′ 00.0000
$\Delta\phi$	— 0,	$\Delta\lambda$	0,
ϕ	39 14 00.3436	λ	74 40 00.0000
	1.06 m/m		

Explanation of form:

$x'=x-K$

$S_g=x'-\frac{x'^3}{(6\rho_o^2)_g}$

$S_m=\frac{1}{R}\left(\frac{1200}{3937}\right)S_g$

R=scale reduction factor

ϕ' is interpolated from table of y

$\Delta\phi=C\,S_m^2$

$\phi=\phi'-\Delta\phi$

$\Delta\lambda_1=S_1 A \sec\phi$

$\log S_1=\log S_m-$cor. arc to sine

$\log \Delta\lambda=\log \Delta\lambda_1+$cor. arc to sine

$\lambda=\lambda$ (central mer.)$-\Delta\lambda$

U. S. GOVERNMENT PRINTING OFFICE 11—11521

Geodetic positions from transverse Mercator coordinates

State N.J. Station

x	2,015,000	log S_g	4.17609126
C	2	log (1200/3937)	9.48401583
x' (=x−C)	+ 15,000	log (1/R)	1086
$x'^3/(6\rho_o^2)_g$	− —	log S_m	+3.66011795
S_g	+ 15,000	cor. arc to sine	− 4
		log S_1	3.66011791+
log S_m^2	7.32023590	log A	8.50913819 - 10
log C	1.316333	log sec ϕ	0.11083896
log $\Delta\phi$	8.634569	log $\Delta\lambda_1$	2.28009506
		cor. sine to arc	+ 6
y	140,000	log $\Delta\lambda$	2.28009512
ϕ'(by interpolation)	39° 13' 03".8223	$\Delta\lambda$	190.5878
$\Delta\phi$	− .0433 .0434	λ (central mer.)	74° 40' 00".0000
ϕ	39 13 03.7790	$\Delta\lambda$	3 10.5878
	11.65 mm	λ	74 36 49.4122
			118.54 mm.

Station

x	2,015,000	log S_g	4.17609126
C	2	log (1200/3937)	9.48401583
x' (=x−C)	+ 15,000	log (1/R)	1086
$x'^3/(6\rho_o^2)_g$	− —	log S_m	+3.66011795
S_g	+15,000	cor. arc to sine	− 4
		log S_1	3.66011791+
log S_m^2	7.32023590	log A	8.50913612 - 10
log C	1.317613	log sec ϕ	0.11134923
log $\Delta\phi$	8.637849	log $\Delta\lambda_1$	2.28060326
		cor. sine to arc	+ 6
y	170,000	log $\Delta\lambda$	2.28060332
ϕ'(by interpolation)	39° 18' 00".3436	$\Delta\lambda$	190.8100
$\Delta\phi$	− .0434	λ (central mer.)	74° 40' 00".0000
ϕ	39 18 00.3002	$\Delta\lambda$	3 10.8100
	0.93 mm	λ	74 36 49.1900
			117.87 mm

(M-29)

(over)

Explanation of form:

$$x' = x - C$$

$$S_g = x' - \frac{x'^3}{(6\rho_o^2)_g}$$

$$S_m = \frac{1}{R}\left(\frac{1200}{3937}\right)S_g$$

R = scale reduction factor

ϕ' is interpolated from table of y

$\Delta\phi = C\, S_m^2$

$\phi = \phi' - \Delta\phi$

$\Delta\lambda_1 = S_1 A \sec\phi$

$\log S_1 = \log S_m$ – cor. arc to sine

$\log \Delta\lambda = \log \Delta\lambda_1 +$ cor. arc to sine

$\lambda = \lambda$(central mer.) $- \Delta\lambda$

△Beesleys 1935 Computed from tilted position

PLANE COORDINATES ON TRANSVERSE MERCATOR PROJECTION T-5642

State N.J. Station

ϕ 39° 16' 59.489"

λ (Central meridian) 74° 40' 00"

λ 74 37 50.946

$\Delta\lambda$ (Central meridian−λ) + 2 09.154

$\Delta\lambda$ (in sec.) + 129.154"

log $\Delta\lambda$	2.111 10786	log S_m^2	6.981453700
Cor. arc to sine	− 3	log C*	1.317339
log $\Delta\lambda_1$	2.11110783	log $\Delta\phi$	8.298753
log cos ϕ	9.888755554		
colog A	1.490863 46	ϕ	39° 16' 59.4890"
log S_1	3.490726 83	$\Delta\phi$	+ .0199
Cor. sine to arc	+ 2	ϕ'	39 16 59.5089
log S_m	3.490726 85		
log 3937/1200	0.51598417	Tabular difference of y for 1" of ϕ'	101.17350
log R	− 1086		
log S_g	4.006700 16	y (for min. of ϕ')	157,824.40
log S_g^3	12.020100 48	y (for seconds of ϕ')	+ 6,020.72
log $1/6\rho_o^2R^2$	4.581021 3	y	163,845.12
log $(S_g^3/6\rho_o^2)_g$	6.601121 8		+1154.88' = 35.20 mm
		log sin $\frac{\phi+\phi'}{2}$	
S_g	10,155.47	log $\Delta\lambda$	
$(S_g^3/6\rho_o^2)_g$	.00	log $\Delta\alpha_1$	
x'	10,155.47		
	2,000,000.00	log $(\Delta\lambda)^3$	
x	2,010,155.47	log F	
	−155.47' = 4.74 mm.	log b	
		$\Delta\alpha_1$	"
		b	
		$\Delta\alpha$	"
		$\Delta\alpha$	° ' "

* Take out C first for ϕ and correct for approximate ϕ'.

(R 349)

$$x = 2{,}000{,}000.00 + x'$$

$$x' = S_g + \left(\frac{S_g^3}{6\rho_0^2}\right)_g$$

$$S_g = \frac{3937}{1200} S_m R$$

$$\log S_m = \log S_1 + \text{cor. sine to arc}$$

$$S_1 = \frac{\Delta\lambda_1 \cos\phi}{A}$$

$$\log \Delta\lambda_1 = \log \Delta\lambda - \text{cor. arc to sine}$$

$$\left(\frac{S_g^3}{6\rho_0^2}\right)_g = \frac{S_g^3}{6\rho_0^2 R^2}$$

$$\phi' = \phi + \Delta\phi$$

$$\Delta\phi = C S_m^2$$

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

S_m = distance in meters from point to central meridian

S_1 = distance in meters from point to central meridian reduced to sine

S_g = grid distance in feet from point to central meridian

R = scale reduction factor

Values of y in minutes and tabular difference for one second, scale reduction factors, colog A, and log C are given in auxiliary tables.

REVIEW OF AIR PHOTO COMPILATION NO.

Chief of Party: E. H. Kirsch Compiled by: W. W. King

Project: H. T. 205 Instructions dated: May 16th, 1936

1. The charts of this area have been examined and topographic information necessary to bring the charts up to date is shown on this compilation. (Par. 16a, b,c,d,e,g and i; 26; and 64)

2. Change in position, or non-existence of wharfs, lights, and other topographic detail of particular importance to navigation which affect the chart, is discussed in the descriptive report. (Par. 26; and 66 g,n)

3. Ground surveys by plane table, sextant, or theodolite have been used to supplement the photographic plot where necessary to obtain complete information, and all such surveys are discussed in the descriptive report. (Par. 65; and 66 d,e)

4. Blue-prints and maps from other sources which were transmitted by the field party contain sufficient control for their application to the charts. (Par. 28)

5. Differences between this compilation and contemporary plane table and hydrographic surveys have been examined and rectified in the field before forwarding the compilations to the office and are discussed in the descriptive report.

6. The control and adjustment of the photo plot are discussed in the descriptive report. Unusual or large adjustments are discussed in detail and limits of the area affected are stated. (Par. 12b; 44; and 66 c,h,i)

7. High water line on marshy and mangrove coast is clear and adequate for chart compilation. (Par. 16a, 43, and 44)

NOTE: Strike out paragraphs, words or phrases not applicable and modify those requiring it. Paragraph numbers refer to those in the Topographic Manual. Refer also to the pamphlet "Notes on the Compilation of Planimetric Line Maps from Five Lens Air Photographs." M-67

8. The representation of low water lines, reefs, coral reefs and rocks, and legends pertaining to them is satisfactory. (Par. 36, 37, 38, 39, 40, 41)

9. Recoverable objects have been located and described on Form 524 in accordance with circular 30, 1933, circular letter of March 3, 1933, and circular 31, 1934. (Par. 29, 30, and 57)

10. A list of landmarks was furnished on Form 567 and instructions in the Director's letter of July 16, 1934, Landmarks for Charts, complied with. (Par. 16d, e; and 60)

11. All bridges shown on the compilation are accompanied by a note stating whether fixed or draw, clearance, and width of draw if a draw bridge. Additional information of importance to navigation is given in the descriptive report. (Par. 16c)

12. Geographic names are shown on the overlay tracing. The accepted local usage of new names has been determined and they are listed in the report, together with a general statement as to source of information and a specific statement when advisable. Complete discussion of place names differing from the charts and from the U. S. G. S. Quadrangles is given in the descriptive report, together with reasons for recommendations made. (Par. 64, and 66k)

13. The geographic datum of the compilation is N.A.1927 (unadjusted) and the reference station is correctly noted.

14. Junctions with adjoining compilations have been examined and are in agreement. (Par. 66j)

15. The drafting is satisfactory and particular attention has been given the following:

    1. Standard symbols authorized by the Board of Surveys and Maps have been used throughout except as noted in the report.

    2. The degrees and minutes of Latitude and Longitude are correctly marked.

3. All station points are exactly marked by fine black dots.

4. Closely spaced lines are drawn sharp and clear for printing.

5. Topographic symbols for similar features are of uniform weight.

6. All drawing has been retouched where partially rubbed off.

7. Buildings are drawn with clear straight lines and square corners where such is the case on the ground.

(Par. 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48)

16. No additional surveying is recommended at this time.

17. Remarks: None

18. Examined and approved;

E. H. Kraisch
Chief of Party

19. Remarks after review in office:

Reviewed in office by: L. C. Lande BG Jones

Examained and approved:

E. F. Green
Chief, Section of Field Records

Fred. L. Peacock
Chief, Section of Field Work

L. O. Colbert
Chief, Division of Charts

G. Lande
Chief, Division of Hydrography and Topography.

Report for Supplemental T 5642

Details shown in red on T 5642 Supplemental were applied by Whitmann and checked by E.W. Frederick 5/12/38 from the following sources:

1. Planetable Survey Field No. DD Office No. C.S. 119 M 7/37
2. " " " " FF " ~~C~~C.S. 127 M 8/37
3. " " " " EE " " C.S. 128 M 8/37

All details on the above surveys have been applied to T 5642 Supplemental Except:
Temporary Planetable stations
Magnetic meridians
Tide gauge locations

The connections to High Water line at Carson Inlet are from C.S. 127 M and from C.S. 128 M except for the section shown in dashed line which is from Boat Sheet H 6262. The section from H 6262 was sketched on the Boat Sheet with four point locations for control

The connections to the low water line at Carson Inlet are from Boat Sheet H 6262. No low water line was determined on the planetable sheets.

Grass Islands have been added to T 5642 at ~~lat~~ 39° 14.1' long 74° 38.6'
~~lat~~ 39° 18.6' long 74° 38.9'
from Boat Sheet H ~~5644~~ 6262.