

距離直読式 (型) 観測簿

測点(E)		測器高		年 月 日 天候	
傾心 E =		観測者		手簿者	
器械番号					
形数	反射鏡(R)	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>
反射点	名称	C-5	C-6		
	傾心 R =	C-6	C-6	7.10	
	器高				
時刻	時	分	秒	分	秒
温度	度	°C	°C	°C	°C
気圧	mm	mm	mm	mm	mm
気象補正(C)					
測定	1	123	895	68	511
	2		896		511
	3	123	895	68	511
	4				
	5				
	6				
	7				
平均	123	895	68	511	
d = E + R + C					
視測距離(D)					
標高(基準上)					
a	a (1)	29	40	70	71
	a (2)				
	a (m)				
	sin a				
	cos a				
	H (1)				
	D sin a				
	H (2)				
	H (m)				
	D cos a	123	895	68	511
	d D <sub>1</sub>				
	S (球面)				
	d D <sub>2</sub>				
	s (平面)				
計算	第一尺係数				
	K ( ) =				
	の ( ) =				
	計 ( ) =				
算	K - 1				
	K - 110				

## 距離直読式 ( 型 ) 觀測簿

測点(E)		測器高		180年6月23日		天候晴		風							
		偏心 E =		観測者 有藤											
		手簿者													
器械番号															
定器 械(E)															
数 反射鏡(R)		( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>						
反 射 鏡		C-1	C-2	C-3	C-4	C-5									
名 称															
偏 心		R =	R =	R =	R =	R =									
器 高															
時 刻															
温 度		°C	°C	°C	°C	°C									
氣 压															
氣象補正(C)															
定	1	63	877	70	649	56	664	238	227	118	880				
	2		877		649		664		227		880				
	3	63	877	70	649	56	665	238	229		879				
	4														
	5														
	6														
	7														
d = E + R + C		63	877	70	649	56	665	238	229	118	880				
観測距離(D)															
標高換算(1)															
" (2)															
a (1)		0	45	40	29	27	0	41	35	0	49	27	0	0	0
a (2)															
a (m)		0	45	40	29	27	0	41	35	0	49	27	0	0	0
sin α =		-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0	-0
cos α =		63, 871	70, 646	56, 648	238, 227										
H (1) =															
D sin α =															
H (2) =															
H (m) =															
D cos α =		63	871	70	646	56	648	238	227	118	880				
d D <sub>1</sub> =															
S (球面) =															
d D <sub>2</sub> =															
s (平面) =															
縮尺係数															
K ( ) =															
K ( ) =															
D <sub>1</sub> =															
D <sub>2</sub> =															
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D <sub>98</sub> =															
D <sub>99</sub> =															
D <sub>100</sub> =															

$d D_1 = H D \cdot R \quad d D_2 = (K - 1) \cdot 10^3 \text{ km}$

### 距離直読式 (TOPCON型) 観測簿

測点(E)		測器高 傾心 E =					観測者 SAITO	
		1980年 6月 18日 天候 晴 風					手簿者	
器械番号								
定数	器械(E)	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>
反射鏡(R)	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>
反射点	名称	(I. T. C)	(T. 3)	(T. 4)	(T. 5)	(T. 6)	(T. 7)	(T. 7)
偏	心 R =		R =	R =	R =	R =	R =	R =
器	高							
時	刻							
温	度							
気	圧							
気	象補正(C)							
	白動補正							
読定	1	310 <sup>m</sup> 760	142 <sup>m</sup> 751	213 <sup>m</sup> 425	74 <sup>m</sup> 601	151 <sup>m</sup> 755		
	2	758	752	424	601	755		
	3	755	752	424	600	755		
	4	755	752	424	601	755		
	5	310 <sup>m</sup> 755	142 <sup>m</sup> 752	213 <sup>m</sup> 424	74 <sup>m</sup> 601	151 <sup>m</sup> 754		
	6							
	7							
平	均	310 <sup>m</sup> 757	142 <sup>m</sup> 752	213 <sup>m</sup> 424	74 <sup>m</sup> 601	151 <sup>m</sup> 755		
d = E + R + C								
観測距離(D)								
標高概算正(1)								
" 反(2)								
α	α (1)	0 0 0	0 0 0	10 7 0	0 10 0	0 0 0		
	α (2)							
	α (m)							
sin α =		-0	-0	-0	-0	-0		
cos α =								
H (1) =								
D sin α =								
H (2) =								
H (m) =								
D cos α =		310 <sup>m</sup> 757	142 <sup>m</sup> 752	213 <sup>m</sup> 424	74 <sup>m</sup> 598	151 <sup>m</sup> 755		
d D <sub>1</sub> =								
S (球面) =								
d D <sub>2</sub> =								
s (平面) =								
縮尺係数								
Kの計	( ) =							
	( ) =							
	( ) =							
	( ) =							
	( ) =							
	( ) =							
中数 K =								
K - 1 =								
(K - 1) × 10 <sup>-4</sup> =								
d D <sub>1</sub> = H D \sqrt{K}		d D <sub>2</sub> = (K - 1) \cdot 10 <sup>4</sup> D km						

距離直讀式 ( ) 型) 觀測簿

測點(E)		測器高		年 月 日 天 候		風	
儀器高		偏 心 E =		觀測者		手簿者	
器 械 番 号							
出 器 械 (E)							
數 反 射 距 (R)	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>
反 射 名 稱	(7.7)	(7.8)	(7.9)	(7.1)	(7.1)		
反 射 點 偏 心 R =	R = 7.8	R = 7.9	R = 7.1	R = 7.1	R =	R =	R =
器 高							
時 刻							
溫 度	°C	°C	°C	°C	°C	°C	°C
氣 壓							
氣 象 補 正 (C)							
自 動 補 正							
1	300	627	105	985	332	984	274 471
2		620		986		983	472
3		620		986		984	471
4		630		985		985	472
5	300	630	105	986	332	985	274 471
6							
7							
平 均	300	620	105	986	332	984	274 471
d = E + R + C							
觀 測 距 離 (D)							
標 高 補 正 (1)							
" 反 (2)							
a (1)	0	0	0	0	0	0	0
a (2)							
a (m)							
sin α	-0	-0	-0	-0	-0	-0	-0
cos α							
H (1)							
D sin α							
H (2)							
H (m)							
D cos α	300	620	105	985	332	985	274 471
d D <sub>1</sub>							
S (球面)							
d D <sub>2</sub>							
s (平面)							
縮 尺 係 數							
K ( ) =							
K ( ) =							
K =							
K = 1							
K (10)							



距離直読式 (型) 観測簿

測点(E)		測器高					年 月 日	天候	風	
		傾心 E =					観測者 SAITO			
器 械 番 号							手 簿 者			
定 数	反射鏡(R)	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>	( ) 0 <sup>m</sup>				
反 射 点	名 称	A-1	A-2	A-3	A-4	A-5				
	編 心	R =	R =	R =	R =	R =				
	器 高									
時 間	刻 度									
温 度	度	°C	°C	°C	°C	°C				
気 象 補 正(C)										
定 数	1	65 <sup>m</sup> 639	46 <sup>m</sup> 427	91 <sup>m</sup> 019	116 <sup>m</sup> 409	55 <sup>m</sup> 740				
	2	639	428	019	410	741				
	3	65 640	46 428	91 019	116 409	55 741				
	4									
	5									
	6									
	7									
平 均		65 640	46 428	91 019	116 409	55 741				
d = E + R + C										
観測距離(D)										
標高計算正(1)										
反(2)										
α	a (1)	0 5 0	0 9 0	0 4 0		0 0 0				
	a (2)									
	a (m)									
sin α =		0	0	0	0	0				
cos α =										
H (1) =										
D sin α =										
H (2) =										
H (m) =										
D cos α =		65 640	46 428	91 019	116 409	55 740				
d D <sub>1</sub> =										
S (球面) =										
d D <sub>2</sub> =										
s (平面) =										
計 算	縮 尺 係 数									
	K	( ) =								
		( ) =								
		( ) =								
		( ) =								
		( ) =								
中 数 K =										
K - 1 =										
(K - 1) 10 <sup>3</sup> =										

$d D_1 = H D \cdot R \quad d D_2 = (K - 1) \cdot 10^3 km$



多角点经纬横線ノ計算 計算者

測点	方位角	距離	Σ X	Σ Y	Σ X <sup>2</sup>	Σ Y <sup>2</sup>
No 26	349° 27' 30"	100.000	-100.000	22727.05	10000.00	20000.00
No 27	333° 20' 16"	100.000	-89.509	23507.16	79318.07	29165.46
No 28	337° 26' 59"	100.000	-76.699	23067.20	58828.14	29459.82
No 29	341° 23' 10"	100.000	-63.836	24463.82	40738.91	29658.96
No 30	345° 19' 25"	100.000	-50.672	25074.42	25676.82	29096.49
No 31	349° 15' 30"	100.000	-37.269	25696.10	13870.72	29974.70
No 32	353° 11' 57"	100.000	-23.689	26325.97	5609.52	30073.07
No 33	357° 08' 40"	100.000	-9.999	26964.98	99.98	30126.96
No 34	5° 17'	100.000	37.40	27590.23	1399.56	30197.65
No 35	5° 08' 30"	100.000	17.460	28237.62	304.83	30103.75
Σ	2° 58'	1000.000	0.000	0.000	0.000	0.000
誤差						
精度						

(A) line



(B) June 多角点水准 / 计算

点	角	后	前	距	高	Y	X
No. 26	171.3	66.13	229.24	16.5	172.460	2373.985	271.278
No. 27			329.30	200.00	179.007	2477.986	2737.590
No. 28			327.26		184.709	2463.419	2750.203
No. 29			341.23		199.539	2510.218	2775.857
No. 30			345.19		193.474	2558.114	2790.175
No. 31			349.15		190.497	2606.079	2801.179
No. 32			353.15		198.592	2656.206	2808.795
No. 33			357.17		199.750	2706.097	2815.006
No. 34			361.17		199.965	2756.083	2819.790
No. 35			365.17		199.236	2806.005	2811.139

多角点 坐标 / 点 ( )

(C) Line

点号	Y	X	Y	X	Y	X	Y	X
No. 26	10.500	172.760	2475.265	252.1258				
No. 27	09.200	179.997	2507.196	2550.591				
No. 28	76.699	192.709	2040.110	2573.574				
No. 29	69.226	189.539	2572.054	2506.010				
No. 30	50.672	193.477	2008.706	2596.791				
No. 31	37.269	195.497	2005.170	2004.676				
No. 32	29.109	198.592	2679.975	2610.200				
No. 33	9.999	199.750	2716.096	2613.196				
No. 34	3.370	199.965	2752.343	2613.825				
No. 35	17.760	199.296	2700.542	2611.803				





座標による距離方向角の計算

与点	(T.9)	(T.9)	(T.9)	(T.9)	(T.9)
求点	C. line (No.10) 700	(No.11) 800	(No.12) 900	(No.13) 450	(No.14) 700
$y_2 =$	2472.075				
$y_1 =$	1002.402	1842.222	1891.062	1922.972	1974.122
$y_2 - y_1 =$	1469.673	670.122	401.912	559.001	512.281
$x_2 =$	2315.546				
$x_1 =$	2114.476	2121.202	2160.222	2195.152	2222.201
$x_2 - x_1 =$	201.070	174.262	120.922	120.211	80.225
$\tan \alpha =$					
$\alpha =$	78° 30' 10"	77° 50' 22"	76° 13' 35"	72° 50' 39"	79° 44' 44"
$A =$					
$(\sum \Delta^2) =$	253130.10	254502.22	256123.32	257502.39	259444.44
$S =$					
$\Delta y \cos \alpha =$					
$\Delta x \sec \alpha =$					
$\& =$					
$S : \& =$					
$S =$					

与点	(T.9)	(T.9)	(T.9)	(T.1)	(T.1)
求点	C. line (No.15) 700	(No.16) 800	(No.17) 800	(No.18) 700	(No.19) 900
$y_2 =$					
$y_1 =$	2018.222	2040.222	2122.222	2142.222	2182.222
$y_2 - y_1 =$	172.122	122.222	0	122.222	106.222
$x_2 =$					
$x_1 =$	2222.202	2272.222	2302.222	2322.222	2352.222
$x_2 - x_1 =$	24.222	49.222	15.222	14.222	21.222
$\tan \alpha =$					
$\alpha =$	85° 1' 2"	88° 45' 51"	90° 0' 0"	87° 39' 22"	82° 20' 4"
$A =$					
$(\sum \Delta^2) =$	26212.2	26445.51	26801.9	27220.10	27739.56
$S =$					
$\Delta y \cos \alpha =$					
$\Delta x \sec \alpha =$					
$\& =$					
$S : \& =$					
$S =$					



座標による距離方向角計算

No.	T.3				
	B. Line				
	No.10	No.11	No.12	No.13	No.14
	500	500	500	450	700
$y_2 =$	2492.075				
$y_1 =$	1692.878	1742.020	1704.150	1826.289	1849.219
$y_2 - y_1 =$	799.197	599.947	500.217	666.586	624.456
$r =$	2315.561				
$r_1 =$	2282.870	2309.824	2336.750	2363.677	2390.603
$r_2 =$	32.681	5.792	21.104	48.111	75.037
$\alpha =$					
$\alpha_1 =$	87° 38' 27"	89° 33' 43"	88° 17' 16"	85° 52' 19"	83° 0' 53"
$\alpha_2 =$					
$\Sigma \Delta^2 =$	267° 38' 27"	269° 23' 43"	271° 42' 44"	274° 7' 41"	276° 01' 7"
$S =$					
$\cos \alpha =$					
$\Delta r \text{ sec}$					
$\delta =$					
$S \cdot \delta =$					
$S =$					

No.	T.3				
	B. Line				
	No.15	No.16	No.17	No.18	No.19
	700	800	850	900	950
$y_2 =$					
$y_1 =$	1910.5504	1952.600	1994.1011	2036.241	2079.072
$y_2 - y_1 =$	588.325	540.195	490.064	455.929	413.003
$r =$					
$r_1 =$	2417.529	2444.456	2471.380	2498.300	2525.224
$r_2 =$	101.763	128.892	156.014	183.772	209.860
$\alpha =$					
$\alpha_1 =$	80° 4' 6"	76° 34' 49"	72° 37' 42"	68° 9' 21"	63° 2' 26"
$\alpha_2 =$					
$\Sigma \Delta^2 =$	279° 25' 54"	283° 25' 11"	287° 22' 10"	291° 30' 29"	296° 52' 14"
$S =$					
$\cos \alpha =$					
$\Delta r \text{ sec}$					
$\delta =$					
$S \cdot \delta =$					
$S =$					

### 座標による距離方向角の計算

号点	T.Z	T.Z	T.Z	T.Z	T.Z
求点	B line (No. 0)	No. 1 10	No. 2 10	No. 3 150	No. 4 200
y <sub>2</sub>	2231.286				
y <sub>1</sub>	1278.690	1320.739	1362.854	1404.904	1447.115
y <sub>0</sub>	955.693	910.282	868.435	826.302	784.171
x <sub>2</sub>	2147.001				
x <sub>1</sub>	2012.635	2000.561	2067.487	2094.214	2121.320
x <sub>0</sub>	124.116	197.240	80.317	53.327	24.221
α					
α	81°59'21"	83°16'59"	84°42'58"	86°18'12"	88°04'21"
A					
A	261°59'21"	263°18'59"	264°42'58"	266°18'12"	268°04'21"
Σ Δ <sup>2</sup>					
S					
Δy cose					
Δx cose					
N					
S					

	T.Z	T.Z	T.Z	T.Z	T.Z
	B line (No. 5)	No. 6	(No. 7)	(No. 8)	No. 9
	250	300	350	400	450
y <sub>2</sub>					
y <sub>1</sub>	1209.124	1501.276	1570.502	1615.607	1657.767
y <sub>0</sub>	742.571	699.910	657.760	615.649	573.519
x <sub>2</sub>					
x <sub>1</sub>	2140.261	2175.195	2202.119	2229.025	2255.972
x <sub>0</sub>	0.465	27.392	54.318	81.244	108.171
α					
α	89°57'51"	87°45'32"	85°16'46"	82°28'57"	79°19'8"
A					
A	270°21'94"	272°14'28"	274°43'14"	277°31'5"	280°40'2"
Σ Δ <sup>2</sup>					
S					
Δy cose					
Δx cose					
N					
S					



### 座標による距離方向角の計算

与点	(7.3)	(7.3)	(7.3)	7.3	7.3
求点	A. line (No.10) 500	(No.11) 550	(No.12) 600	(No.13) 650	(No.14) 700
$y_2 =$	2490.875'				
$y_1 =$	1575.125'	1424.325'	1474.553'	1718.581'	1760.714'
$y_2 - y_1 =$	900.000'	650.550'	616.922'	774.521'	232.161'
$x_2 =$	2315.506'				
$x_1 =$	2451.420'	2478.346'	2505.272'	2532.199'	2559.125'
$x_2 - x_1 =$	135.914'	162.700'	189.208'	216.633'	243.559'
$\tan \alpha =$					
$\alpha =$	41°25'21"	79°15'51"	76°55'7"	72°22'10"	71°26'0"
$A =$	270°04'29"	280°44'9"	293°4'58"	285°37'50"	288°24'0"
$(\sum \Delta)^2 =$					
$\Delta y \cdot \cos \alpha =$					
$\Delta x =$					
$\Delta y =$					
$\Delta z =$					
$\Delta w =$					
$\Delta v =$					
$\Delta u =$					
$\Delta t =$					
$\Delta s =$					
$\Delta r =$					
$\Delta q =$					
$\Delta p =$					
$\Delta o =$					
$\Delta n =$					
$\Delta m =$					
$\Delta l =$					
$\Delta k =$					
$\Delta j =$					
$\Delta i =$					
$\Delta h =$					
$\Delta g =$					
$\Delta f =$					
$\Delta e =$					
$\Delta d =$					
$\Delta c =$					
$\Delta b =$					
$\Delta a =$					
$\Delta z =$					
$\Delta y =$					
$\Delta x =$					
$\Delta w =$					
$\Delta v =$					
$\Delta u =$					
$\Delta t =$					
$\Delta s =$					
$\Delta r =$					
$\Delta q =$					
$\Delta p =$					
$\Delta o =$					
$\Delta n =$					
$\Delta m =$					
$\Delta l =$					
$\Delta k =$					
$\Delta j =$					
$\Delta i =$					
$\Delta h =$					
$\Delta g =$					
$\Delta f =$					
$\Delta e =$					
$\Delta d =$					
$\Delta c =$					
$\Delta b =$					
$\Delta a =$					
$\Delta z =$					
$\Delta y =$					
$\Delta x =$					
$\Delta w =$					
$\Delta v =$					
$\Delta u =$					
$\Delta t =$					
$\Delta s =$					
$\Delta r =$					
$\Delta q =$					
$\Delta p =$					
$\Delta o =$					
$\Delta n =$					
$\Delta m =$					
$\Delta l =$					
$\Delta k =$					
$\Delta j =$					
$\Delta i =$					
$\Delta h =$					
$\Delta g =$					
$\Delta f =$					
$\Delta e =$					
$\Delta d =$					
$\Delta c =$					
$\Delta b =$					
$\Delta a =$					
$\Delta z =$					
$\Delta y =$					
$\Delta x =$					
$\Delta w =$					
$\Delta v =$					
$\Delta u =$					
$\Delta t =$					
$\Delta s =$					
$\Delta r =$					
$\Delta q =$					
$\Delta p =$					
$\Delta o =$					
$\Delta n =$					
$\Delta m =$					
$\Delta l =$					
$\Delta k =$					
$\Delta j =$					
$\Delta i =$					
$\Delta h =$					
$\Delta g =$					
$\Delta f =$					
$\Delta e =$					
$\Delta d =$					
$\Delta c =$					
$\Delta b =$					
$\Delta a =$					



### 座標による距離方向角の計算

与点	T.1	(T.1)	(T.1)	(T.1)	(T.1)
求点	B line (NO.20) 1000	(NO.21) 1050	(NO.22) 1100	(NO.23) 1150	(NO.24) 1200
$y_2 =$	2000.000	-	-	-	-
$y_1 =$	2121.202	2143.332	2205.443	2247.590	2289.724
$y_2 - y_1 =$	-121.202	-143.332	-205.443	-247.590	-289.724
$x_2 =$	2000.000	-	-	-	-
$x_1 =$	2552.161	2579.007	2606.913	2633.910	2659.866
$x_2 - x_1 =$	-552.161	-579.007	-606.913	-633.910	-659.866
$\tan \alpha =$					
$\alpha =$	10° 22' 49"	15° 45' 4"	18° 43' 43"	21° 21' 52"	23° 42' 16"
$\Sigma \Delta^2 =$					
S					
$\Delta y \text{ cose}$					
$\Delta x \text{ sec}$					
&					
S &					
S					

与点	T.1	(T.1)	(T.1)	(T.1)	(T.1)
求点	B line (NO.25) 1250	(NO.26)	( )	( )	( )
$y_2 =$					
$y_1 =$	2241.851	2272.905			
$y_2 - y_1 =$	-791.851				
$x_2 =$					
$x_1 =$	2606.792	2712.710			
$x_2 - x_1 =$	-606.792				
$\tan \alpha =$					
$\alpha =$	25° 47' 22"				
$\Sigma \Delta^2 =$					
S					
$\Delta y \text{ cose}$					
$\Delta x \text{ sec}$					
&					
S &					
S					



座標による距離方向角の計算

与点	(A) 座 (No.26)	(No.27)	No.28	(No.29)	(No.30)
求点	(T.C)	(T.C)	T.C	(T.C)	(T.C)
$y_2 =$	2291.586				
$y_1 =$	2272.705	2238.239	2288.720	2246.382	2207.142
$y_2 - y_1 =$	18.881	41.1419	41.150	41.154	41.215
$x_2 =$	2147.801				
$x_1 =$	2086.178	2016.545	2042.992	2065.226	2023.649
$x_2 - x_1 =$	61.623	69.956	65.809	81.735	123.152
$\tan \alpha =$					
$\alpha =$	10-12-38	11-13-28	11-3-26	12-24-23	13-16-59
A					
$(\sum \Delta^2) =$					
S					
$\Delta y \text{ cosec}$					
$\Delta x \text{ sec}$					
&					
S &					
S					
	(No.31)	(No.32)	(No.33)	(No.34)	(No.35)
	(T.C)	(T.C)	(T.C)	(T.C)	(T.C)
$y_2 =$					
$y_1 =$	2549.410	2602.197	2696.090	2759.828	2823.482
$y_2 - y_1 =$	41.220	41.200	41.160	41.150	41.150
$x_2 =$					
$x_1 =$	2997.670	3027.387	3015.136	3013.755	3010.275
$x_2 - x_1 =$	41.649	41.650	41.649	41.649	41.649
$\tan \alpha =$					
$\alpha =$	21-12-25	21-12-25	21-12-25	21-12-25	21-12-25
A					
$(\sum \Delta^2) =$					
S					
$\Delta y \text{ cosec}$					
$\Delta x \text{ sec}$					
&					
S &					
S					

### 座標による距離方向角の計算

与点 求点	座標				
	(No.26)	(No.27)	(No.28)	(No.29)	(No.30)
$y_2 =$	-259,000	-	-	-	-
$y_1 =$	-2373,985	-2217,934	-2469,212	-2510,219	-2550,115
$y_2 - y_1 =$	(+) 194,985	(+) 196,050	(+) 225,122	(+) 270,222	(+) 326,220
$x_2 =$	-2147,991	-	-	-	-
$x_1 =$	-2713,714	-2727,622	-2750,222	-2755,257	-2790,725
$x_2 - x_1 =$	(+) 565,723	(+) 539,707	(+) 410,142	(+) 480,056	(+) 642,974
$\tan \alpha$	0,710	0,710	0,540	0,540	0,500
$\alpha$	35° 19' 9"	35° 22' 25"	26° 49' 7"	26° 56' 49"	26° 57' 58"
A	1,310	1,310	1,310	1,310	1,310
$(\sum \Delta^2) =$					
S					
$\Delta y \cdot \cos \alpha$					
$\Delta x \cdot \sec \alpha$					
&					
S: &					
S					

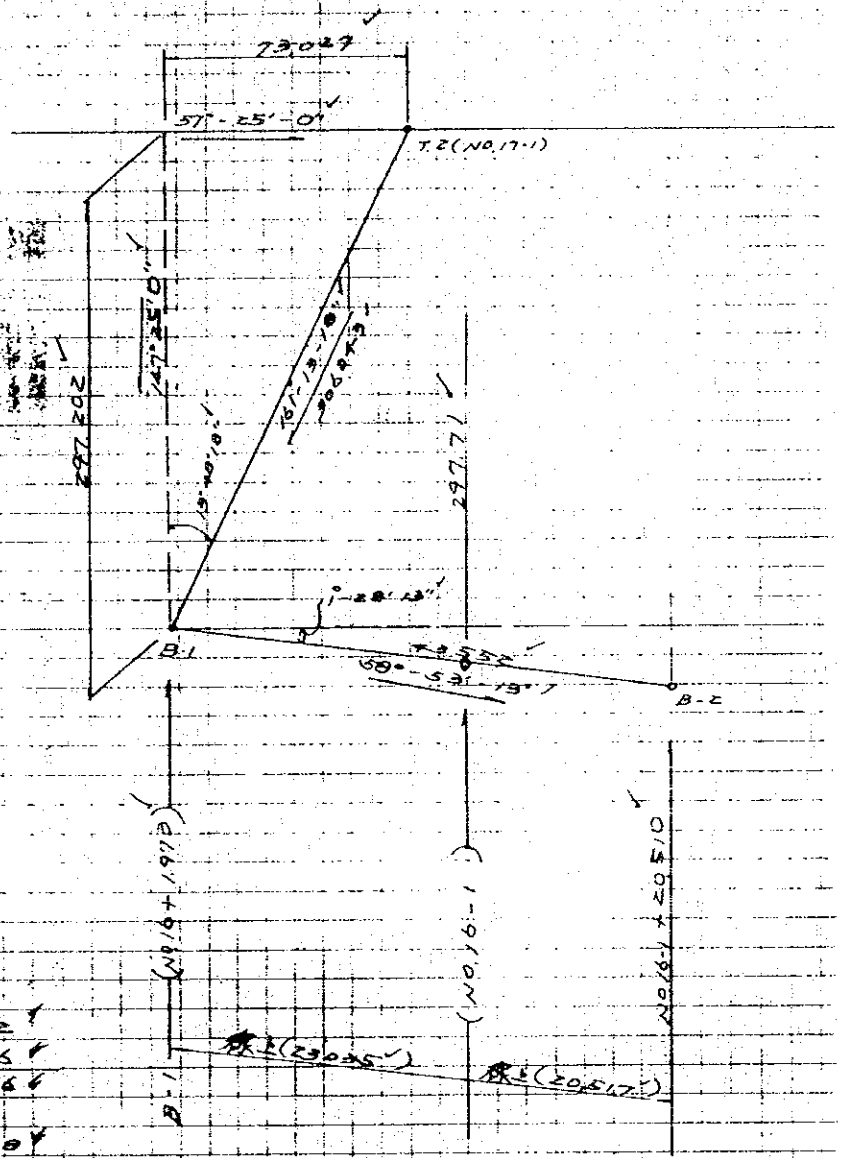
与点 求点	座標				
	(No.31)	(No.32)	(No.33)	(No.34)	(No.35)
$y_2 =$	-	-	-	-	-
$y_1 =$	-2604,979	-2656,206	-2706,477	-2752,423	-2806,902
$y_2 - y_1 =$	(+) 275,979	(+) 225,200	(+) 174,011	(+) 124,297	(+) 74,215
$x_2 =$	-	-	-	-	-
$x_1 =$	-2001,173	-2000,972	-2012,402	-2013,724	-2011,129
$x_2 - x_1 =$	(+) 659,376	(+) 660,372	(+) 655,405	(+) 645,207	(+) 643,229
$\tan \alpha$	0,710	0,710	0,540	0,540	0,500
$\alpha$	35° 57' 33"	35° 44' 29"	26° 51' 21"	26° 54' 17"	26° 54' 10"
A	1,310	1,310	1,310	1,310	1,310
$(\sum \Delta^2) =$					
S					
$\Delta y \cdot \cos \alpha$					
$\Delta x \cdot \sec \alpha$					
&					
S: &					
S					



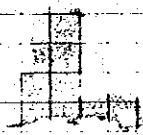




トラバース線上深淺測量交点計算

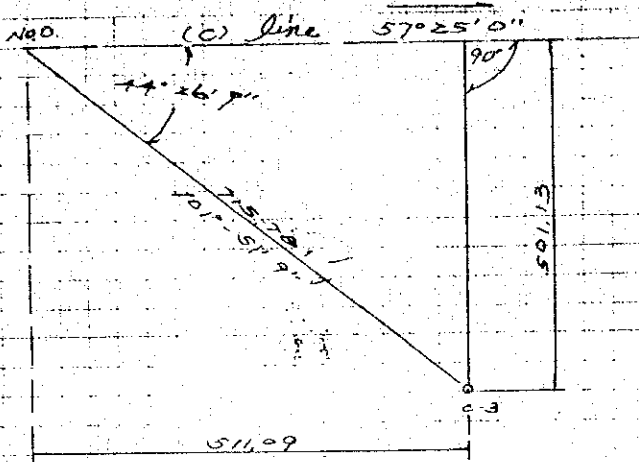


$(T.2)$   
 $(B.1)$   
 $y_2 = 2,929.802$   
 $x_1 = 2,231.286$   
 $B_2 - B_1 = (+) 98.516$   
 $x_2 = 1,858.078$   
 $x_1 = 2,147.901$   
 $x_2 - x_1 = (-) 289.759$   
 $18^{\circ}-45'-41''$   
 $\Delta x = 161.13 = 18$   
 $Dist = 306.073$









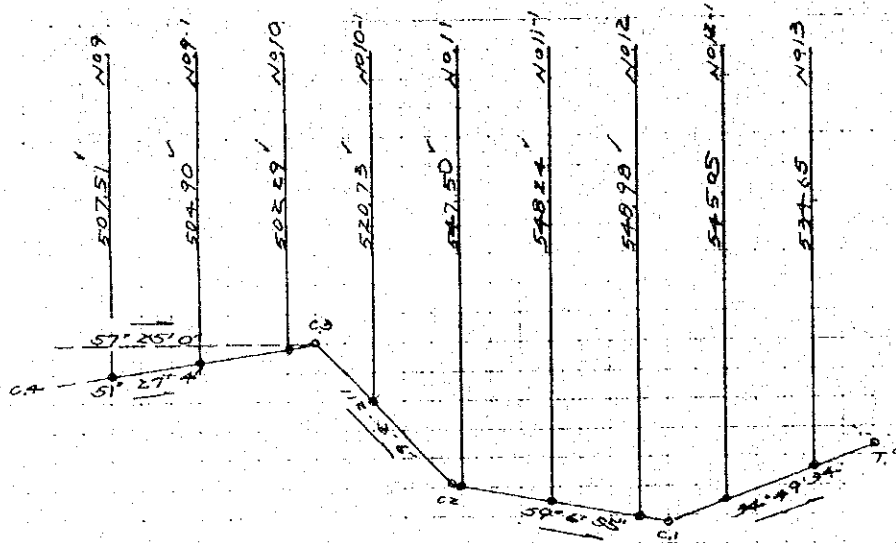
(N00) C. Line  
(C-3)

$$\begin{aligned}
 \theta_2 &= 2086.919 \checkmark \\
 \theta_1 &= 1386.298 \checkmark \\
 \Delta \theta &= 17200.521 \checkmark
 \end{aligned}$$

$$\begin{aligned}
 x_2 &= 1698.100 \checkmark \\
 x_1 &= 1845.113 \checkmark \\
 \Delta x &= 147.013 \checkmark
 \end{aligned}$$

$$\begin{aligned}
 \theta &= 70^\circ - 0' - 51'' \\
 &= 91^\circ - 51' - 9''
 \end{aligned}$$

$$\text{Dist} = 715.781 \checkmark$$



Point Difference	方位角 (Azimuth)	距离 (Distance)	各点高程 (Point Elevations)
C.3 - C.4 = 239.327	(+) 15° 57' 56"	237.036	(+) 24.769
C.3 - C.2 = 56.678	(+) 54° 38' 6"	32.707	(+) 46.195
C.2 - C.1 = 70.676	(-) 1° 41' 55"	70.615	(+) 2094
C.1 - T.9 = 63.871	(-) 22° 35' 26"	58.970	(-) 24.536

Point	测量 (Measurement)	(C) 距离 (Distance)
C.3	No. 10 + 11.89	501.10
C.2	No. 10 + 13.88	517.32
C.1	No. 12 + 14.19	519.72

测量距离 (Measurement Distances)

C.3 ↓	11.15	C.1 ↓	11.30
No. 10 (C.4)	25.14	12 + (T.9)	27.08
9-1	25.14	No. 13	
No. 9			

C.3 ↓	24.00
(C.2)	24.00
10-1	32.62

C.2 ↓	6.12
(C.1)	6.12
No. 11	25.01
11-1	25.01
No. 12	25.01
C.1	14.50

### 座標による距離方向角の計算

与点	(72)	(72)	(72)	( )	( )
求点	(500)	(400)	(600)	( )	( )
$y_2 =$	+2237.286'	-	-	-	-
$y_1 =$	-2058.692'	-717.392'	-1576.975'	-	-
$y_2 - y_1 =$	+3972.594'	+510.902'	+655.211'	-	-
$x_2 =$	+2147.801'	-	-	-	-
$x_1 =$	-2121.304'	-2588.069'	-2924.603'	-	-
$x_2 - x_1 =$	+4269.105'	+2576.765'	+376.802'	-	-
tan $\alpha$ ...					
$\alpha$ ...	82° 2' 10"	76° 15' 10"	69° 5' 50"		
A...					
$(\sum \Delta^2) =$	270 57 50	204 49 50	295 54 10		
S...					
$\Delta y \text{ cosec}$					
$\Delta x \text{ sec}$					
&...					
S: &...					
S...					

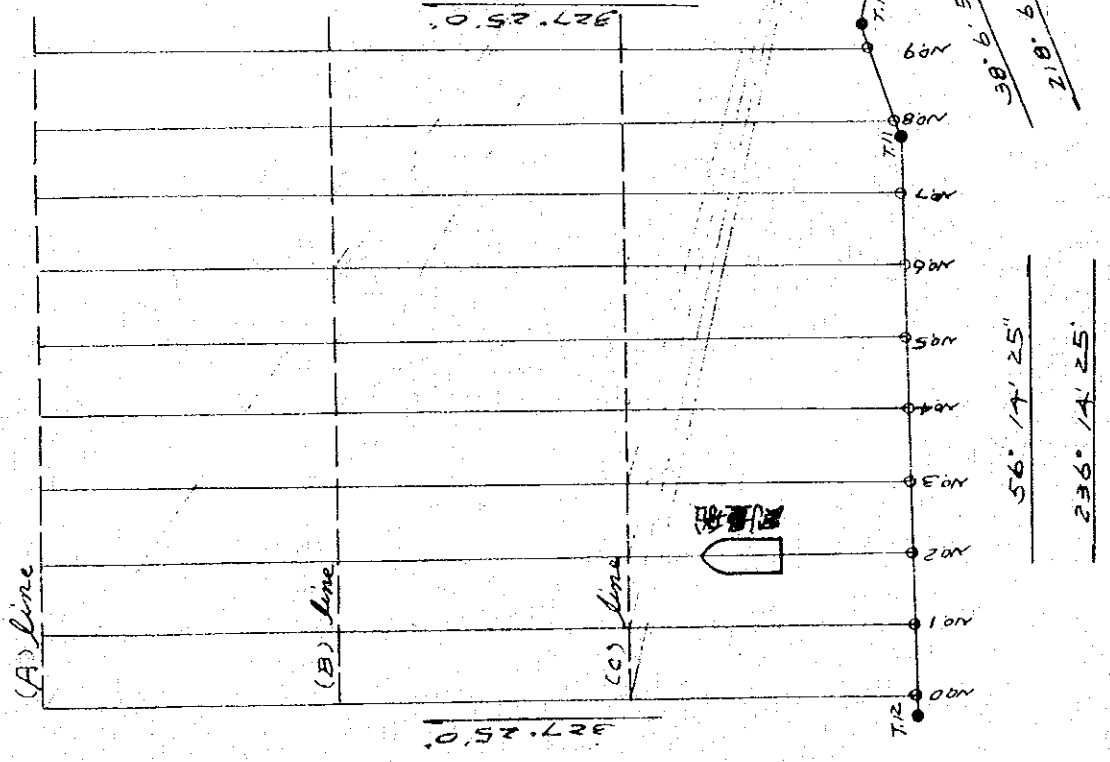
与点	(72)	(72)	(72)	( )	( )
求点	(500)	(400)	(600)	( )	( )
$y_2 =$	-2231.586'	-	-	-	-
$y_1 =$	-1878.240'	-748.520'	-1624.281'	-	-
$y_2 - y_1 =$	+357.026'	+100.766'	+608.505'	-	-
$x_2 =$	-2147.801'	-	-	-	-
$x_1 =$	-2155.210'	-201.080'	-266.589'	-	-
$x_2 - x_1 =$	+77.409'	-169.257'	+218.700'	-	-
tan $\alpha$ ...					
$\alpha$ ...	88° 45' 30"	91° 19' 05"	62° 21' 00"		
A...					
$(\sum \Delta^2) =$	291 4 30	288 41 0	277 37 0		
S...					
$\Delta y \text{ cosec}$					
$\Delta x \text{ sec}$					
&...					
S: &...					
S...					

深水測量交會點計算

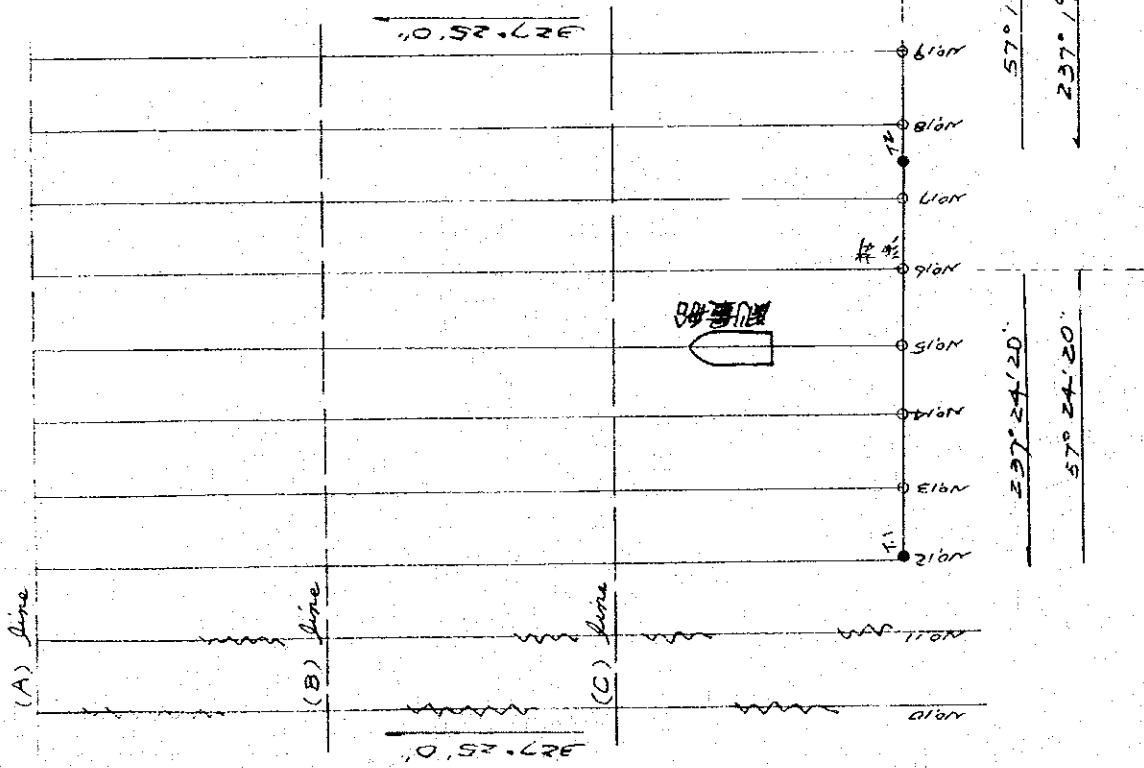
NO.1

T.2

NO	(C) Line	(B) Line	(A) Line
0	250° 17' 30"	261° 59' 0"	271° 51' 20"
1	251° 2' 40"	263° 17' 0"	273° 26' 40"
2	251° 53' 10"	264° 43' 0"	275° 9' 50"
3	252° 50' 20"	266° 18' 10"	277° 1' 40"
4	253° 55' 20"	268° 4' 0"	279° 3' 0"
5	255° 9' 40"	270° 2' 10"	281° 14' 50"
6	256° 35' 40"	272° 14' 30"	283° 38' 10"
7	258° 16' 20"	274° 43' 10"	286° 13' 50"
8	260° 15' 0"	277° 31' 0"	289° 3' 0"
9	262° 37' 0"	280° 40' 50"	292° 6' 20"

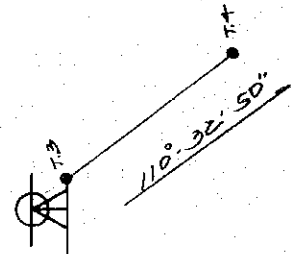


NO. 2



7.3

NO	(C) Line	(B) Line	(A) Line
10	253° 38' 20"	267° 38' 30"	278° 34' 40"
11	254° 50' 20"	269° 33' 40"	280° 44' 10"
12	256° 13' 30"	271° 42' 40"	283° 4' 50"
13	257° 50' 30"	274° 7' 40"	285° 37' 50"
14	259° 44' 40"	276° 51' 10"	288° 24' 0"
15	262° 1' 0"	279° 55' 50"	291° 24' 20"
16	264° 45' 50"	283° 25' 10"	294° 39' 20"
17	268° 8' 10"	287° 22' 20"	298° 10' 0"
18	272° 20' 20"	291° 50' 30"	301° 55' 50"
19	277° 40' 0"	296° 52' 10"	305° 57' 0"

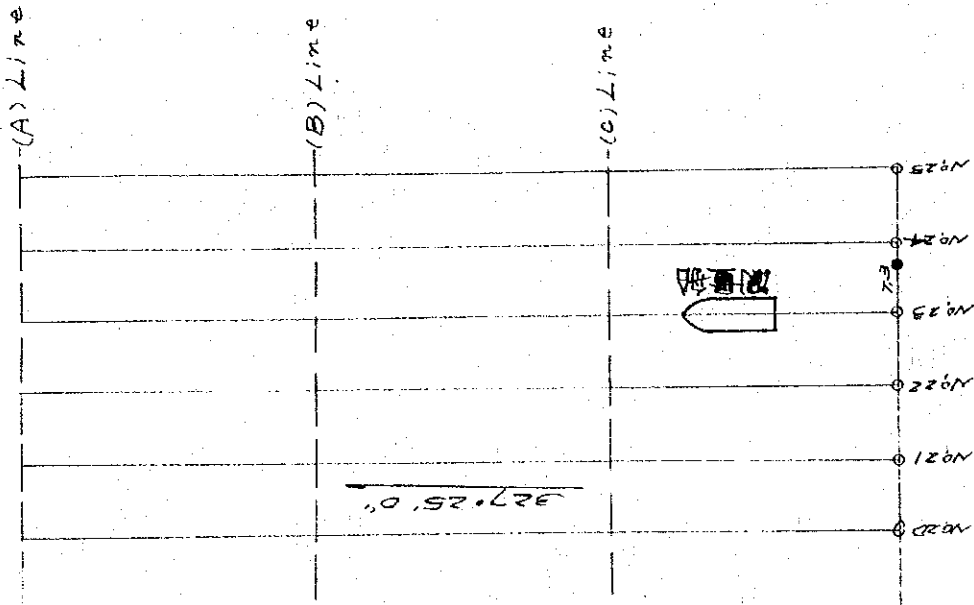




No. 3

T. 1

No.	(C) Line	(B) Line	(A) Line
20	30° 47' 20"	12° 22' 50"	1° 4' 20"
21	33° 25' 50"	15° 45' 0"	4° 15' 20"
22	35° 35' 50"	18° 43' 40"	7° 11' 40"
23	37° 25' 0"	21° 21' 50"	9° 54' 0"
24	38° 58' 0"	23° 42' 20"	12° 23' 30"
25	40° 18' 10"	25° 47' 20"	14° 41' 10"



T. 1

57° 25' 0"

57° 19' 20"

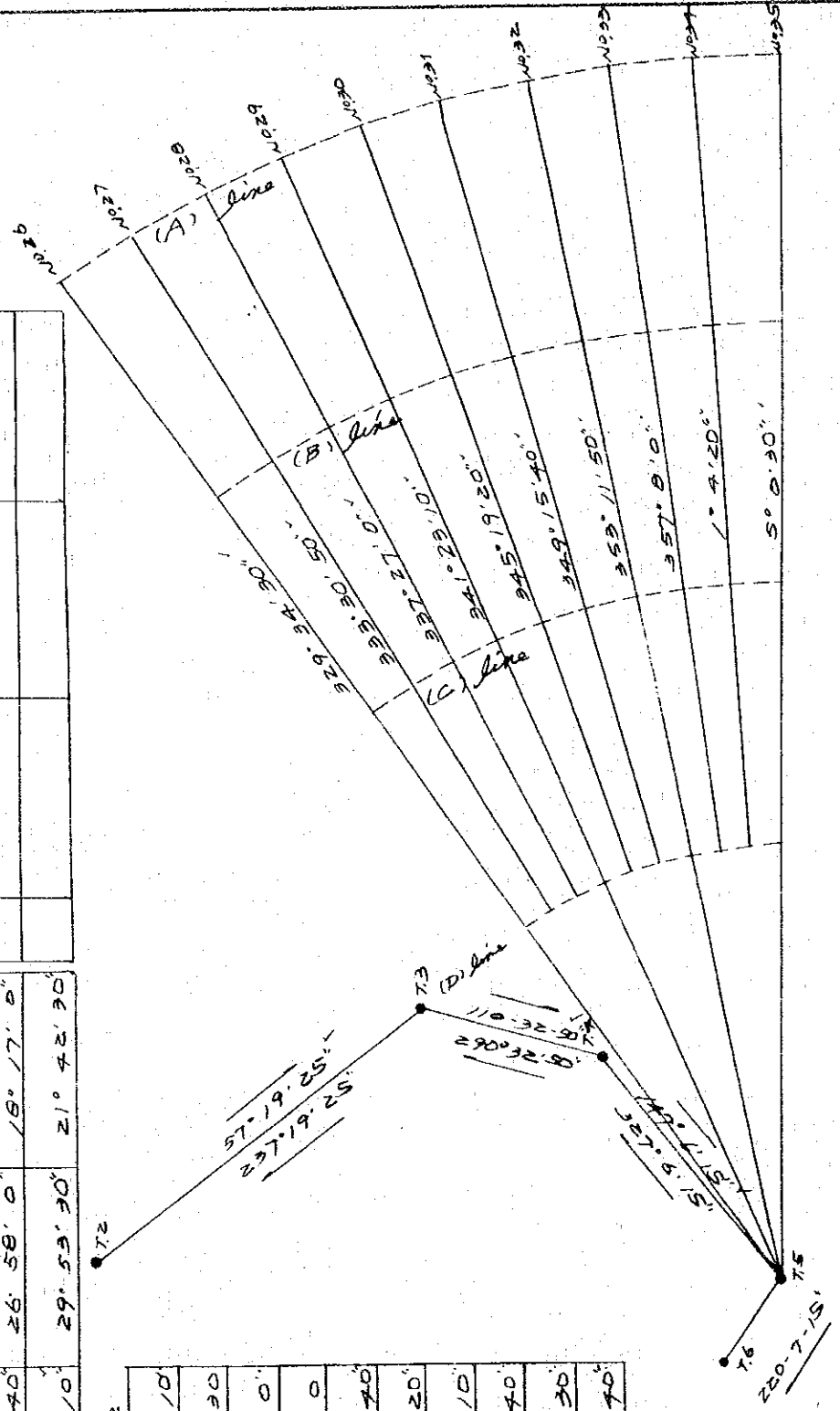
337° 19' 20"

NO. 4

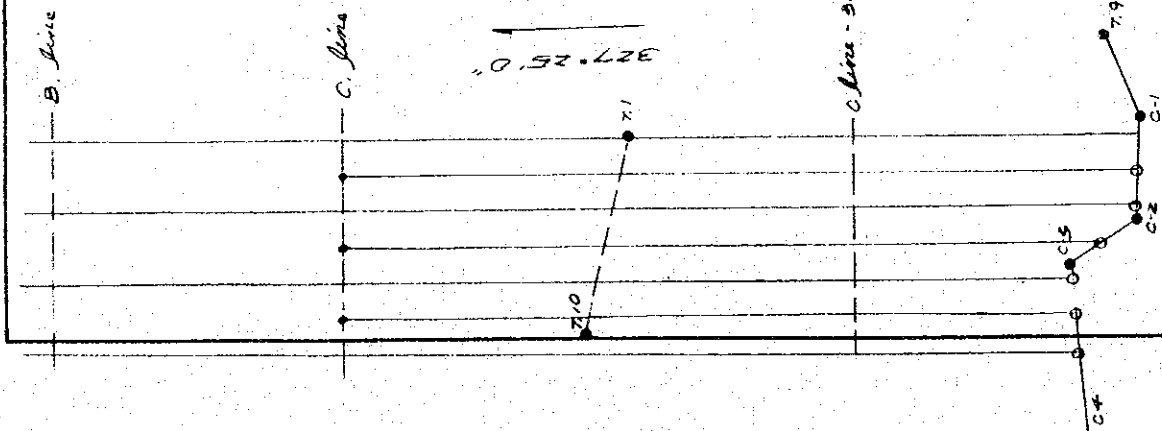
NO	(C) line	(B) line	(A) line	NO	(C) line	(B) line	(A) line
26	31° 48' 10"	14° 9' 10"	3° 12' 40"	32	44° 8' 20"	32° 44' 20"	25° 1' 30"
27	33° 53' 10"	17° 33' 40"	7° 13' 30"	33	46° 10' 30"	35° 31' 20"	28° 15' 20"
28	35° 57' 30"	20° 49' 10"	11° 3' 40"	34	48° 11' 30"	38° 14' 20"	31° 23' 50"
29	38° 0' 50"	23° 56' 50"	14° 44' 20"	35	50° 12' 40"	40° 54' 20"	34° 28' 10"
30	40° 3' 40"	26° 58' 0"	18° 17' 0"				
31	42° 6' 10"	29° 53' 30"	21° 42' 30"				

(D) line

26	57° 32' 10"
27	58° 16' 30"
28	59° 34' 0"
29	60° 45' 0"
30	62° 14' 40"
31	63° 50' 20"
32	65° 30' 10"
33	67° 14' 40"
34	68° 58' 30"
35	70° 45' 40"



NP. 5



R T. 3

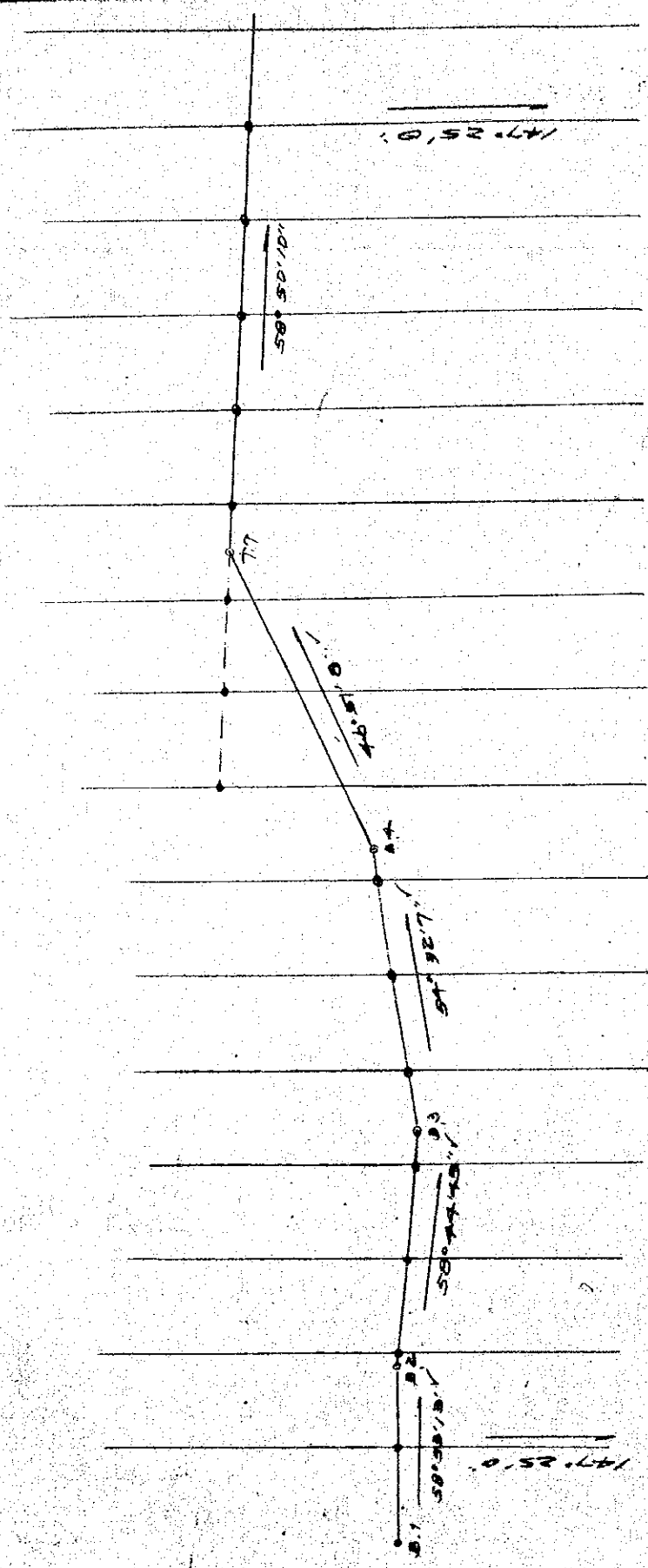
NO	(C) line	(B) line	(A) line
9-1	253° 21' 10"		
10	253° 30' 20"	267° 30' 30"	278° 34' 40"
10-1	254° 9' 10"		
11	254° 50' 20"	269° 33' 40"	280° 44' 10"
11-1	255° 26' 10"		

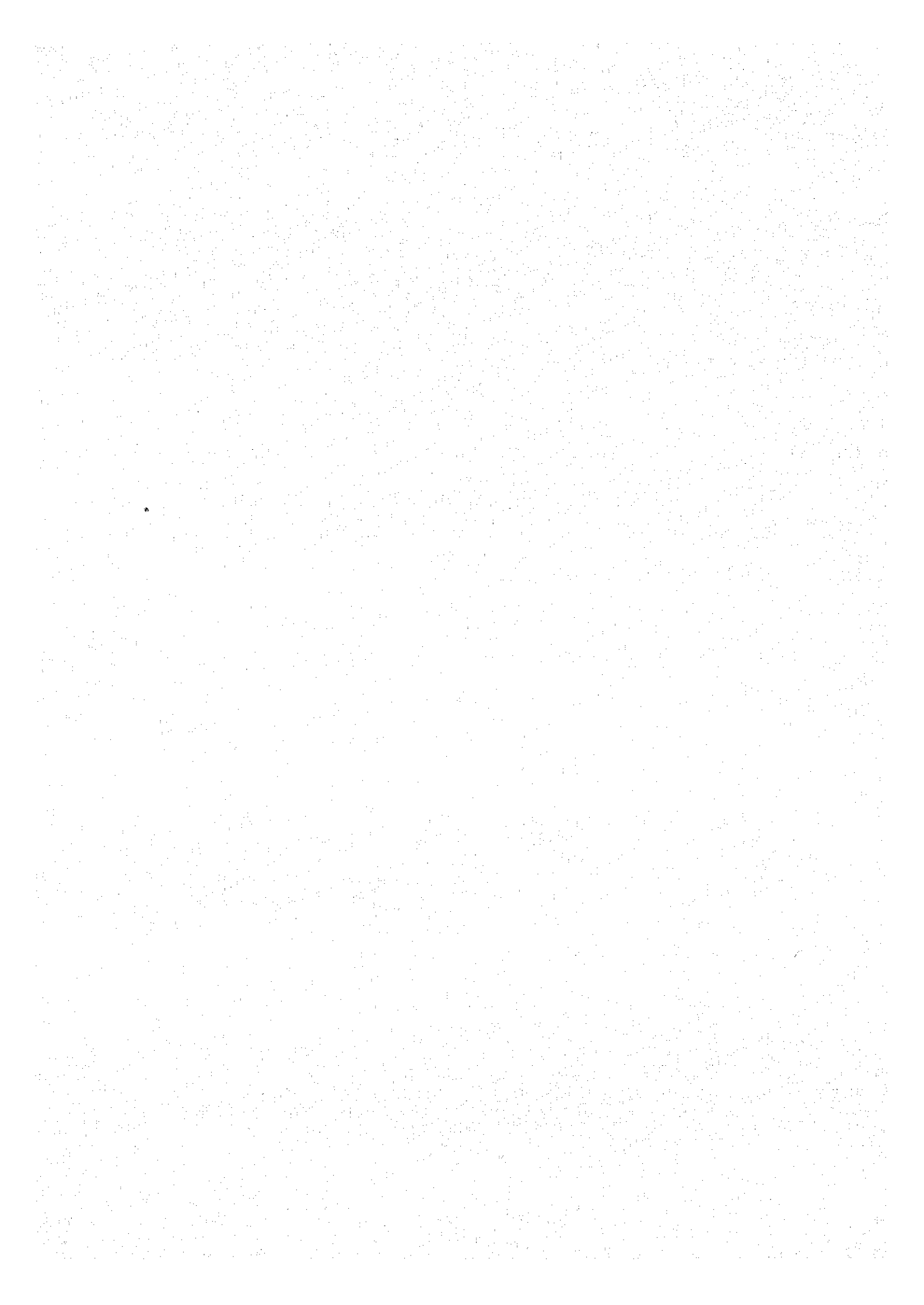
亦何路  
 C.1 → C.2    239° 7' 0" ✓    ← 59° 7' 0" ✓  
 C.2 → C.3    292° 3' 10" ✓    ← 112° 3' 10" ✓  
 C.3 → C.4    231° 27' 0" ✓    ← 51° 27' 0" ✓

C. line - 950m

P.T. 1/K1 湾内横断面方向

N.P. 6





JICA