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AD905017

Cylinder Expansion (Gurney Constant) and Warhead Fragmentation

Part 2. Computerized Data Reduction

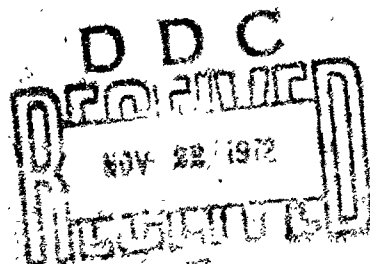
by

Richard A. Plaxson

and

Charles T. Mitchell

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ABSTRACT

Development of a cylinder expansion test for use in assessing the metal acceleration capability of explosives is discussed in Part 1 of this report. A precisely manufactured metal cylinder is filled with explosive, and its wall expansion during detonation is observed with a streak camera. The photographic record of the cylinder expansion is analyzed by mechanized film reading and high speed computer techniques. The maximum velocity attained by the wall fragments is taken as a measure of the momentum imparted to the metal by the explosive. Both manual and automated methods of data reduction for attainment of test results are given. When standardized, this test procedure will permit the correlation of the evaluations of explosive compounds between laboratories. Part 2 of this report covers the computerized reduction of the pictorial data to tabular listings and graphic displays.

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AN ACTIVITY OF THE NAVAL MATERIAL COMMAND

W. J. Moran, RADM, USN Commander

H. G. Wilson Technical Director

FOREWORD

This report describes the development of a cylinder expansion test used in assessing the metal acceleration capability of explosives. Two methods, manual and automated, for the translation of the photographic recordings are presented. The techniques described were developed by the Explosives Research Branch (Code 4541) at the Naval Weapons Center (NWC), China Lake, California. This work was performed during fiscal years 1968-71 under Task Assignment AirTask A350 350D/216B/2 F17-353-501.

This report is presented in two parts. Part 1 contains a description of the test program and Part 2 a complete listing of the tabulated, reduced data. Distribution of Part 2 has been limited to those facilities or individuals known to be engaged in explosive testing technology or applications thereof. Others may obtain copies of Part 2 by requesting from the Defense Documentation Center.

The material in this report has been reviewed for technical accuracy by C. D. Lind (Code 4541). This report is presented for use at the working level and does not necessarily reflect the official view or final judgment of NWC.

Released by
R. REED, Head
*Applied Research and
Processing Division*
1 September 1972

Under authority of
G. W. LEONARD, Head
Propulsion Development Department

INTRODUCTION

The analytical processes used in the cylinder expansion test program (described in Part 1) were extremely tedious and allowed several areas of possible errors. Serious consideration was given to automating the data reduction procedures. As a result, Control Data Corporation (CDC), Ridgecrest, California, was given the responsibility of designing a computerized system of reducing the film data and information sheets into printouts and graphic presentations. The resulting CYLEX program was devised by Joseph Nemcek of CDC.

THE CYLEX PROGRAM

The CYLEX program consists of a main line (CYLEX), two data manipulation subroutines (TEMP2, TEMP3), and three special purpose subroutines (POINTR, ORTHLS, COEFS). CYLEX is the name of the main line program which initiates the data processing. In CYLEX the plot array is established and the common areas filled. CYLEX reads the raw data cards and fills the X and Y arrays which are then fitted to a curve by means of an orthogonal least squares fit of order specified by the user.

TEMP2 is the tabulation computation subroutine called by CYLEX. TEMP2 creates the values for the variables TJ, RJ, TDJ, R_j' , V_j' , Alpha' , RINJ' , and VOLJ'/VOLD . These values are then printed in tabular form by the printer and/or the plotter, based on a user declared option. TEMP2 also calculates the above variables at the points 5, 10, 15, 19, 26, 32 mm from the Y_0 radius point. The specified point values that fall within the limits of the data fitted in CYLEX are printed at the end of the table output and at the completion of an entire run the average of the top and bottom values, if available, are printed at the end of the tabular list.

TEMP3 is the subroutine to do the plotting. Entry is from TEMP2 based on a check of user specified plot options. If any plots are requested, TEMP3 is called, otherwise control is returned from TEMP2 to CYLEX. Five different graphs may be produced in TEMP3:

V_j' vs TJ

$R_j - R_0$ vs TJ

$R - R_0$ vs TJ

Alpha_j' (Alpha' in tabular printout) vs RJ'

R_j vs TJxD (TDJ in tabular printout)

Each of the graphs has a fixed ordinate scale and an abscissa scale that is thirty units long. Since each graph may extend over more than one page, the abscissa scale limits are variable from -99 to +999 with the first graph of a series having as smallest abscissa value an integral ten below the least abscissa data value.

TEMP3 also contains a checking section that will mark, on demand, the points on the graphs equivalent to the values calculated at the 5, 10, 15, 19, 26, and 32 mm points.

After completion of all requested plots, a "walk back" to CYLEX occurs.

POINTR is a special purpose routine to draw either an arrow or a triangle on the plotter at any specific X, Y location. The arrow is 80 x 20 rosters and the triangle 40 x 20 rosters. The specified X, Y location is the point of the arrow or the apex of the equal sides of the isosceles triangle. The symbol is orientable in 360 degrees with 0° when the arrow is vertical and increasing degrees running counter clockwise.

ORTHLS is the math pack orthogonal polynomial routine and finds the parameters of the least squares polynomial which best approximates a weighted set of points using orthogonal polynomials.

COEFS is the math pack routine to create a set of coefficients of the least squares polynomial which best approximates a weighted set of data points using the orthogonality parameters created by ORTHLS.

In the program is a table called POINTS set with values of the six known points from which the "Top" and "Bottom" lines are written. This table also is used for directing the drawing of the plot arrows. Organization of table is as below:

	1	2	3	4	5	6	7	8	9
	H	T	YA	Alpha	R	TD	VP	RP	Distance
1									5
2									10
3									15
4									19
5									26
6									32

NWC TP 5240
PART 2

TI (USECS)	RI (MM)	TJ (USECS)	RJ (MM)	TOP TDJ (MM)	RJ (MM)	VJ (MM/USECS)	ALPHA (MM/USECS)	RINJ (MM)	PAGE 2 VOLJ/VOL0
1.21443	23.60920	7.21443	23.60920	55.62916	23.61384	1.41294	2.40982	23.01431	3.00471
7.41483	23.90237	7.41483	23.90237	57.07194	23.89708	1.41975	2.42152	23.01431	3.08032
7.61523	24.18952	7.61523	24.18952	58.61443	24.18287	1.42634	2.43236	22.62240	3.17334
7.81563	24.48068	7.81563	24.48068	60.15691	24.46935	1.43273	2.44385	22.92957	3.25975
8.01603	24.77386	8.01603	24.77386	61.69940	24.75709	1.43891	2.45448	23.23629	3.34757
8.21643	25.06402	8.21643	25.06402	63.24188	25.04605	1.44488	2.46475	23.54462	3.43680
8.41683	25.34514	8.41683	25.34514	64.78437	25.32746	1.45065	2.47467	23.85244	3.52742
8.61723	25.63932	8.61723	25.63932	66.32685	25.62146	1.45621	2.48424	24.16161	3.61948
8.81764	25.92847	8.81764	25.92847	67.86934	25.91913	1.46156	2.49345	24.47149	3.71290
9.01804	26.20980	9.01804	26.20980	69.41182	26.21335	1.46671	2.50230	24.78208	3.80774
9.21844	26.52486	9.21844	26.52486	70.95431	26.50787	1.47165	2.51080	25.09329	3.90398
9.41884	26.80799	9.41884	26.80799	72.49679	26.80307	1.47628	2.51895	25.40514	4.00162
9.61924	27.10116	9.61924	27.10116	74.03928	27.09940	1.48090	2.52673	25.71757	4.10005
9.81964	27.40337	9.81964	27.40337	75.58176	27.39661	1.48522	2.53416	26.03057	4.20107
10.02004	27.68550	10.02004	27.68550	77.12425	27.69466	1.48933	2.54124	26.34408	4.30287
10.22044	27.98068	10.22044	27.98068	78.66673	27.99352	1.49323	2.54798	26.65608	4.40606
10.42084	28.28791	10.42084	28.28791	80.20922	28.29314	1.49693	2.55432	26.97254	4.51062
10.62124	28.59212	10.62124	28.59212	81.75170	28.59348	1.50042	2.56033	27.28742	4.61658
10.82164	28.88831	10.82164	28.88831	83.29419	28.89449	1.50370	2.56598	27.60208	4.72384
11.02204	29.19152	11.02204	29.19152	84.83667	29.19615	1.50677	2.57127	27.91850	4.83248
11.22244	29.50076	11.22244	29.50076	86.37916	29.49840	1.50984	2.57621	28.23423	4.94247
11.42285	29.79895	11.42285	29.79895	87.92164	29.80120	1.51230	2.58079	28.55044	5.05390
11.62325	30.11022	11.62325	30.11022	89.46413	30.10452	1.51475	2.58502	28.86690	5.16648
11.82365	30.40136	11.82365	30.40136	91.00661	30.40830	1.51700	2.58888	29.18358	5.28043
12.02405	30.69152	12.02405	30.69152	92.54910	30.71252	1.51904	2.59240	29.50042	5.39572
12.22445	31.02284	12.22445	31.02284	94.09158	31.01712	1.52087	2.59553	29.81741	5.51230
12.42525	31.33007	12.42525	31.33007	95.63406	31.32207	1.52249	2.59835	30.13461	5.63016
12.62565	31.62726	12.62565	31.62726	97.17655	31.62723	1.52391	2.60079	30.45167	5.74930
12.82585	31.92545	12.82585	31.92545	98.71904	31.93284	1.52512	2.60288	30.76868	5.86959
13.02605	32.22565	13.02605	32.22565	100.26152	32.23858	1.52613	2.60460	31.08605	5.99134
13.22645	32.54091	13.22645	32.54091	101.80401	32.54450	1.52692	2.60598	31.40320	6.11421
13.42685	32.84914	13.42685	32.84914	103.34649	32.85056	1.52751	2.60699	31.72027	6.23830
13.62725	33.16240	13.62725	33.16240	104.88898	33.15672	1.52789	2.60765	32.03723	6.36380
13.82765	33.46460	13.82765	33.46460	106.43146	33.46293	1.52807	2.60795	32.35404	6.49007
14.02805	33.75175	14.02805	33.75175	107.97394	33.76916	1.52804	2.60789	32.67068	6.61772
14.22845	34.07304	14.22845	34.07304	109.51643	34.07536	1.52780	2.60748	32.98708	6.74652
14.42885	34.38529	14.42885	34.38529	111.05892	34.38149	1.52736	2.60671	33.30320	6.87645
14.62926	34.69753	14.62926	34.69753	112.60140	34.68751	1.52670	2.60559	33.61903	7.00750
14.82966	35.00677	14.82966	35.00677	114.14389	34.99337	1.52583	2.60410	33.93453	7.13964
15.03006	35.32203								
15.23046	35.62926								
15.43086	35.92745								
15.63126	36.23167								
15.83166	36.53990								
16.03206	36.84822								
16.23246	37.17444								
16.43287	37.49472								
16.63327	37.79994								

[illegible]

PAGE 1

EXPERIMENT NUMBER R-17.
NWC CODE 4641 CYLEX

FIRING DATE 8 JANUARY 1968.
MAGNIFICATION = .9960
OUTSIDE RADIUS = 16.31MM

FIRING BY C. C. MITCHELL.
WRITING RATE = 1.497(NM/USEC)
INSIDE RADIUS = 12.70MM

C/M = .4193 D = 7.697 MM/USECS

METAL CU(OPHC) RHOM = 8.9800/CG EXPLOSIVE PBXN-101 RHOC = 1.7000/CG

T1 (USECS)	R1 (MM)	TJ (USECS)	RJ (MM)	BOTTOM TDJ (MM)	RJ (MM)	VJ (NM/USEC)	ALPHA (NM/USEC)	RINJ (MM)	VOLJ (VOLO)
-00000	16.30600	3.20641	18.32106	24.67976	18.29791	1.32489	2.08698	16.18116	1.62335
-20040	16.43251	3.40681	18.56603	26.22224	18.54443	1.23536	2.10493	16.45041	1.67968
-40080	15.65640	3.60721	18.81704	27.76473	18.79303	1.24585	2.12257	16.73901	1.73721
-60120	15.87629	3.80762	19.04495	29.30721	19.04368	1.25575	2.13989	17.01993	1.79601
-80160	16.05901	4.00802	19.27487	30.84970	19.29632	1.26566	2.15690	17.30215	1.85608
1.00200	16.24275	4.20842	19.53390	32.39218	19.55094	1.27539	2.17359	17.58567	1.91739
1.20240	16.40941	4.40882	19.78792	33.93467	19.80749	1.28494	2.18998	17.87045	1.97999
1.40281	16.54696	4.60922	20.05398	35.47715	20.06593	1.29429	2.20602	18.15649	2.04388
1.60321	16.72668	4.80962	20.31804	37.01964	20.32623	1.30347	2.22177	18.43376	2.10907
1.80361	16.89234	5.01002	20.57608	38.56212	20.58835	1.31246	2.23719	18.73224	2.17558
2.00401	17.05499	5.21042	20.85117	40.10461	20.85226	1.32126	2.25230	19.02191	2.24337
2.20441	17.28680	5.41082	21.12226	41.64709	21.11790	1.32988	2.26710	19.31275	2.31249
2.40481	17.42146	5.61122	21.37025	43.18958	21.38526	1.33831	2.28158	19.60474	2.38295
2.60521	17.62732	5.81162	21.64936	44.73206	21.65429	1.34655	2.29574	19.89785	2.45474
2.80561	17.85620	6.01202	21.90840	46.27455	21.92495	1.35462	2.30959	20.19207	2.52787
3.00601	18.06804	6.21242	22.19956	47.81703	22.19721	1.36249	2.32311	20.48737	2.60235
3.20641	18.32106	6.41283	22.46964	49.35952	22.47103	1.37018	2.33633	20.78373	2.67818
3.40681	18.56603	6.61323	22.72868	50.90200	22.74637	1.37769	2.34922	21.08112	2.75537
3.60721	18.81704	6.81363	22.92787	52.44449	23.02319	1.38501	2.36180	21.37952	2.83392
3.80762	19.04495	7.01403	23.31804	53.98697	23.30147	1.39214	2.37406	21.67890	2.91385

TI (USECS)	RI (MH)	TJ (USEC)	RJ (MH)	TOJ (MH)	RJ* (MH)	VJ* (MH/USEC)	ALPHA* (MH/USEC)	RINJ* (MH)	VOLJ*/VOLO	PAGE 2
7.21443	23.59012	7.21443	23.59012	55.52946	23.58115	1.39909	2.38600	21.97924	2.99515	
7.41493	23.46221	7.41493	23.46221	57.07194	23.10221	1.40585	2.39763	22.28052	3.07782	
7.61523	24.15739	7.61523	24.15739	50.61443	24.14461	1.41243	2.40894	22.58270	3.16187	
7.81563	24.41643	7.81563	24.41643	60.15691	24.42430	1.41882	2.41993	22.88577	3.24731	
8.01603	24.71261	8.01603	24.71261	61.69940	24.71326	1.42503	2.43060	23.18969	3.33413	
8.21643	25.00980	8.21643	25.00980	63.24148	24.90944	1.43105	2.44096	23.49444	3.42234	
8.41683	25.27687	8.41683	25.27687	64.78437	25.20492	1.43669	2.45099	23.79999	3.51193	
8.61723	25.54811	8.61723	25.54811	66.32635	25.57534	1.44254	2.46071	24.10631	3.60292	
8.81764	25.81926	8.81764	25.81926	67.86934	25.86497	1.44800	2.47011	24.41338	3.69529	
9.01804	26.16341	9.01804	26.16341	69.41182	26.15564	1.45324	2.47920	24.72117	3.78905	
9.21844	26.46562	9.21844	26.46562	70.95431	26.44784	1.45837	2.48756	25.02965	3.88420	
9.41884	26.73871	9.41884	26.73871	72.49679	26.74019	1.46328	2.49641	25.33879	3.98074	
9.61924	27.04996	9.61924	27.04996	74.03928	27.03391	1.46801	2.50454	25.64856	4.07867	
9.81964	27.34012	9.81964	27.34012	75.58176	27.32856	1.47254	2.51235	25.95834	4.17798	
10.02004	27.63429	10.02004	27.63429	77.12425	27.62410	1.47690	2.51984	26.26589	4.27867	
10.22044	27.92646	10.22044	27.92646	78.66673	27.92049	1.48106	2.52701	26.58139	4.38074	
10.42084	28.21361	10.42084	28.21361	80.20922	28.21770	1.48505	2.53386	26.89340	4.48419	
10.62124	28.51381	10.62124	28.51381	81.75170	28.51569	1.48884	2.54040	27.20590	4.58901	
10.82164	28.80899	10.82164	28.80899	83.29419	28.81442	1.49245	2.54662	27.51885	4.69519	
11.02204	29.13027	11.02204	29.13027	84.83607	29.11385	1.49588	2.55251	27.83223	4.80273	
11.22244	29.42345	11.22244	29.42345	86.37916	29.41386	1.49912	2.55809	28.14600	4.91163	
11.42285	29.71361	11.42285	29.71361	87.92154	29.71469	1.50217	2.56335	28.46013	5.02188	
11.62325	30.01381	11.62325	30.01381	89.46413	30.01602	1.50504	2.56829	28.77460	5.13347	
11.82365	30.30296	11.82365	30.30296	91.00661	30.31790	1.50773	2.57291	29.08937	5.24640	
12.02405	30.62324	12.02405	30.62324	92.54910	30.62030	1.51022	2.57722	29.40441	5.36065	
12.22445	30.90838	12.22445	30.90838	94.09158	30.92319	1.51254	2.58120	29.71969	5.47622	
12.42485	31.22364	12.42485	31.22364	95.63406	31.22632	1.51467	2.58486	30.03518	5.59310	
12.62525	31.51380	12.62525	31.51380	97.17655	31.53026	1.51661	2.58821	30.35084	5.71129	
12.82565	31.80605	12.82565	31.80605	98.71904	31.83437	1.51836	2.59123	30.66665	5.83076	
13.02605	32.12324	13.02605	32.12324	100.26152	32.13381	1.51994	2.59394	30.98256	5.95151	
13.22645	32.42645	13.22645	32.42645	101.80401	32.44384	1.52137	2.59633	31.29856	6.07353	
13.42685	32.74774	13.42685	32.74774	103.34649	32.74354	1.52252	2.59840	31.61461	6.19681	
13.62725	33.05196	13.62725	33.05196	104.88898	33.05376	1.52354	2.60014	31.93067	6.32133	
13.82765	33.34312	13.82765	33.34312	106.43146	33.35917	1.52437	2.60157	32.24671	6.44708	
14.02805	33.63730	14.02805	33.63730	107.97394	33.66472	1.52501	2.60268	32.56270	6.57406	
14.22845	33.97454	14.22845	33.97454	109.51643	33.97038	1.52547	2.60347	32.87861	6.70223	
14.42885	34.29994	14.42885	34.29994	111.05892	34.27712	1.52574	2.60394	33.19440	6.83160	
14.62925	34.60717	14.62925	34.60717	112.60140	34.58139	1.52583	2.60409	33.51005	6.96214	
14.82965	34.89231	14.82965	34.89231	114.14387	34.88766	1.52573	2.60393	33.82551	7.09384	
15.03005	35.20456	15.03005	35.20456	115.68637	35.19333	1.52545	2.60344	34.14075	7.22668	

TI (USECS)	RI (MM)	TJ (USEC)	RJ (MM)	BOTTOM TDJ (MM)	RJ (MM)	VJ (MM/USEC)	ALPHA (MM/USEC)	RINJ (MM)	VOLJ (MM/USEC)
16.83367	37.97865								
17.03407	38.29793								
17.23447	38.62122								
17.43487	38.93749								
17.63527	39.24773								
17.83567	39.57202								
18.03607	39.90034								
18.23647	40.20154								
18.43687	40.52885								
18.63727	40.83507								
18.83767	41.15134								
19.03808	41.49672								
19.23848	41.79090								
19.43888	42.09612								
19.63928	42.41640								
19.83968	42.74571								
20.04008	43.07101								
20.24048	43.38728								
20.44088	43.67945								
20.64128	44.01579								
20.84168	44.28586								
BOTTOM VALUES AT 5. MM									
		4.79044	20.30600	36.47234	20.30130	1.30260	2.22028		
BOTTOM VALUES AT 10. MM									
		8.43274	25.30600	64.90684	25.30968	1.43734	2.45170		
BOTTOM VALUES AT 15. MM									
		11.81444	30.30600	90.43604	30.30408	1.50761	2.57271		
BOTTOM VALUES AT 19. MM									
		14.44908	34.30600	111.71454	34.30096	1.52576	2.60397		
AVERAGE VALUES AT 5. MM									
		4.79034	20.30600	36.47124	20.30167	1.30842	2.23027		
AVERAGE VALUES AT 10. MM									
		8.41556	25.30600	64.77455	25.30955	1.44373	2.46278		
AVERAGE VALUES AT 15. MM									
		11.78464	30.30600	90.70639	30.30399	1.51193	2.58015		
AVERAGE VALUES AT 19. MM									
		14.41495	34.30600	110.95186	34.30754	1.52662	2.60545		

CYLEX

CUSTOMER NAME

Page 1 of 2

0 = ZERO 1 = ONE I = ALPHA J = TWO K = ALPHA L =

M = THREE N = FOUR O = FIVE P = SIX Q = SEVEN R = EIGHT

S = NINE T = TEN U = ELEVEN V = TWELVE W = THIRTEEN

X = FOURTEEN Y = FIFTEEN Z = SIXTEEN

CODE	NAME, TELEPHONE
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REMARKS CARD - ONE, 80 Characters & Free Form	
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[illegible]

METAL (INLET)	RMS _{in}		EXPLOSIVE		RMS _{out}	
	(RMS _{in})	g/c	(RMS _{in})	g/c	(RMS _{out})	g/c
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81	2	3	4	5	6	7
82	2	3	4	5	6	7
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WIRING RATE		INSIDE RAOHS	OUTSIDE RAOHS	DISTRIBUTION VELOCITY
(WR)	mm ²	(RI)	(RO)	(D)
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AASL MEMEX 990551 X47,
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NWC CODE 4541 CYLEX

C. F. MITCHELL.

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1	1	1	1	002	2	17 1	28600 00328	1	1
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1	1	1	1	012	2	17 1	31600 02096	1	1
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NWC TP 5240
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045	3	17 1	41500 10860
046	3	17 1	41800 11174
047	3	17 1	42100 11456
048	3	17 1	42400 11748
049	3	17 1	42700 12049
050	3	17 1	43000 12330
051	3	17 1	43300 12624
052	3	17 1	43600 12930
053	3	17 1	43900 13233
054	3	17 1	44200 13528
055	3	17 1	44500 13830
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057	3	17 1	45100 14435
058	3	17 1	45400 14751
059	3	17 1	45700 15035
060	3	17 1	46000 15324
061	3	17 1	46300 15654
062	3	17 1	46600 15960
063	3	17 1	46900 16256
064	3	17 1	47200 16553
065	3	17 1	47500 16852
066	3	17 1	47800 17166
067	3	17 1	48100 17473
068	3	17 1	48400 17785
069	3	17 1	48700 18086
070	3	17 1	49000 18372
071	3	17 1	49300 18692
072	3	17 1	49600 19003
073	3	17 1	49900 19314
074	3	17 1	50200 19622
075	3	17 1	50500 19936
076	3	17 1	50800 20242
077	3	17 1	51100 20530
078	3	17 1	51400 20842
079	3	17 1	51700 21149
080	3	17 1	52000 21477
081	3	17 1	52300 21781
082	3	17 1	52600 22100
083	3	17 1	52900 22404
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086	3	17 1	53800 23345
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089	3	17 1	54700 24275
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092	3	17 1	55600 25228
093	3	17 1	55900 25540
094	3	17 1	56200 25870
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096	3	17 1	56800 26527
097	3	17 1	57100 26807
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104	3	17	59200-29027
105	3	17	59500-29340
106	3	17	59800-29648
107	3	17	60100-29976
108	3	17	60400-30314
109	3	17	60700-30625
110	3	17	61000-30950
111	3	17	61300-31271
112	3	17	61600-31612
113	3	17	61900-31928
000	3	17	28000-00000
001	3	17	28300-00126
002	3	17	28600-00349
003	3	17	28900-00570
004	3	17	29200-00750
005	3	17	29500-00933
006	3	17	29800-01099
007	3	17	30100-01236
008	3	17	30400-01415
009	3	17	30700-01580
010	3	17	31000-01742
011	3	17	31300-01943
012	3	17	31600-02107
013	3	17	31900-02322
014	3	17	32200-02540
015	3	17	32500-02751
016	3	17	32800-03003
017	3	17	33100-03247
018	3	17	33400-03497
019	3	17	33700-03724
020	3	17	34000-03953
021	3	17	34300-04211
022	3	17	34600-04464
023	3	17	34900-04729
024	3	17	35200-04992
025	3	17	35500-05251
026	3	17	35800-05523
027	3	17	36100-05793
028	3	17	36400-06040
029	3	17	36700-06314
030	3	17	37000-06576
031	3	17	37300-06866
032	3	17	37600-07135
033	3	17	37900-07393
034	3	17	38200-07691
035	3	17	38500-07980
036	3	17	38800-08251
037	3	17	39100-08522
038	3	17	39400-08816
039	3	17	39700-09074
040	3	17	40000-09369
041	3	17	40300-09665
042	3	17	40600-09971
043	3	17	40900-10241
044	3	17	41200-10526
045	3	17	41500-10814

NWC TP 5240
PART 2

41800-11115	17 2	096	1
42100-11387	17 2	097	1
42400-11697	17 2	098	1
42700-11986	17 2	099	1
43000-12279	17 2	050	1
43300-12570	17 2	051	1
43600-12856	17 2	052	1
43900-13155	17 2	053	1
44200-13449	17 2	054	1
44500-13769	17 2	055	1
44800-14061	17 2	056	1
45100-14350	17 2	057	1
45400-14649	17 2	058	1
45700-14937	17 2	059	1
46000-15256	17 2	060	1
46300-15540	17 2	061	1
46600-15854	17 2	062	1
46900-16143	17 2	063	1
47200-16454	17 2	064	1
47500-16750	17 2	065	1
47800-17052	17 2	066	1
48100-17372	17 2	067	1
48400-17675	17 2	068	1
48700-17965	17 2	069	1
49000-18258	17 2	070	1
49300-18594	17 2	071	1
49600-18918	17 2	072	1
49900-19224	17 2	073	1
50200-19508	17 2	074	1
50500-19819	17 2	075	1
50800-20136	17 2	076	1
51100-20432	17 2	077	1
51400-20747	17 2	078	1
51700-21056	17 2	079	1
52000-21370	17 2	080	1
52300-21670	17 2	081	1
52600-21977	17 2	082	1
52900-22289	17 2	083	1
53200-22582	17 2	084	1
53500-22900	17 2	085	1
53800-23222	17 2	086	1
54100-23537	17 2	087	1
54400-23846	17 2	088	1
54700-24169	17 2	089	1
55000-24496	17 2	090	1
55300-24796	17 2	091	1
55600-25122	17 2	092	1
55900-25427	17 2	093	1
56200-25742	17 2	094	1
56500-26086	17 2	095	1
56800-26379	17 2	096	1
57100-26683	17 2	097	1
57400-27002	17 2	098	1
57700-27330	17 2	099	1
58000-27654	17 2	100	1
58300-27969	17 2	101	1
58600-28260	17 2	102	1
58900-28595	17 2	103	1

[illegible]

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*****
UNIVAC 1108 TIME/SHARING EXEC ---- MULTI-PROCESSOR SYSTEM ---- VER. 25.07.37 B04 SITE • NYC.
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RUMID • 177050	FILE NAME • PR000177050	PART NUMBER • 00	DATE • 120370	SERVICE NAME •	PROGNO •
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NWC TP 5240
PART 2

[illegible]

2 RUN 177050,195262020050,AASLCVLEX-2,4,100/10 J. MEMCEK 4964551 X17

05501 105490

SCOPIN TEMP..TPFS.
FURPLR 0017-12/03-12:46

ACLOSE TEMP.

3 FOR US CYLX-CYLEXR
CYCLE 002 COMPILED BY 1201 0057E ON 03 DEC 70 AT 12:46:39.

MAIN PROGRAM

STORAGE USED: CODE(1) 00153; DATA(0) 002016; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 PLOTS 003447
0004 IDINFO 000006
0005 ARR2 000310
0006 MAIN 002027

EXTERNAL REFERENCES (BLOCK, NAME)

0007 MODESB
0010 SCOUTH
0011 SETSMG
0012 GRIMLS
0013 COEPS
0014 TEMP2
0015 EXITE
0016 NINTRS
0017 MROUS
0020 MIGLS
0021 MIG2K
0022 WERR28
0023 MROUS
0024 MEIP58
0025 NSTOPS

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000262	100L	0001	000365	10000L	0001	000501	10001L	0001	000234	102L	0001	000655	110L
0002	000257	111L	0001	000612	1176	0001	000342	125L	0001	000604	127L	0001	000075	1506
0003	000102	1346	0001	000103	1566	0001	000115	1646	0001	000117	1676	0000	001551	201F
0004	001553	202F	0000	001560	203F	0000	001567	204F	0000	001602	205F	0001	000154	2068
0005	000161	2126	0001	000166	2166	0001	000173	2226	0001	000200	2266	0001	000207	2336
0006	001605	302F	0000	001672	303F	0000	001746	307F	0001	000375	3176	0001	000402	3236
0007	000407	3276	0001	000435	3436	0001	000444	3506	0001	000453	3556	0001	000511	3716
0008	000516	3756	0000	001550	400F	0001	000523	4016	0001	000551	4156	0001	000550	4228
0009	000567	4276	0001	000610	4426	0001	001146	5016	0001	001000	5026	0001	001004	5076
0010	001061	51L	0001	001104	5306	0001	001114	5346	0001	000034	55L	0000	002000	A
0011	002013	AAA	0000	R 000330	ALFA	0003	R 000062	ALPHA	0000	R 000342	WETA	0000	I 000004	BOTTOM
0012	000315	C	0004	R 000000	CAA	0006	R 000005	CM	0006	R 000006	CM2	0000	R 001537	CT
0013	000013	D	0000	I 001530	I	0000	I 001512	ICH6	0003	I 000005	IO	0003	I 000023	IOAT
0014	000004	IEM	0006	I 000007	IGNOR	0000	I 001520	IMLD	0000	I 001543	II02	0000	I 001531	IL
0015	001532	ILI	0000	I 001547	ILJ	0000	I 001504	IMET	0006	I 000014	INAM	0000	I 001544	INM
0016	001562	INMIC	0006	I 002026	ION	0000	I 001545	IP04	0000	I 001546	IP341	0003	I 000026	INMMS
0017	000003	ITOP	0000	I 001526	IS	0003	I 003432	I?	0003	I 003443	110	0003	I 003444	111

0003	I	003445	I12	3003	I	003433	I2	0003	I	003334	I3	0003	I	003335	I4	0003	I	003436	I5
0003	I	003437	I6	0003	I	003440	I7	0003	I	003441	I8	0003	I	003442	I9	0003	I	000000	J
0003	I	000001	JJJ	0006	I	000010	K	0000	I	001527	KK	0003	I	003446	LEV	0006	R	000000	M6
0006	R	000000	M61	0006	R	000001	M62	0000	R	001523	ORDER	0003	R	003356	POINT5	0000	R	002512	R
0000	I	000002	RD	0000	R	001535	RH0C	0000	R	001534	RH0M	0006	R	000002	RI	0000	R	003441	RI1
0006	R	001157	RMAX	0006	R	001156	RH1M	0006	I	000011	RO	0000	R	001536	R00	0000	I	000001	R01
0003	I	002342	TP	0003	I	000002	RD	0003	I	001212	RI	0003	I	002652	T	0003	I	000372	T0
0003	I	000702	T1	0000	I	000003	TOP	0000	I	000034	T1	0000	R	000564	T2	0000	R	001174	T3
0006	R	000003	Y0LB	0003	I	001522	VP	0000	R	000005	V	0006	R	000000	W8	0000	R	001542	W81
0006	R	000026	Y	0006	R	001160	YH	0000	R	000000	Z	0006	R	000336	Y	0006	R	000646	Y4
0006	R	000470	YH	0000	R	001540	YD	0005	R	000000	Z								

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C MAIN LINE FOR CYCLE
10 REAL M6M62,M61
20 INTEGER M0,M01,M02
30 DIMENSION I0(200),Y0(200),W(200),A(11),ALFA(10),OCTA(10)
40 I0(1)=200,I1(200),I3(200),POINMS(216,9)
50 DIMENSION I0(1),I0AT(13),INAM(10),IMET(6),ICM6(6),AAA(11)
60 I=1(200),Y(200),Y0(200),Y1RMS(24),I0(200),Y1(200),R(200)
70 2-R(200),I1(200),VP(200),ALPHA(200),IMOC(10,6),IMLD(6)
80 COMMON /PLOTG/J,JJ,M,ITOP,ICM,I0,I0AT,IRMS,ALPHA,I0,Y1,R1,VP,R,
90 IRP,TRINOIC,POINMS,I1,I2,I3,I4,I5,I6,I7,I8,I9,I10,I11,I12,LEV
100 COMMON /IOTMF0/CAA(6)/ARR2/2(200)
110 COMMON /MAIN/ M6,M62,R1,VOLD,VP,CM,CM2,IGNOR,K,R0,I0,D,INAM
120 I=1,Y1RMS,IRMAX,IR,IM,AAA,IOR
130 DATA TOP,*,TOP,*/BOTTOM,*/BOTTOM,*/
140 IGNOR = 1
150 READ(5,400) CAA
160 CALL M0M62(0,0)
170 CALL SCOUTH (2)
180 CALL SETSYM6 (2,93,0,1)
190 KK=2
200
210 IF (IGNOR) 50,50,52
220 52 READ (5,200) I1,I2,I3,I4,I5,I6,I7,I8,I9,I10,I11,I12,IMLD,
230 I((IMOC(I),J),J,I-1,6),I=1,0)
240 DO 61 IL=1,10
250 61 IL=1,0
260 I1=IMOC(1,IL)=IMOC(1L,IL)+IMLD(1,IL)
270 60 CONTINUE
280 READ (5,201) RMIM,RMAX,ORDER
290 KK=1
300 READ (5,204) ICM,I0AT,INAM,I0,IRMS,IMET,IRMS,ICM6,RMOC
310 READ (5,201) VM,RI,R00,0
320 CT=0,0
330 M6=0,0
340 102 READ(5,202) R0,Xb,Y0
350 IF (R0-2) 100,100,101
360 101 CT=CT+1,0
370 M6=M6+Y0
380 60 TO 102
390 CONTINUE
400

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00264 40* M6=(R00*2*CT)/M5 *1000.
00265 41* M6=1.0/M6
00266 42* RI=RI
00267 43* RI=RI*RI
00270 44* ITOP=TOP
00271 45* LEV=1
00272 46* VOLD=RI-R00*R00
00273 47* CM=(RI*RHOC)/(VOLD*RHOM)
00274 48* M61=M6
00275 49* M62=M6
00276 50* CM2=CM/2.
00277 51* M6= .001/M6
00300 52* WR= 1./WR
00301 53* FO=R00
00302 54* Y11= Y0
00303 55* M62=M6
00304 56* RMIN=RMIN/M62
00305 57* RMAX=RMAX/M62
00306 58*
00307 59* 125 R01=R0
00310 60* IF (I1) 127,127,125
00313 61* .125 60 TO 10000,10001,10000,11
00314 62* 10000. WRITE (16,302) IEN,IO,IOAT,INAM,M61,URI,R00,R11,CH,D
00341 63* WRITE (16,307) INET,RHOM,ICHS,RHOC,IRMS
00361 64* WRITE (16,303) ITOP
00364 65* K=11
00365 66* 60 Y0 (127,127,10001),11
00366 67* 10001 WRITE (16,302) IEN,IO,IOAT,INAM,M61,URI,R00,R11,CH,D
00413 68* WRITE (16,307) INET,RHOM,ICHS,RHOC,IRMS
00433 69* K=11
00436 70* WRITE (16,303) ITOP
00437 71* 127 X11=D.0
00440 72* JJ=0
00441 73* DO 110 I=2,200
00444 74* READ(5,203) IENOR,R0,R0,X11,Y11
00453 75* X11=X11)-X0
00454 76* IF (R0-901) 111,99,111
00457 77* 99 IF (Y11)-RMIN) 110,98,98
00462 78* 98 IF (Y11)-RMAX) 97,97,110
00465 79* 97 JJ=JJ+1
00466 80* XH(JJ)=X11
00467 81* YH(JJ)=Y11
00470 82* 110 CONTINUE
00472 83* 111 J=J-1
00473 84* IOR = ORDER
00474 85* IOR=ORDER+1.
00475 86* CALL ORTHLS (XH,YH,M,JJJ,O,C,ALFA,BETA,IOR,T,T2,T3,IND)
00476 87* CALL COEFS (O,C,ALFA,BETA,IOR,A,T1,T2,T3,IND)
00477 88* CALL ORTHLS (YH,XH,M,JJJ,O,C,ALFA,BETA,IOR,T1,T2,T3,IND)
00500 89* CALL COEFS (O,C,ALFA,BETA,IOR,ARA,T1,T2,T3,IND)
00501 90* DO 500 I=1,JJJ
00504 91* YAT1=0.
00505 92* ALPHA11 = 0.
00506 93* DO 501 IPOU=1,IOR

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00511 540 IP0U1=IP0U-1
00512 550 YAL1=YAL1 + A(IP0U1)*IHM(1)*IP0U1
00513 560 ALPHA(I)=ALPHA(I) + IP0U1*(IP0U1)*IHM(1)*IP0U1-1
00514 570 S01 CONTINUE
00516 580 S00 CONTINUE
00520 590 80 CALL TEMP2 (Z)
00521 100 60 TO (51-55)*KK
00522 101 51 Y(1)=Y(J+1)
00523 102 LEV=2
00524 103 KK=2
00525 104 CALL SETSMG (Z,51,0,1)
00526 105 CALL SETSMG (Z,46,0,1)
00527 106 DO 54 IL=1,5
00532 107 IL=IL+5
00533 108 DO 53 ILJ=1,6
00536 109 53 INDIC(IL,ILJ)=INDIC(IL,ILJ)
00540 110 54 CONTINUE
00542 111 IL=17
00543 112 IL=18
00544 113 IL=19
00545 114 IL=20
00546 115 IL=21
00547 116 IL=22
00550 117 IOP=80000
00551 118 IF(IOP) 50,50,125
00554 119 400 FORMAT(6A6)
00555 120 201 FORMAT(5F10,5)
00556 121 202 FORMAT(4X,11,10X,F6,0,1X,F5,0)
00557 122 203 FORMAT(6X,11,3X,12,1X,11,10X,F6,0,1X,F5,0)
00560 123 204 FORMAT(AS,5X,246,4X,10A2/3(13X6,A2,/,6A2,4X,F10,4,5X,6A2,3X,
00560 124 1F10,4)
00561 125 205 FORMAT(12I1,1X,66I1)
00562 126 302 FORMAT(1,1,19X,EXPERIMENT NUMBER,AS,70X,PAGE 1/20X,13A6,A2,/)
00562 127 1 20X, FIRING DATE,246,4X,5X,FIRED BY,10A2,
00562 128 2 20X, MAGNIFICATION =,F7,4,10X,WRITING RATE =,F7,3,
00562 129 3 (MM/USEC),/
00562 130 4 20X, OUTSIDE RADIUS =,F5,2,MM, 8X, INSIDE RADIUS =,
00562 131 5 FS,2,MM, 8X, C/M =,F6,4,7X,D =,F6,3, MM/USECS,/)
00563 132 303 FORMAT(50X,A6/
00563 133 1M,6X,11,10X,RI,10X,TJ,10X,RJ,10X,TD,9X,RJ,
00563 134 1 9X,VJ,7X,ALPHA,6X,RIMJ,6X,VOLJ,VOLO,
00563 135 2 5X,(USECS),6X,(MM),7X,(USECS),6X,(MM),7X, (MM)
00563 136 3 6X,(MM),6X,(MM/USEC),3X,(MM/USEC),5X,(MM),/)
00564 137 307 FORMAT(20X,METAL,6A2,5X,RHOM =,F5,3,6/CC,10X,
00564 138 1,EXPLOSIVE,6A2,5X,RHOC =,F5,3,6/CC,
00564 139 2,2(20X,13A6,A2,/)
00565 140 50 CALL EXITG(2)
00566 141 END

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NEW
-01

END OF COMPILATION: NO DIAGNOSTICS.

SCOPUT TPF8,TEMP.

FURPUR 0017-12/03-12:46

ACLOSE TEMP.

8ERS TPFS.

ACOPIN TEMP..TPFS.

8FREE TEMP.

8PRT.T TPFS.

FURPUR 0017-12/03-12:46

ASASCYLEX-2*TPFS ELEMENT TABLE

D NAME	VERSION	TYPE	DATE	TIME	SEQ	SIZE	PRE-TEXT	ICYCLE	WORD	PSMODE	LOCATION
TEMP2		FOR SYMB	30 OCT 70	10:49:41	1	1	36	5	0	1	1792
TEMP2R		RELOCATABLE	30 OCT 70	10:50:04	2	2	42	5	0	1	1828
TEMP3		FOR SYMB	30 OCT 70	10:50:12	3	3	74	5	0	1	1872
TEMP3R		RELOCATABLE	30 OCT 70	10:50:21	4	3	109	5	0	1	1946
POINT		FOR SYMB	30 OCT 70	10:50:26	5	5	8	5	0	1	2058
POINTR		RELOCATABLE	30 OCT 70	10:50:27	6	2	16	5	0	1	2066
ORTHLS		FOR SYMB	30 OCT 70	10:50:33	7	7	44	5	0	1	2084
ORTHLR		RELOCATABLE	30 OCT 70	10:50:38	8	1	15	5	0	1	2128
COEFS		FOR SYMB	30 OCT 70	10:50:39	9	9	31	5	0	1	2144
COEFSR		RELOCATABLE	30 OCT 70	10:50:43	10	1	12	5	0	1	2175
CYLEX		FOR SYMB	03 DEC 70	12:46:40	11	11	33	5	3	4	2180
CYLEXR		RELOCATABLE	03 DEC 70	12:46:43	12	3	43	5	3	4	2221
NEXT AVAILABLE LOCATION-											2267

ASSEMBLER PROCEDURE TABLE EMPTY

COBOL PROCEDURE TABLE EMPTY

FORTRAN PROCEDURE TABLE EMPTY.

ENTRY POINT TABLE EMPTY

8 FIN

NWC TP 5420
PART 2

RUNID: 177050 ACCOUNT: 105202020050 PROJECT: AASLCYLEX-2
LOAD 6720V 2/6 TEMP -1 177050
TIME: 00:00:02.283 IM: 14 OUT: 0 PAGES: 7
INITIATION TIME: 12:46:01-DEC 3, 1970
TERMINATION TIME: 12:47:00-DEC 3, 1970

8 FC2-15 TEMP2-TEMP2R
CYCLE_000 COMPILED BY 1201 0057E ON 22 OCT 70 AT 17:13:47.

SUBROUTINE TEMP2 ENTRY POINT 001223

STORAGE USED: CODE(1) 001236; DATA(0) 000167; BLANK COMMON(2) 000000

COMMON BLOCKS:

0003 PLOTS 003447
0004 MAIN 002027

EXTERNAL REFERENCES (BLOCK NAME)

0005 TEMPS
0006 SORT
0007 ATAM
0010 COS
0011 AFR2S
0012 MROUS
0013 MI01S
0014 MI02S
0015 MEXPS
0016 MERR3S

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0003	000232 10L	0000	000106 1000F	0000	000116 1001F
0001	000122 120L	0001	000520 121L	0001	000030 123G
0001	000253 126L	0001	000465 15L	0001	000132 161G
0001	000362 220L	0001	000507 25L	0001	000250 30L
0000	000332 103F	0001	000434 321L	0001	000570 377G
0001	001017 35L	0001	000264 40L	0001	001032 416G
0001	000772 55L	0001	000464 60L	0001	001111 64L
0001	000451 30L	0004	000200 A	0004	000203 AAA
0004	000005 CM	0004	000006 CM2	0004	000013 D
0003	000023 10AT	0003	000004 1EM	0004	000007 1GNOR
0004	000014 1WAM	0003	000162 1H0IC	0000	000143 1AJP8
0000	000011 1POM	0000	000017 1P9H1	0003	000026 1HMS
0003	000332 11	0003	000343 11C	0003	000344 111
0003	000343 13	0003	000345 14	0003	000346 15
0003	000344 16	0003	000346 17	0003	000347 18
0003	000347 19	0003	000348 20	0003	000349 21
0003	000350 22	0003	000351 23	0003	000352 24
0003	000353 25	0003	000354 26	0003	000355 27
0003	000356 28	0003	000357 29	0003	000358 30
0003	000359 31	0003	000360 32	0003	000361 33
0003	000362 34	0003	000363 35	0003	000364 36
0003	000365 37	0003	000366 38	0003	000367 39
0003	000368 40	0003	000369 41	0003	000370 42
0003	000371 43	0003	000372 44	0003	000373 45
0003	000374 46	0003	000375 47	0003	000376 48
0003	000377 49	0003	000378 50	0003	000379 51
0003	000380 52	0003	000381 53	0003	000382 54
0003	000383 55	0003	000384 56	0003	000385 57
0003	000386 58	0003	000387 59	0003	000388 60
0003	000389 61	0003	000390 62	0003	000391 63
0003	000392 64	0003	000393 65	0003	000394 66
0003	000395 67	0003	000396 68	0003	000397 69
0003	000398 70	0003	000399 71	0003	000400 72
0003	000401 73	0003	000402 74	0003	000403 75
0003	000404 76	0003	000405 77	0003	000406 78
0003	000407 79	0003	000408 80	0003	000409 81
0003	000410 82	0003	000411 83	0003	000412 84
0003	000413 85	0003	000414 86	0003	000415 87
0003	000416 88	0003	000417 89	0003	000418 90
0003	000419 91	0003	000420 92	0003	000421 93
0003	000422 94	0003	000423 95	0003	000424 96
0003	000425 97	0003	000426 98	0003	000427 99
0003	000428 100	0003	000429 101	0003	000430 102
0003	000431 103	0003	000432 104	0003	000433 105
0003	000434 106	0003	000435 107	0003	000436 108
0003	000437 109	0003	000438 110	0003	000439 111
0003	000440 112	0003	000441 113	0003	000442 114
0003	000443 115	0003	000444 116	0003	000445 117
0003	000446 118	0003	000447 119	0003	000448 120
0003	000449 121	0003	000450 122	0003	000451 123
0003	000452 124	0003	000453 125	0003	000454 126
0003	000455 127	0003	000456 128	0003	000457 129
0003	000458 130	0003	000459 131	0003	000460 132
0003	000461 133	0003	000462 134	0003	000463 135
0003	000464 136	0003	000465 137	0003	000466 138
0003	000467 139	0003	000468 140	0003	000469 141
0003	000470 142	0003	000471 143	0003	000472 144
0003	000473 145	0003	000474 146	0003	000475 147
0003	000476 148	0003	000477 149	0003	000478 150
0003	000479 151	0003	000480 152	0003	000481 153
0003	000482 154	0003	000483 155	0003	000484 156
0003	000485 157	0003	000486 158	0003	000487 159
0003	000488 160	0003	000489 161	0003	000490 162
0003	000491 163	0003	000492 164	0003	000493 165
0003	000494 166	0003	000495 167	0003	000496 168
0003	000497 169	0003	000498 170	0003	000499 171
0003	000500 172	0003	000501 173	0003	000502 174
0003	000503 175	0003	000504 176	0003	000505 177
0003	000506 178	0003	000507 179	0003	000508 180
0003	000509 181	0003	000510 182	0003	000511 183
0003	000512 184	0003	000513 185	0003	000514 186
0003	000515 187	0003	000516 188	0003	000517 189
0003	000518 190	0003	000519 191	0003	000520 192
0003	000521 193	0003	000522 194	0003	000523 195
0003	000524 196	0003	000525 197	0003	000526 198
0003	000527 199	0003	000528 200	0003	000529 201
0003	000530 202	0003	000531 203	0003	000532 204
0003	000533 205	0003	000534 206	0003	000535 207
0003	000536 208	0003	000537 209	0003	000538 210
0003	000539 211	0003	000540 212	0003	000541 213
0003	000542 214	0003	000543 215	0003	000544 216
0003	000545 217	0003	000546 218	0003	000547 219
0003	000548 220	0003	000549 221	0003	000550 222
0003	000551 223	0003	000552 224	0003	000553 225
0003	000554 226	0003	000555 227	0003	000556 228
0003	000557 229	0003	000558 230	0003	000559 231
0003	000560 232	0003	000561 233	0003	000562 234
0003	000563 235	0003	000564 236	0003	000565 237
0003	000566 238	0003	000567 239	0003	000568 240
0003	000569 241	0003	000570 242	0003	000571 243
0003	000572 244	0003	000573 245	0003	000574 246
0003	000575 247	0003	000576 248	0003	000577 249
0003	000578 250	0003	000579 251	0003	000580 252
0003	000581 253	0003	000582 254	0003	000583 255
0003	000584 256	0003	000585 257	0003	000586 258
0003	000587 259	0003	000588 260	0003	000589 261
0003	000590 262	0003	000591 263	0003	000592 264
0003	000593 265	0003	000594 266	0003	000595 267
0003	000596 268	0003	000597 269	0003	000598 270
0003	000599 271	0003	000600 272	0003	000601 273
0003	000602 274	0003	000603 275	0003	000604 276
0003	000605 277	0003	000606 278	0003	000607 279
0003	000608 280	0003	000609 281	0003	000610 282
0003	000611 283	0003	000612 284	0003	000613 285
0003	000614 286	0003	000615 287	0003	000616 288
0003	000617 289	0003	000618 290	0003	000619 291
0003	000620 292	0003	000621 293	0003	000622 294
0003	000623 295	0003	000624 296	0003	000625 297
0003	000626 298	0003	000627 299	0003	000628 300
0003	000629 301	0003	000630 302	0003	000631 303
0003	000632 304	0003	000633 305	0003	000634 306
0003	000635 307	0003	000636 308	0003	000637 309
0003	000638 310	0003	000639 311	0003	000640 312
0003	000641 313	0003	000642 314	0003	000643 315
0003	000644 316	0003	000645 317	0003	000646 318
0003	000647 319	0003	000648 320	0003	000649 321
0003	000650 322	0003	000651 323	0003	000652 324
0003	000653 325	0003	000654 326	0003	000655 327
0003	000656 328	0003	000657 329	0003	000658 330
0003	000659 331	0003	000660 332	0003	000661 333
0003	000662 334	0003	000663 335	0003	000664 336
0003	000665 337	0003	000666 338	0003	000667 339
0003	000668 340	0003	000669 341	0003	000670 342
0003	000671 343	0003	000672 344	0003	000673 345
0003	000674 346	0003	000675 347	0003	000676 348
0003	000677 349	0003	000678 350	0003	000679 351
0003	000680 352	0003	000681 353	0003	000682 354
0003	000683 355	0003	000684 356	0003	000685 357
0003	000686 358	0003	000687 359	0003	000688 360
0003	000689 361	0003	000690 362	0003	000691 363
0003	000692 364	0003	000693 365	0003	000694 366
0003	000695 367	0003	000696 368	0003	000697 369
0003	000698 370	0003	000699 371	0003	000700 372
0003	000701 373	0003	000702 374	0003	000703 375
0003	000704 376	0003	000705 377	0003	000706 378
0003	000707 379	0003	000708 380	0003	000709 381
0003	000710 382	0003	000711 383	0003	000712 384
0003	000713 385	0003	000714 386	0003	000715 387
0003	000716 388	0003	000717 389	0003	000718 390

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00101 10 SC=00TIME TCOMP2 (2)
00103 20 REAL MC=MC2
00104 30 INTEGER R0
00105 40 DIMENSION XMI(200),YMI(200),ALPHA(200),IMAX(10),X(200),Y(200),
00106 50 IVAL(200),AA(11),RI(200),Z(200),ID(11),IDAI(3),IRMS(24),TD(200),
00107 60 XT(1200),VP(200),RI(200),ZP(200),Y(200),IMDIC(10),61*POINTS(2,6,9)
00108 70 COMMON /PLOTS/ JJ,JJ,RO,ITOP,ICM,IO,IOAT,IRFMS,ALPHA,TD,YI,RI,VP,R,
00109 80 I,T,IMDIC,POT,QTS,YI,IZ,I3,I4,I5,I6,I7,I9,I10,I11,I12,LEV
00110 90 COMMON /MAIN/ G,MC2,P,VOLD,CHK,CM2,IGNOR,K,W0,IO,D,IMAX,X,Y,T,YA,
00111 100 IRMIN,IRMAX,IRMIN,IRMAX,IROR
00112 110 MOD(I1,J1)=I1-I1/IJ/J1-JJ
00113 120 301 FORMAT (10I3,F9.5)
00114 130 302 FORMAT (10I1,11Z8,'PAGE ',I2)
00115 140 303 FORMAT (5I4,A5,I4,'6X',I1,'10X',RI,'10',I1,'10X',R0,'10X',R0J,'10X',TDJ,'
00116 150 19',R0J,'6X',R0,'6X',I7,'10X',ALPHA,'6X',RI,MJ,'5X',VOLJ,'/VOLG',/
00117 160 25X,'(IUSEC)',6J,'7X',ALPHA,'7X',IUSC,'6X',IMN,'7X',IMN),'.6X)
00118 170 3*(MM),'.6X',IMF,UFIC',3X',IMF,USEC',3X',IMN)/)
00119 180 1000 FORMAT(1MD,A6,' VALUES AT ',F10.0,' MM',6(3X,F4.5))
00120 190 IFC=2
00121 200 S= SUBT(CM/41,C421)
00122 210 S= 1./5
00123 220 VT=0.
00124 230 I=0
00125 240 DO 120 I1=1,J
00126 250 IF (Y(I11)-RMI) 260,201,201
00127 260 201 IF (Y(I11)-RMI) 202,202,200
00128 270 202 CONTINUE
00129 280 I=I+1
00130 290 RII=MG+VMI(1)*R0
00131 300 RPI(1)=MG+YMI(1)*R0
00132 310 TII = MG+XMI(1)*COI
00133 320 RII(1)=YMI(1)*MG2+RC
00134 330 TII(1)=XMI(1)*RC+ODI
00135 340 VPI(1) = (ALPHA*II)*MG/(COI*WR)
00136 350 IOI(1) = YI(1)*D
00137 360 TMTA = ATAN(VPI(1)/OI)/2.
00138 370 ALPHA*II = (VPI(1)/COS(TMTA)))*S
00139 380 GO TO 120
00140 390 200 CONTINUE
00141 400 RII(1)=YI(1)*MG2+RC
00142 410 TII(1)=XMI(1)*MG+COI
00143 420 120 CONTINUE
00144 430 IF(I1) 123,123,122
00145 440 122 I=0
00146 450 DO 121 I1=1,J
00147 460 IF(Y(I11)-RMI) 220,221,221
00148 470 221 IF(Y(I11)-RMI) 222,222,220
00149 480 222 I=I+1
00150 490 RM= SORT(CPI(1)*21+ VOLD)
00151 500 RATIO= RM-RMI/RMI
00152 510 R=K+1
00153 520 IF (MOD(RM,441) 223,223,126
00154 530 223 GO TO 120,120,11
00200

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[illegible]

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00350 1080 1010 CONTINUE
00352 1090 POINTS(LEV,JMM,5)= MG*POINTS(LEV,JMM,1) *RD
00353 1100 POINTS(LEV,JMM,2)= POINTS(LEV,JMM,2)*MR+.001
00354 1110 IF ( POINTS(LEV,JMM,2) .GT. T(IJJ) ) GO TO 35
00355 1120 POINTS(LEV,JMM,6)= POINTS(LEV,JMM,2)*0
00357 1130 POINTS(LEV,JMM,7)=(POINTS(LEV,JMM,4)*RG)/(1.001*MR)
00360 1140 POINTS(LEV,JMM,9)= MG*POINTS(LEV,JMM,3) *RD
00361 1150 THETA= ATAN(POINTS(LEV,JMM,7)/D)/2.
00362 1160 POINTS(LEV,JMM,4)= (POINTS(LEV,JMM,7)/COS(THETA)) * S
00363 1170 GO TO 145.55.451.11
00364 1180 45 WRITE (6,1000) ITOP,POINTS(LEV,JMM,9),POINTS(LEV,JMM,2),POINTS(LEV
00366 1190 1,JMM,5),POINTS(LEV,JMM,6),POINTS(LEV,JMM,8),POINTS(LEV,JMM,7),
00368 1200 2*POINTS(LEV,JMM,4)
00376 1210 GO TO 135.75.55.11
00377 1220 55 WRITE (16,1000) ITOP,POINTS(LEV,JMM,9),POINTS(LEV,JMM,2),POINTS(LE
00377 1230 1V,JMM,5),POINTS(LEV,JMM,6),POINTS(LEV,JMM,8),POINTS(LEV,JMM,7),
00377 1240 2*POINTS(LEV,JMM,4)
00411 1250 35 CONTINUE
00411 1260 IF (LEV .EQ. 1) GO TO 1006
00413 1270 IF (LEV .EQ. 1) GO TO 1003 JMM=1*6
00415 1270 IF ( POINTS(1,JMM,2) .GT. T(IJJ) )OR. POINTS(2,JMM,2) .GT. T(IJJ)
00420 1280 S) GO TO 1003
00422 1290 T2 =(POINTS(1,JMM,2)+POINTS(2,JMM,2))/2.
00423 1310 45 =(POINTS(1,JMM,5)+POINTS(2,JMM,5))/2.
00423 1320 T08=(POINTS(1,JMM,6)+POINTS(2,JMM,6))/2.
00426 1330 RPB=(POINTS(1,JMM,4)+POINTS(2,JMM,4))/2.
00427 1350 VP7=(POINTS(1,JMM,7)+POINTS(2,JMM,7))/2.
00430 1360 AL4=(POINTS(1,JMM,9)+POINTS(2,JMM,9))/2.
00431 1370 GO TO (65,75,65).11
00431 1370 65 WRITE (6,1001) POINTS(1,JMM,9),12.45,T08,RPB,VP7,AL4
00442 1380 GO TO (1003,1003,75).11
00443 1390 75 WRITE (16,1001) POINTS(1,JMM,9),12.45,T08,RPB,VP7,AL4
00454 1400 1003 CONTINUE
00456 1410 1006 IF (I2+I3+I4+I5+I6) 125,125,126,1
00461 1420 1261 CALL TEMP3
00462 1430 125 RETURN
00463 1440 1001 FORMAT(1MC,AVERAGE VALUES AT 'F3.0,' MR',2E6(F9.5,3H),
00464 1450 END

```

END OF COMPILATION: NO DIAGNOSTICS.

FOR IS TEMP, TEMP3R

54431 MILITARY

STORAGE USED: 0354 391015

COMMON BLOCKS:

0003 IDIMF 000006
0004 ARRZ 000310
0005 PL015 001447

EXTERNAL REFERENCES (B)

0006	FONT2
0007	FONT12
0008	FONT16
0011	SETSMG
0012	PAGE6
0013	OBJC76
0014	SUBJEG
0015	UNSC22
0016	GRIO6
0017	LEGN06
0020	TEXT6
0021	NUMRG6
0022	SCAL22
0023	POINT6
0024	POINTR
0025	MEMRG6

INVESTMENT

```

0001 000444 18L
0001 000361 2L
0001 000365 25L
0001 000343 3010L
0001 001701 12L
0001 002510 00L
0001 001654 4506
0001 002142 5306
0001 002435 6126
0005 R 000062 ALPMA
0005 R 000310 MOLOV
0005 I 000004 IEM
0005 I 000631 IM6
0005 I 000003 ITOP
0005 003444 I11
0005 I 003436 I5

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0000	I	000621	MAX
0005	R	001212	R1
0000	R	000625	INY
0000	R	000622	VMAX

0000	1	00346	LA
0000	R	00000	RO
0000	R	00624	TM
0000	R	00632	MA
0000	R	00000	LA

0000 I 000642 JZ
0005 R 002342 RP
0005 R 000702 YI
0000 R 000627 Y

0005 I 00001 JJJ
0005 * 002032 R
0005 R 000372 IO
0000 R 000626 X
0005 R 000000 Z

0005 I 000000 J
0005 R 003256 P01MIS
0005 R 002652 Y
0005 R 001522 VP
0000 R 000623 YMIN

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00101 10 SUBROUTINE TEMPS
00102 20 EXTERNAL FOMT2,FOMT12
00103 30 DIMENSION HOLDX(200),HOLDY(200)
00104 40 DIMENSION R(200),RP(200),RP(200),VP(200),ALPHA(200),TD(200),T(200)
00105 50 1,R1(200),IAT(3),IMKS(28),IOL(14),IMUTC(10,6),POINT(S(2,6,9)
00106 60 COMMON /IOINFO,CAAE(6),/PRZ(2,200)
00107 70 COMMON /PLOTS,J,JJ,RO,ITOP,ICM,IO,INAT,IMKS,ALPHA,TD,T,RI,VP,R,
00108 80 IRP,I,INDIC,POINTS(1,12,13,14,15,16,17,18,19,110,111,112,LEV
00109 90 CALL VECIG (Z,FOMT2,G)
00110 100 CALL SETSMG (Z,FOMT2,G)
00111 110 CALL VECIG (Z,FOMT2,G)
00112 120 CALL PAGEG(Z,O,1,1)
00113 130 CALL OBJCIG (Z,SFO,200,3700,266G,.)
00114 140 1 IF (I2.EQ.0) GO TO 2
00115 150 BEGIN GRAPH FOR I2
00116 160 INDEX=1
00117 170 15 MAXX=I(INDX)
00118 180 CALL SETSMG (Z,AC,G,.)
00119 190 YMAX= -(MAXX/10)*10
00120 200 YTIME= YMAX-30.
00121 210 CALL SUBJEG (Z,O,YNIM,S,YNMAX)
00122 220 CALL UNSCZ2 (Z,TN1,TN2,440,2753)
00123 230 CALL GRID6 (Z,1,1,1,10,10)
00124 240 CALL UNSCZ2 (Z,X,Y,RY5,2800)
00125 250 CALL LEGM06 (Z,X,Y
00126 260 CALL VECIG (Z,FOMT12,G)
00127 270 CALL TEXT16 (Z,X,3MSLM)
00128 280 CALL VECIG (Z,FOMT12,G)
00129 290 CALL TEXT16 (Z,6,6MSECSU,1)
00130 300 CALL SETSMG (Z,46,270,.)
00131 310 DO 16 ISAC= 1,6
00132 320 16 ISAC= ISAC-1
00133 330 X=INTG
00134 340 CALL MUNORG(Z,X,TN2,3,INTG)
00135 350 YH= ARS(YMAX)
00136 360 DO 17 ISAC= 1,4
00137 370 17 ISAC= ISAC-1
00138 380 Y= -INTG
00139 390 CALL SCALZ2(Z,X,Y,IX,IY)
00140 400 IV=IV+31
00141 410 CALL UNSCZ2(Z,X,Y,IX,IY)
00142 420 17 CALL MUNRG (Z,TN1,T,3,INTG)
00143 430 CALL UNSCZ2 (Z,X,Y,350,1700)
00144 440 CALL LEGM02 (Z,X,Y
00145 450 CALL LEGM06 (Z,X,Y
00146 460 CALL TEXT16 (Z,3,3MSLM )
00147 470 11,11H7S-64JS+00(1)

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-JF-06U0 - RSL 6-09-64 (SL 44944)

NWC TP 5240
PART 2

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00266 1000 YN = ABS(YMAX)
00267 1010 DO 27 ISAC = 1.0
00272 1020 INT6 = 10.0*(ISAC-1.0)*YM
00273 1030 Y = -INT6
00274 1040 CALL SCALZ(2.0,X,Y,IX,IV)
00275 1050 IV=IV+31
00276 1060 CALL UMSC22(2.0,X,Y,IX,IV)
00277 1070 27 CALL MUNBRG (2.0,INT6,Y,3.0,INT6)
00301 1080 CALL UMSC22 (2.0,X,Y,350.1700)
00302 1090 CALL LEGNOG (2.0,X,Y,11.11,INT6LS-JS*SU())
00303 1100 CALL VECIG (2.0,FONT12.0)
00304 1110 CALL TEXTG (2.0,3.34SLM )
00305 1120 CALL VECIG (2.0,FONT2.0)
00306 1130 CALL TEXTG (2.0,6.6MSEC2U))
00307 1140 CALL UMSC22 (2.0,X,Y,390.2160)
00310 1150 CALL LEGNOG (2.0,X,Y,40.10)
00311 1160 CALL UMSC22 (2.0,X,Y,3910.2460)
00312 1170 CALL LFGMOG (2.0,X,Y,80.1RMNS)
00313 1180 CALL UMSC22 (2.0,X,Y,3960.2660)
00314 1190 CALL LEGNOG (2.0,X,Y,6.11TOP)
00315 1200 CALL TEXTG (2.0,25.0 EXPERIMENT NUMBER *)
00316 1210 CALL TEXTG (2.0,5.1EN)
00317 1220 CALL TEXTG (2.0,19.0 DATE FIRED- *)
00320 1230 CALL TEXTG (2.0,16.10AT)
00321 1240 IPHI=2
00322 1250 INDEP=2
00323 1260 IDCP= 8
00324 1270 IP=0
00325 1280 DO 20 IDX= IMOX,JJJ
00330 1290 IF (YMIN + Y(IDX)) 21,21,22
00333 1300 21 IF (IP(IDX)- RD -100.1) 23,23,20
00336 1310 23 IP=IP+1
00337 1320 HOLDY(IP)= RP(IDX)-RD
00340 1330 HOLDY(IP)= -Y(IDX)
00341 1340 20 CONTINUE
00343 1350 22 CALL POINTG (2.0,IP,HOLDY,HOLDY)
00344 1360 INDI=IDX
00345 1370 DO 3011 J2=1.6
00350 1380 IF (INDIC(IPHI,J2).EQ. 0) GO TO 3011
00352 1390 Y = -POINTS(LEV,J2,INDEP)
00353 1400 IF (Y.LT. YMIN .OR. Y .GT. YMAX) GO TO 3011
00355 1410 X = POINTS(LEV,J2,INDEP) - RD
00356 1420 CALL POINTH(2.0,X,Y,270.0.1)
00357 1430 3011 CONTINUE
00361 1440 CALL PAGEG (2.0,1.1)
00362 1450 IF (IDR .LT. JJJ) GO TO 25
00364 1460 3 IF (IDR .EQ. 0) GO TO 9
00364 1470 C BEGIN PLOT FOR GRAPH THREE
00366 1480 IMOI=1
00367 1490 MAX=Y(INDI)
00370 1500 CALL SETSNG (2.0,6.0.0)
00371 1510 YMAX=(YMAX/101.0)
00372 1520 YMIN= YMAX-30.
00373 1530 CALL SUBJEG (2.0.0.,YMIN,100.0.,YMAX)

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00374 1590 CALL UMSC22 (Z.TMX,TNY,440.275)
00375 1590 CALL BRID6 (Z.1.1.10.10)
00376 1590 CALL UMSC22 (Z.TMX,TNY,440.275.2800)
00377 1590 CALL LEGMD6 (Z.X.Y.23.23MR - RSL5-05.5U (SLMMSU))
00400 1590 CALL SETSNG (Z.46.270.1)
00401 1590 DO 36 ISAC = 1.11
00404 1590 X=INTG
00405 1590 X=INTG
00406 1590 36 CALL NUMBR6 (Z.X.TNY.3.INTG)
00410 1590 YN = ABSIYPAX
00411 1590 DO 37 ISAC = 1.4
00414 1590 INTG = 10.0 (ISAC-1).YN
00415 1590 Y = -INTG
00416 1590 CALL SCAL22 (Z.X.Y.12.12)
00417 1590 IF IV=31
00420 1590 CALL UMSC22 (Z.X.Y.12.12)
00421 1590 37 CALL NUMBR6 (Z.TMX,Y.3.INTG)
00423 1590 CALL UMSC22 (Z.X.Y.350.170)
00424 1590 CALL LEGMD6 (Z.X.Y.12.12)
00425 1590 CALL VECIG (Z.FONT12.C)
00426 1590 CALL TEXT6 (Z.3.JMELM)
00427 1590 CALL TEXT6 (Z.FONT12.C)
00430 1590 CALL TEXT6 (Z.6.6WSECSSU)
00431 1590 CALL UMSC22 (Z.X.Y.12.12)
00432 1590 CALL LEGMD6 (Z.X.Y.80.10)
00433 1590 CALL UMSC22 (Z.X.Y.391F.265C)
00434 1590 CALL LEGMD6 (Z.X.Y.80.10)
00435 1590 CALL UMSC22 (Z.X.Y.391F.265C)
00436 1590 CALL LEGMD6 (Z.X.Y.80.10)
00437 1590 CALL TEXT6 (Z.5.IEM)
00440 1590 CALL TEXT6 (Z.19.0)
00441 1590 CALL TEXT6 (Z.16.10AT)
00442 1590 IPHIC = 3
00443 1590 INDEP = 2
00444 1590 INDEP = 5
00445 1590 XP=0
00446 1590 DO 38 IOR=INOR+J
00447 1590 IF (YMIN + YI10X) 31.32.32
00452 1590 31 IF (R110X)-80-100.1 33.33.30
00455 1590 33 IF (R110X)-80-100.1 33.33.30
00460 1590 33 IF (R110X)-80-100.1 33.33.30
00461 1590 WOLR(IP)= R110X-80
00462 1590 WOLR(IP)= -YI10X
00463 1590 30 CONTINUE
00465 1590 32 CALL POINT6 (Z.IP.WOLR.WOLR)
00466 1590 INDEP=10X
00467 1590 DO 3012 J2=1.6
00472 1590 IF (INDIC(IPM1-J2).EQ.0) 60 TO 3012
00474 1590 Y = -POINTS(LEV-J2-INDEP)
00475 1590 IF (Y .LT. YMIN .OR. Y .GT. YMAX) 60 TO 3012
00477 1590 X = POINTS(LEV-J2-INDEP) -80
00500 1590 CALL POINT6 (Z.X.V.270.1)
00501 1590 3012 CONTINUE
00503 1590 CALL PAGE6 (Z.0.1.1)

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NWC TP 5240
PART 2

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00504 2000 IF (200 .LT. J) GO TO 35
00506 2010 4 IF (IS .EQ. 0) GO TO 5
00508 2100 BEGIN PLOT FOR GRAPH FOUR
00510 2110 INDEX=1
00512 2120 45 MAXI=RP(INDX)
00514 2130 YMAX=-(KXIX/10)*10
00516 2140 YMIN=YMAX-30.
00518 2150 CALL SETSMG (2,46,0.)
00520 2160 CALL SUBJEC (2,0,VMIN,5,VMAX)
00522 2170 CALL UNSC22 (2,IM,IM,400,2753)
00524 2180 CALL EPIDC (2,1,1,1,1,10)
00526 2190 CALL UNSC27 (2,X,Y,875,2400)
00528 2200 CALL LEGMD6 (2,X,Y,20,20,20,20,20,20,20,20)
00530 2210 CALL VECIG (2,0,12,0)
00532 2220 CALL TEXTG (2,1,3,MSLM)
00534 2230 CALL TEXTG (2,0,12,0)
00536 2240 CALL TEXTG (2,0,6,EMSECSU)
00538 2250 CALL SETSMG (2,46,270.)
00540 2260 DO 46 ISAC=1,6
00542 2270 INTG=ISAC-1
00544 2280 X=INTG
00546 2290 46 CALL NUMBRG (2,X,IM,Y,3,INTG)
00548 2300 YM=ANSIYMAX)
00550 2310 DO 47 ISAC=1,4
00552 2320 INTG=10*(ISAC-1)*YM
00554 2330 Y=-INTG
00556 2340 CALL SCAL27 (2,X,Y,IX,IY)
00558 2350 IV=IV+31
00560 2360 CALL UNSC22 (2,X,Y,IX,IY)
00562 2370 47 CALL NUMBRG (2,IM,Y,3,INTG)
00564 2380 CALL UNSC22 (2,X,Y,350,1700)
00566 2390 CALL LEGMD6 (2,X,Y,20,20,20,20,20,20,20,20)
00568 2400 CALL UNSC27 (2,X,Y,390,2660)
00570 2410 CALL LEGMD6 (2,X,Y,40,10)
00572 2420 CALL UNSC22 (2,X,Y,3910,2660)
00574 2430 CALL LEGMD6 (2,X,Y,80,19MS)
00576 2440 CALL UNSC27 (2,X,Y,3850,2660)
00578 2450 CALL LEGMD6 (2,X,Y,6,1TOP)
00580 2460 CALL TEXTG (2,25,0) EXPERIMENT NUMBER *)
00582 2470 CALL TEXTG (2,5,1EN)
00584 2480 CALL TEXTG (2,19,0) DATE FIRED- *)
00586 2490 CALL TEXTG (2,15,1DAT)
00588 2500 IPMI=4
00590 2510 IDCP=4
00592 2520 IDCP=4
00594 2530 IP=0
00596 2540 DO 48 I=1,INDX,JJJ
00598 2550 IF (VMIN .GT. RP(INDX)) 41,41,42
00600 2560 41 IF (ALPHA(INDX)-4.) 43,43,48
00602 2570 43 IP=IP+1
00604 2580 MOLOX(IP)=ALPHA(INDX)
00606 2590 MOLOX(IP)=RP(INDX)
00608 2600 48 CONTINUE
00610 2610 42 CALL POINTG (2,IP,MOLOX,MOLOX)

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00610 2620      INDX=IOX
00611 2630      DO 3014 J2=1,5
00612 2640      IF (INDX(IPMI,J2) .EQ. 0) GO TO 3014
00613 2650      V = -POINTS(LEV,J2,INDEP)
00614 2660      IF (V .LT. YMIN .OR. V .GT. YMAX) GO TO 3014
00615 2670      X = POINTS(LEV,J2,IDEP)
00616 2680      CALL POINTR(2,X,Y,270.,1)
00617 2690      3014 CONTINUE
00618 2700      CALL PAGE(2,0,1,1)
00619 2710      IF (IOX.LT.JJJ) GO TO 45
00620 2720      5 IF (IG .EQ. 0) GO TO 6
00621 2730      C BEGIN PLOT NUMBER FIVE
00622 2740      INDX=1
00623 2750      55 MAXX=TO(INDX)
00624 2760      YMAX=-(MAXX/10)+10
00625 2770      YMIN=YMAX-30.
00626 2780      CALL SETSHG (2,46,0,1)
00627 2790      CALL SUBJEG (2,0,0,YMIN+100,0,YMAX/
00628 2800      CALL UNSCZ2 (2,INX,TNY,440,2753)
00629 2810      CALL GRIDG (2,1,1,10,10)
00630 2820      CALL UNSCZ2(2,X,Y,875,2800)
00631 2830      CALL LEGMDG(2,X,Y,19,1,INX,LS-JS,5U (SLMMSU))
00632 2840      CALL SETSHG (7,46,270.)
00633 2850      DO 56 ISAC = 1,11
00634 2860      INTG = (ISAC-1)*10
00635 2870      X=INTG
00636 2880      56 CALL NUMBRG(2,X,TNY,3,INTG)
00637 2890      YN = ABS(YMAX)
00638 2900      DO 57 ISAC = 1,4
00639 2910      INTG = 10*(ISAC-1)*YM
00640 2920      Y = -INTG
00641 2930      CALL SCALZ2(2,X,Y,IN,IV)
00642 2940      IV=IV+1
00643 2950      CALL UNSCZ2(2,X,Y,IN,IV)
00644 2960      57 CALL NUMBRG (2,INX,Y,3,INTG)
00645 2970      CALL UNSCZ2 (2,X,Y,350,1700)
00646 2980      CALL LEGMDG (2,X,Y,23,23,INX,LS-JS, X QUD (SLMMSU))
00647 2990      CALL UNSCZ2 (2,X,Y,390,2660)
00648 3000      CALL LEGMDG (2,X,Y,80,10)
00649 3010      CALL UNSCZ2 (2,X,Y,3910,2660)
00650 3020      CALL LEGMDG (2,X,Y,80,INX,LS)
00651 3030      CALL UNSCZ2 (2,X,Y,3060,2660)
00652 3040      CALL LEGMDG (2,X,Y,6,170P)
00653 3050      CALL TEXTG (2,5,1EM) EXPERIMENT NUMBER *)
00654 3060      CALL TEXTG (2,19,0) DATE FINED- *)
00655 3070      CALL TEXTG (2,16,10AT)
00656 3080      IPMI=5
00657 3090      INDEP=6
00658 3100      INCP= 5
00659 3110      IP=9
00660 3120      DO 58 IOR=INOR,JJJ
00661 3130      IF (IYMIN + TO(IOR)) 51,51,52
00662 3140      51 IF (RIOR) -ICP,1 53,53,50
00663 3150

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00720 3160      S3 IP=IP+1
00721 3170      MOLOX(IP)=R(IX)
00722 3180      MOLOX(IP)=TD(IX)
00723 3190      S0 CONTINUE
00724 3200      S2 CALL POINT6 (Z,IP,MOLDX,MLOY)
00725 3210      INDX=IX
00726 3220      DO 3015 J2=1,6
00727 3230      IF (INDX(IPHI,J2).EQ.0) GO TO 3015
00728 3240      Y = -POINTS(LEV,J2,INDEX)
00729 3250      IF (Y .LT. YMIN .OR. Y .GT. YMAX) GO TO 3015
00730 3260      X = POINTS(LEV,J2,INDEX)
00731 3270      CALL POINT4(Z,X,Y,270.0)
00732 3280      S015 CONTINUE
00733 3290      CALL PAGE6 (Z,0.1,1)
00734 3300      IF (IX .LT. JJJ) GO TO 55
00735 3310      6 RETURN
00736 3320      ENO

```

END OF COMPILATION: NO DIAGNOSTICS.

8 FOR-15 POINT-POINTER
CYCLE 000 COMPILED BY 1201 0057E ON 22 OCT 70 AT 17:14:00.

SUBROUTINE POINTR ENTRY POINT 000147

STORAGE USED: CODE(1) 000015; DATA(0) 000054; BLANK COMMON(2) 000000

EXTERNAL REFERENCES (BLOCK NAME)

0003 SETSM
0004 SETSM
0005 SCALZ2
0006 LINES6
0007 UNSC22
0010 COS
0011 SIN
0012 WERR36

STORAGE ASSIGNMENT (BLOCK TYPE, RELATIVE LOCATION, NAME)

0001 000321 10L 0000 R 00002 ANGEL 0000 000027 INJPS 0000 I 000004 IX
0000 I 000010 JXX 0000 I 000013 JXX 0000 I 000014 JJY 0000 I 000006 JX
0000 I 000011 JX 0000 I 000005 JV 0000 I 000012 JY 0000 R 000001 TEXT
0000 R 000016 U 0000 R 000000 WIDTH

00101 10 SUBROUTINE POINTR (2,X,Y,ANG,IOP1)
00101 20 C 0 OPTION IS TRIANGLE
00101 30 C 1 OPTION IS ARROW
00103 40 DIMENSION Z(200)
00103 50 CALL SETSM (2,30,WIDTH)
00105 60 CALL GETSPC (2,31,TEXT)
00105 70 CALL SETSM (2,30,5)
00107 80 CALL SETSPC (2,31,0)
00110 90 ANG = (ANG/57.295) - 1.5708
00111 100 CALL SCALZ2(2,X,Y,TEXT)
00112 110 CALL LINES6 (2,0,X,Y)
00113 120 JV = -90
00114 130 JX = 10
00115 140 JJY = -90
00116 150 JX = -10
00117 160 JX = JX * COS(ANG) - JY * SIN(ANG) * IX
00120 170 JJY = JY * COS(ANG) - JX * SIN(ANG) * IV
00121 180 JXX = JX * COS(ANG) - JY * SIN(ANG) * IX
00122 190 JJY = JY * COS(ANG) - JX * SIN(ANG) * IV
00123 200 CALL UNSC22(2,0,JX,JY)
00124 210 CALL LINES6 (2,1,0)
00125 220 CALL UNSC22(2,0,JXX,JYY)

00126	230	CALL LINESG (2,1,7,U)	
00127	240	CALL LINESG (2,1,X,Y)	
00130	250	IF (IOPT .EQ. 0) GO TO 10	
00132	260	JK = 0	
00133	270	JV = -80	
00134	280	JXX = JX*COS(ANGL)+JY*SIN(ANGL)	•IX
00135	290	JYY = JY*COS(ANGL)-JX*SIN(ANGL)	•IV
00136	300	CALL UNSCZ2(2,Y,U,JXX,JYY)	
00137	310	CALL LINESG (2,1,7,U)	
00140	320	CALL LINESG (2,1,X,Y)	
00141	330	10 CALL SETSMG (7,10,WIOTH)	
00142	340	CALL SETSMG (7,31,TEXTIR)	
00143	350	RETURN	
00144	360	END	

END OF COMPILATION: NO DIAGNOSTICS.

2 FOR 15 ORTHLS. ORTHLR
CYCLE 000 COMPILED BY 1201 0057E ON 22 OCT 70 AT 17:14:09.

SUBROUTINE ORTHLS ENTRY POINT 000354

STORAGE USED: CODE(1) 000026; DATA(0) 000053; BLANK COMMON(2) 000000

EXTERNAL REFERENCES (BLOCK, NAME)

0003 NEXP58
0003 NERR35

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000051 1L	0001	000172 1RL	0003	000000 1176	0003	000102 1358	0001	000311 15L
0001	000147 1556	0001	000316 16L	0001	000203 173G	0001	000060 2L	0001	000231 2068
0001	000250 2146	0001	000272 2246	0001	000325 240G	0001	000072 3L	0001	000313 4L
0001	000327 5L	0001	000317 7L	0001	000355 9L	0001	000164 9L	0000	R 000003 0
0000	I 000002 1	0000	I 000005 11	0000	000014 14JPS	0000	I 000000 NJ1	0000	R 000011 R
0000	R 000004 40	0000	R 000006 5	0000	R 000001 SUM	0000	R 000007 SUMP	0000	R 000010 TEMP

00101	10	C	SUBROUTINE ORTHLS (X,Y,Z,W,M,N,L,J,C,ALPHA,BETA,R,T1,T2,T3,IND)	ORTHLS
00101	20	C		ORTHLS
00101	30	C	THIS SUBROUTINE COMPUTES THE COEFFICIENTS OF THE POLYNOMIAL	ORTHLS
00101	40	C	EQUATION OF DEGREE K AND THE ALPHA AND BETA PARAMETERS.	ORTHLS
00101	50	C		ORTHLS
00103	60	C	DIMENSION X(200),Y(200),Z(200),C(11),ALPHA(11),BETA(11),T1(200),	ORTHLS
00103	70	C	T2(200),T3(200)	ORTHLS
00103	80	C		ORTHLS
00103	90	C	PROGRAM INITIALIZATION.	ORTHLS
00103	100	C		ORTHLS
00104	110	C	NJ1=R-J+1	ORTHLS
00105	120	C	IF (NJ1) 16,16,20	ORTHLS
00105	130	C	20 CONTINUE	ORTHLS
00111	140	C	SUM=0.0	ORTHLS
00112	150	C	17(1)-11 21+3+21	ORTHLS
00115	160	C	21 CONTINUE	ORTHLS
00116	170	C	DO 2 1=1,N	ORTHLS
00121	180	C	T3(1)=X(1)	ORTHLS
00122	190	C	IF (J) 22+27+1	ORTHLS
00125	200	C	22 CONTINUE	ORTHLS
00126	210	C	SUM=SUM+1.0	ORTHLS
00127	220	C	GO TO 2	ORTHLS
00130	230	C	1 SUM=SUM+X(1)*C(12+J)	ORTHLS
00131	240	C	2 W(1)=1.0	ORTHLS
00133	250	C	GO TO 7	ORTHLS
00136	260	C	3 DO 6 1=1,N	ORTHLS

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00137 270 T2(1)=X(1)
00140 280 IF(J) 23,23,4
00143 290 23 CONTINUE
00146 300 SUM=SUM+M(I)
00149 310 GO TO 5
00152 320 9 SUM=SUM+M(I)*X(1)+(2-J)
00155 330 5 X(1)=M(I)*X(1)
00158 340 6 Y(I)=M(I)*Y(I)
00161 350 7 R=0.0
00164 360 DO 9 I=1,M
00167 370 IF(J) 24,24,8
00170 380 24 CONTINUE
00173 390 T2(1)=1.0
00176 400 60 TO 9
00179 410 8 T2(1)=T2(1)+J
00182 420 9 T1(1)=0.0
00185 430 C
00188 440 C BEGIN COMPUTATION.
00191 450 C
00194 460 C
00197 470 I=1
00200 480 10 S=0.0
00203 490 DO 11 I=1,M
00206 500 11 S=S+T1(I)*T2(I)
00209 510 C
00212 520 C COMPUTATION OF A COEFFICIENT IN THE POLYNOMIAL EQUATION.
00215 530 C
00218 540 C
00221 550 C
00224 560 C
00227 570 IF(I)=1 25,15,15
00230 580 25 CONTINUE
00233 590 C
00236 600 C COMPUTATION OF AN ALPHA FOR THE POLYNOMIAL EQUATION.
00239 610 C
00242 620 SUMXP=0.0
00245 630 DO 12 I=1,M
00248 640 12 SUMXP=SUMXP+X(1)*T2(I)*T2(I)
00251 650 ALPHA(I)=(SUMXP/R)
00254 660 C
00257 670 C COMPUTATION OF A NEW POLYNOMIAL.
00260 680 C
00263 690 DO 13 I=1,M
00266 700 TEMP=T2(I)
00269 710 T2(I)=T2(I)-ALPHA(I)*T2(I)-R*Y(I)
00272 720 13 T1(I)=TEMP
00275 730 C
00278 740 C COMPUTATION OF A BETA FOR THE POLYNOMIAL EQUATION.
00281 750 C
00284 760 R=0.0
00287 770 DO 14 I=1,M
00290 780 14 R=R+M(I)*T2(I)*T2(I)
00293 790 BETA(I)=R/R
00296 800 B=0.0
00299 810 11=11+1
00302 820
00305 830
00308 840
00311 850
00314 860
00317 870
00320 880
00323 890
00326 900
00329 910
00332 920
00335 930
00338 940
00341 950
00344 960
00347 970
00350 980
00353 990
00356 1000
00359 1010
00362 1020
00365 1030
00368 1040
00371 1050
00374 1060
00377 1070
00380 1080
00383 1090
00386 1100
00389 1110
00392 1120
00395 1130
00398 1140
00401 1150
00404 1160
00407 1170
00410 1180
00413 1190
00416 1200
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00464 1360
00467 1370
00470 1380
00473 1390
00476 1400
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00608 1840
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00659 2010
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00755 2330
00758 2340
00761 2350
00764 2360
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00779 2410
00782 2420
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00788 2440
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00797 2470
00800 2480
00803 2490
00806 2500
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01994 6460
01997 6470
02000 6480
02003 6490
02006 6500
02009 6510
02012 6520
02015 6530
02018 6540
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02123 6890
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02132 6920
02135 6930
02138 6940
02141 6950
02144 6960
02147 6970
02150 6980
02153 6990
02156 7000
02159 7010
02162 7020
02165 7030
02168 7040
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02177 7070
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02189 7110
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02231 7250
02234 7260
02237 7270
02240 7280
02243 7290
02246 7300
02249 7310
02252 7320
02255 7330
02258 7340
02261 7350
02264 7360
02267 7370
02270 7380
02273 7390
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02297 7470
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02393 7790
02396 7800
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02402 7820
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02408 7840
02411 7850
02414 7860
02417 7870
02420 7880
02423 7890
02426 7900
02429 7910
02432 7920
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02807 9170
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03056 10000

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00234	81°		GO TO 10		ORTNLS
00234	82°	C			ORTNLS
00234	83°	C	SUCCESSFUL RETURN.		ORTNLS
00234	84°	C			ORTNLS
00235	85°		15 IM01=1		ORTNLS
00236	86°		RETURN		ORTNLS
00236	87°	C			ORTNLS
00236	88°	C	ERROR RETURN. SET ALL C COEFFICIENTS. ALPHA AND BETA TO ZERO.		ORTNLS
00236	89°	C			ORTNLS
00237	90°		16 DO 17 II=1-K		ORTNLS
00242	91°		CL17=0.0		ORTNLS
00243	92°		ALPHA (II)=0.0		ORTNLS
00244	93°		17 BETA(II)=0.0		ORTNLS
00246	94°		CLK=11=0.0		ORTNLS
00247	95°		IM01=-1		ORTNLS
00250	96°		RETURN		ORTNLS
00251	97°		END		ORTNLS

END OF COMPILATION: NO DIAGNOSTICS.

8 FOR 15 COEF5.COEFSR
CYCLE 000 COMPILED BY 1201 0007E ON 22 OCT 70 AT 17:14:16.

SUBROUTINE COEFS ENTRY POINT 000266

STORAGE USED: COE(1) 000330: DATA(1) 000055: BLANK COMMON(2) 000000

EXTERNAL REFERENCES (BLOCK NAME)

0003 WEAR35

STORAGE ASSIGNMENT (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000053	1136	0001	000114	1316	0001	000150	1436	0001	000175	1606	0001	000217	1670
0001	000235	1766	0001	000067	21	0001	000164	51	0001	000221	01	0001	000226	91
0000	0	000001	0	0000	1	000003	11	0000	1	000000	00	0000	1	000002
0000	1	000004	01	0000	1	000005	02							

00101	10	C	SUBROUTINE COEFS (J=C*ALPHA+ETA*NC+A*TI+T2+T3+IMD2)	COEFS
00101	20	C		COEFS
00101	30	C	THIS SUBROUTINE COMPUTES THE A COEFFICIENTS FOR A POLYNOMIAL	COEFS
00101	40	C	OF DEGREE NC WHERE NC IS LESS THAN OR EQUAL TO K.	COEFS
00101	50	C		COEFS
00101	60	C	DIMENSION C(11),ALPHA(11),ETA(11),A(11),T1(20),T2(20),T3(20)	COEFS
00101	70	C		COEFS
00101	80	C	PROGRAM INITIALIZATION.	COEFS
00101	90	C		COEFS
00104	100	C	KCJ=K-J+1	COEFS
00105	110	C	IF(KCJ) 9,5,20	COEFS
00110	120	C	20 CONTINUE	COEFS
00111	130	C	B=0.0	COEFS
00112	140	C	B=1/M-1/KCJ	COEFS
00115	150	C	A(M)=C(M)	COEFS
00116	160	C	T1(M)=0.0	COEFS
00117	170	C	T2(M)=0.0	COEFS
00120	180	C	1 T3(M)=0.0	COEFS
00127	190	C	IF(KC-J) 5,5,21	COEFS
00125	200	C	21 CONTINUE	COEFS
00126	210	C	I1=2	COEFS
00126	220	C	BEGIN COMPUTATION.	COEFS
00126	230	C		COEFS
00127	240	C	2 T2(I1)=1.0	COEFS
00130	250	C	B=3/M-2/I1	COEFS
00133	270	C	T3(M)=T2(M-1)-T2(M-1)*ALPHA(I1-1)-B*T1(M)	COEFS
00133	280	C		COEFS
00133	290	C	COMPUTATION OF AN A COEFFICIENT.	COEFS

END OF COMPILATION:

2 MAP-X CYLIND-CVLEEM
MAP 0015-10/22-17:10 -(10)

1. LIB PLY-PLATE LIBRARY.

ADDRESS LIMITS 001000 036360 040000 065236
STARTING ADDRESS 035206
WORDS DECIMAL 15009 IBANK 10911 ORANK

SEGMENT MAIN				001000 036360	040000 065236
MSUTCS/FOR	1	001000 001021			
MSULKS/FOR	1	001022 001007			
MSWMS/FOR	1	001050 001126	2	040000 040011	
MSUFS/FOR	1	001127 001320	2	040012 040031	
MSFCHS/FOR	1	001321 001610	2	040032 040070	
MSWTS/FOR	1	001611 002057	2	040071 040156	
MSLOS/FOR	1	002058 002213	2	040157 040203	
MSFCOS/FOR	1	002214 002261	2	040204 040245	
MSPLV/FOR	1	002262 002310	2	040246 040287	
MSOCVS/FOR	1	002311 002400	2	040288 040329	
MSFVS/FOR	1	002401 002467	2	040330 040371	
MSULKS/FOR	1	002468 002613	2	040372 040413	
MSSLS/FOR	1	002614 002651	2	040414 040455	
MSPBS/FOR	1	002652 002705	2	040456 040497	
MSIMS/FOR	1	002706 002753	2	040498 040539	
MSMPS/FOR	1	002754 002801	2	040540 040581	
MSMPS/FOR	1	002802 002849	2	040582 040623	
MSMPS/FOR	1	002850 002897	2	040624 040665	
MSMPS/FOR	1	002898 002945	2	040666 040707	
MSMPS/FOR	1	002946 002993	2	040708 040749	
MSMPS/FOR	1	002994 003041	2	040750 040791	
MSMPS/FOR	1	003042 003089	2	040792 040833	
MSMPS/FOR	1	003090 003137	2	040834 040875	
MSMPS/FOR	1	003138 003185	2	040876 040917	
MSMPS/FOR	1	003186 003233	2	040918 040959	
MSMPS/FOR	1	003234 003281	2	040960 040991	
MSMPS/FOR	1	003282 003329	2	040992 041033	
MSMPS/FOR	1	003330 003377	2	041034 041075	
MSMPS/FOR	1	003378 003425	2	041076 041117	
MSMPS/FOR	1	003426 003473	2	041118 041159	
MSMPS/FOR	1	003474 003521	2	041160 041201	
MSMPS/FOR	1	003522 003569	2	041202 041243	
MSMPS/FOR	1	003570 003617	2	041244 041285	
MSMPS/FOR	1	003618 003665	2	041286 041327	
MSMPS/FOR	1	003666 003713	2	041328 041369	
MSMPS/FOR	1	003714 003761	2	041370 041411	
MSMPS/FOR	1	003762 003809	2	041412 041453	
MSMPS/FOR	1	003810 003857	2	041454 041495	
MSMPS/FOR	1	003858 003905	2	041496 041537	
MSMPS/FOR	1	003906 003953	2	041538 041579	
MSMPS/FOR	1	003954 004001	2	041600 041641	
MSMPS/FOR	1	004002 004049	2	041642 041683	
MSMPS/FOR	1	004050 004097	2	041684 041725	
MSMPS/FOR	1	004098 004145	2	041726 041767	
MSMPS/FOR	1	004146 004193	2	041768 041809	
MSMPS/FOR	1	004194 004241	2	041810 041851	
MSMPS/FOR	1	004242 004289	2	041852 041893	
MSMPS/FOR	1	004290 004337	2	041894 041935	
MSMPS/FOR	1	004338 004385	2	041936 041977	
MSMPS/FOR	1	004386 004433	2	041978 042019	
MSMPS/FOR	1	004434 004481	2	042020 042061	
MSMPS/FOR	1	004482 004529	2	042062 042103	
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MSMPS/FOR	1	004578 004625	2	042146 042187	
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MSMPS/FOR	1	004770 004817	2	042314 042355	
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MSMPS/FOR	1	004866 004913	2	042398 042439	
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MSMPS/FOR	1	004962 005009	2	042482 042523	
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MSMPS/FOR	1	005058 005105	2	042566 042607	
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MSMPS/FOR	1	005154 005201	2	042650 042691	
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MSMPS/FOR	1	005250 005297	2	042734 042775	
MSMPS/FOR	1	005298 005345	2	042776 042817	
MSMPS/FOR	1	005346 005393	2	042818 042859	
MSMPS/FOR	1	005394 005441	2	042860 042901	
MSMPS/FOR	1	005442 005489	2	042902 042943	
MSMPS/FOR	1	005490 005537	2	042944 042985	
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MSMPS/FOR	1	005586 005633	2	043028 043069	
MSMPS/FOR	1	005634 005681	2	043070 043111	
MSMPS/FOR	1	005682 005729	2	043112 043153	
MSMPS/FOR	1	005730 005777	2	043154 043195	
MSMPS/FOR	1	005778 005825	2	043196 043237	
MSMPS/FOR	1	005826 005873	2	043238 043279	
MSMPS/FOR	1	005874 005921	2	043280 043321	
MSMPS/FOR	1	005922 005969	2	043322 043363	
MSMPS/FOR	1	005970 006017	2	043364 043405	
MSMPS/FOR	1	006018 006065	2	043406 043447	
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MSMPS/FOR	1	006162 006209	2	043532 043573	
MSMPS/FOR	1	006210 006257	2	043574 043615	
MSMPS/FOR	1	006258 006305	2	043616 043657	
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MSMPS/FOR	1	006354 006401	2	043700 043741	
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MSMPS/FOR	1	010338 010385	2	047186 047227	
MSMPS/FOR	1	010386 010433	2	047228 047269	
MSMPS/FOR	1	010434 010481	2	047270 047311	
MSMPS/FOR	1	010482 010529	2	047312 047353	

NOTIFS/FORMC	1	C06720	007237	2	043166	043174
TANS/FOR	1	007240	007257	2	043175	043201
WSTOPS/FORMC	1	007260	007311	2	043202	043207
WTRUS/FOR	1	007312	007363	2	043210	043263
WTRUS/FORMC	1	007364	007612	2	043264	043311
WTRUS/FOR	1	007613	007674	2	043412	043443
WTRUS/FORMC	1	007675	007745	2	043444	043453
WTRUS/FOR	1	007746	010077	2	043454	043474
WTRUS/FORMC	1	010100	010142	2	043475	043500
WTRUS/FOR	1	010143	010221	2	043501	043622
WTRUS/FORMC	1	010222	010253	2	043623	043772
WTRUS/FOR	1	010254	010630	0	043723	045071
WTRUS/FORMC	1	010631	011524	0	045072	045100
WTRUS/FOR	1	011525	012035	2	045101	045162
WTRUS/FORMC	1	012036	012577	2	045163	045324
WTRUS/FOR	1	012578	012754	2	045325	045370
WTRUS/FORMC	1	012755	013372	2	045371	045371
WTRUS/FOR	1	013373	013565	2	045372	045432
WTRUS/FORMC	1	013566	013752	2	045433	045433
WTRUS/FOR	1	013753	014500	2	045434	047025
WTRUS/FORMC	1	014501	015762	2	047026	047078
WTRUS/FOR	1	015763	016041	2	047079	047340
WTRUS/FORMC	1	016042	016263	2	047341	047425
WTRUS/FOR	1	016264	016291	2	047426	047600
WTRUS/FORMC	1	016292	016357	2	047601	047607
WTRUS/FOR	1	016358	017335	2	047608	047610
WTRUS/FORMC	1	017336	017650	2	047611	047660
WTRUS/FOR	1	017651	017723	2	047661	047667
WTRUS/FORMC	1	017724	020141	2	047668	047670
WTRUS/FOR	1	020142	020224	2	047671	047676
WTRUS/FORMC	1	020225	020304	2	047677	047680
WTRUS/FOR	1	020305	020306	2	047681	047686
WTRUS/FORMC	1	020307	020308	2	047687	047690
WTRUS/FOR	1	020309	020310	2	047691	047696
WTRUS/FORMC	1	020311	020312	2	047697	047700
WTRUS/FOR	1	020313	020314	2	047701	047706
WTRUS/FORMC	1	020315	020316	2	047707	047710
WTRUS/FOR	1	020317	020318	2	047711	047716
WTRUS/FORMC	1	020319	020320	2	047717	047720
WTRUS/FOR	1	020321	020322	2	047721	047726
WTRUS/FORMC	1	020323	020324	2	047727	047730
WTRUS/FOR	1	020325	020326	2	047731	047736
WTRUS/FORMC	1	020327	020328	2	047737	047740
WTRUS/FOR	1	020329	020330	2	047741	047746
WTRUS/FORMC	1	020331	020332	2	047747	047750
WTRUS/FOR	1	020333	020334	2	047751	047756
WTRUS/FORMC	1	020335	020336	2	047757	047760
WTRUS/FOR	1	020337	020338	2	047761	047766
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WTRUS/FOR	1	020341	020342	2	047771	047776
WTRUS/FORMC	1	020343	020344	2	047777	047780
WTRUS/FOR	1	020345	020346	2	047781	047786
WTRUS/FORMC	1	020347	020348	2	047787	047790
WTRUS/FOR	1	020349	020350	2	047791	047796
WTRUS/FORMC	1	020351	020352	2	047797	047800
WTRUS/FOR	1	020353	020354	2	047801	047806
WTRUS/FORMC	1	020355	020356	2	047807	047810
WTRUS/FOR	1	020357	020358	2	047811	047816
WTRUS/FORMC	1	020359	020360	2	047817	047820
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WTRUS/FORMC	1	020363	020364	2	047827	047830
WTRUS/FOR	1	020365	020366	2	047831	047836
WTRUS/FORMC	1	020367	020368	2	047837	047840
WTRUS/FOR	1	020369	020370	2	047841	047846
WTRUS/FORMC	1	020371	020372	2	047847	047850
WTRUS/FOR	1	020373	020374	2	047851	047856
WTRUS/FORMC	1	020375	020376	2	047857	047860
WTRUS/FOR	1	020377	020378	2	047861	047866
WTRUS/FORMC	1	020379	020380	2	047867	047870
WTRUS/FOR	1	020381	020382	2	047861	047866
WTRUS/FORMC	1	020383	020384	2	047867	047870
WTRUS/FOR	1	020385	020386	2	047871	047876
WTRUS/FORMC	1	020387	020388	2	047877	047880
WTRUS/FOR	1	020389	020390	2	047881	047886
WTRUS/FORMC	1	020391	020392	2	047887	047890
WTRUS/FOR	1	020393	020394	2	047891	047896
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WTRUS/FORMC	1	020399	020400	2	047907	047910
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WTRUS/FORMC	1	020547	020548	2	047927	

NUM06/6060	1	020305 020571	0	050292 050274
TEXT66/6060	1	020572 020706	2	BLANKSCOMMON
LE006/6060	1	020707 021025	0	050275 050312
BR106/6060	1	021026 022306	2	BLANKSCOMMON
SUBJ6/6060	1	022307 022727	0	050313 050326
OBJCT6/6060	1	022730 023325	2	BLANKSCOMMON
PAGE6/6060	1	023326 023553	0	050327 050445
VEC166/6060	1	023554 023656	2	BLANKSCOMMON
FONT12/6060	1	023657 023712	0	050446 050505
FONT26/6060	1	023713 024077	0	BLANKSCOMMON
LINE56/6060	1	024100 024237	2	050506 050563
SCALE22/6060	1	024240 024547	0	BLANKSCOMMON
SET506/6060	1	024550 025013	2	050564 050624
GET506/6060	1	025014 025114	0	BLANKSCOMMON
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PLCTS (COMMON BLOCK)			0	BLANKSCOMMON
ARR2 (COMMON BLOCK)			0	050667 051375
IDINFO (COMMON BLOCK)			0	051376 051206
BLANKSCOMMON (COMMON BLOCK)			2	051207 051224
COEFSR	1	027115 027450	0	BLANKSCOMMON
ORTH0	1	027451 030076	0	051225 051261
POINT0	1	030077 030513	0	BLANKSCOMMON
TEMP30	1	030514 033747	2	051262 051306
TEMP20	1	033750 035205	0	BLANKSCOMMON
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PAGE 1

EXPERIMENT NUMBER 2-17.
NWC CODE 4841 CYLEX
PIRED BY C. T. MITCHELL.
FIRING DATE 8 JANUARY 1959.
MAGNIFICATION = .996
OUTSIDE RADIUS = 16.31MM
INSIDE RADIUS = 12.79MM
C/N = .4193
D = 7.697 MM/US/SEC
METAL CB(OPMC)
RNOH = 9.9800/CC
EXPLOSIVE PRXM-191
RNOG = 1.7000/CC

TI (US/SEC)	RI (MM)	TJ (US/SEC)	RJ (MM)	TOP (MM)	TDJ (MM)	RJ (MM)	VJ (MM/US/SEC)	ALPHA (MM/US/SEC)	RIMJ (MM)	VOLJ (V/VOLO)
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-00040	15.43251	3.60721	16.78595	27.76472	18.76100	1.25508	2.13075	16.72017	1.72484	
-00080	15.03532	3.80762	19.04606	29.30721	19.03418	1.26061	2.13682	17.00310	1.70376	
-00120	15.02407	4.00802	19.28491	30.84970	19.20094	1.26594	2.14352	17.20301	1.05427	
-00160	15.00470	4.20842	19.53792	32.39218	19.34556	1.26906	2.15188	17.37968	1.92000	
1.00200	16.18652	4.40882	19.79706	33.93467	19.00420	1.26596	2.20089	17.06690	1.97020	
1.00240	16.34114	4.60922	20.06101	35.47715	20.06497	1.30567	2.22554	18.15342	2.04366	
1.00280	16.50078	4.80962	20.31603	37.01964	20.32758	1.32445	2.24182	18.44324	2.10941	
1.00320	16.67748	5.01002	20.57406	38.56212	20.59207	1.32445	2.25776	18.73033	2.17651	
1.00360	16.86223	5.21042	20.83119	40.10461	20.85841	1.33353	2.27337	19.02085	2.24496	
1.00400	17.04893	5.41082	21.11023	41.64709	21.12654	1.34249	2.28861	19.32219	2.31476	
1.00440	17.23669	5.61122	21.40018	43.18958	21.39643	1.35147	2.30349	19.61692	2.38591	
1.00480	17.42641	5.81162	21.69043	44.73206	21.66304	1.35853	2.31802	19.91201	2.45843	
1.00520	17.61824	6.01202	21.98057	46.27455	21.94132	1.36770	2.33220	20.20904	2.53232	
1.00560	17.81241	6.21242	22.27071	47.81703	22.21623	1.37583	2.34602	20.50798	2.60750	
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PAGE 2

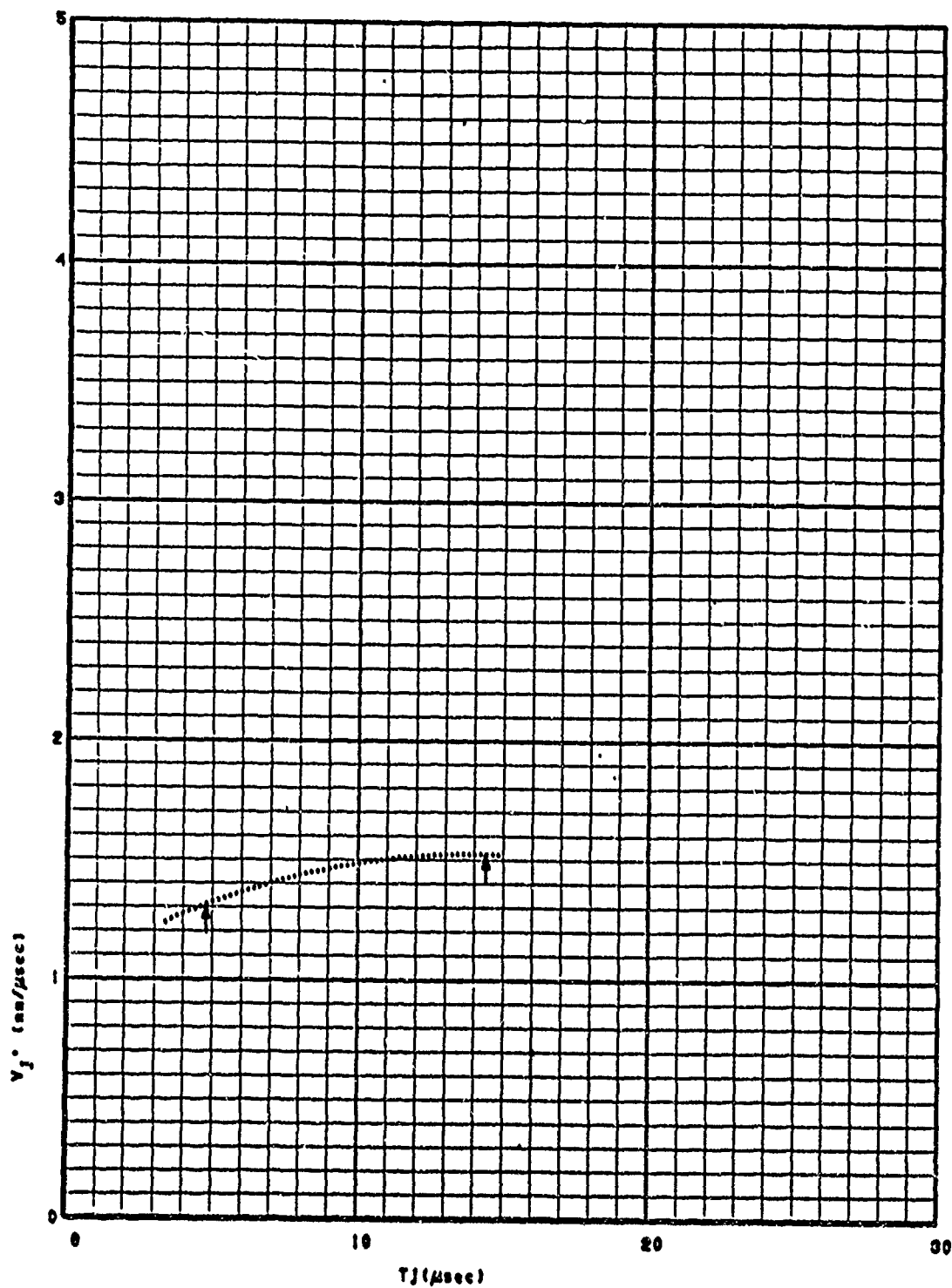
TI (USECS)	RI (MM)	TJ (USECS)	RJ (MM)	TBJ (MM)	RJ (MM)	VJ (MM/USEC)	ALPHA (MM/USEC)	RI MJ (MM)	VOL J/VOLB
7.21003	23.60920	7.21003	23.60920	55.52946	23.61184	1.41294	2.40982	22.81031	3.00471
7.41003	23.90237	7.41003	23.90237	57.07194	23.91975	1.41975	2.42152	22.31050	3.00832
7.61023	24.18952	7.61523	24.18952	58.18752	24.18767	1.42634	2.43286	22.62360	3.17134
7.81563	24.48068	7.81563	24.48068	59.35691	24.46335	1.43273	2.44385	22.92957	3.25975
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8.41683	25.34514	8.41683	25.34514	64.78037	25.32619	1.44855	2.47467	23.85244	3.52743
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8.81764	25.92847	8.81764	25.92847	67.86934	25.91483	1.46156	2.49345	24.47143	3.71290
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9.41924	26.78079	9.41924	26.78079	72.49679	26.80307	1.47638	2.51895	25.40514	4.00162
9.61964	27.06116	9.61964	27.06116	74.03927	27.09740	1.48090	2.52673	25.71757	4.10065
9.82004	27.34337	9.82004	27.34337	75.58176	27.39651	1.48522	2.53416	26.03057	4.20107
10.02044	27.62550	10.02044	27.62550	77.12425	27.69466	1.48933	2.54124	26.34408	4.30287
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13.22684	32.13958	13.22684	32.13958	101.80401	32.51082	1.52692	2.60598	31.40320	6.11421
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13.82804	32.98597	13.82804	32.98597	106.43145	33.41547	1.52827	2.60795	32.35404	6.49087
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NWC TP 5240
PART 2

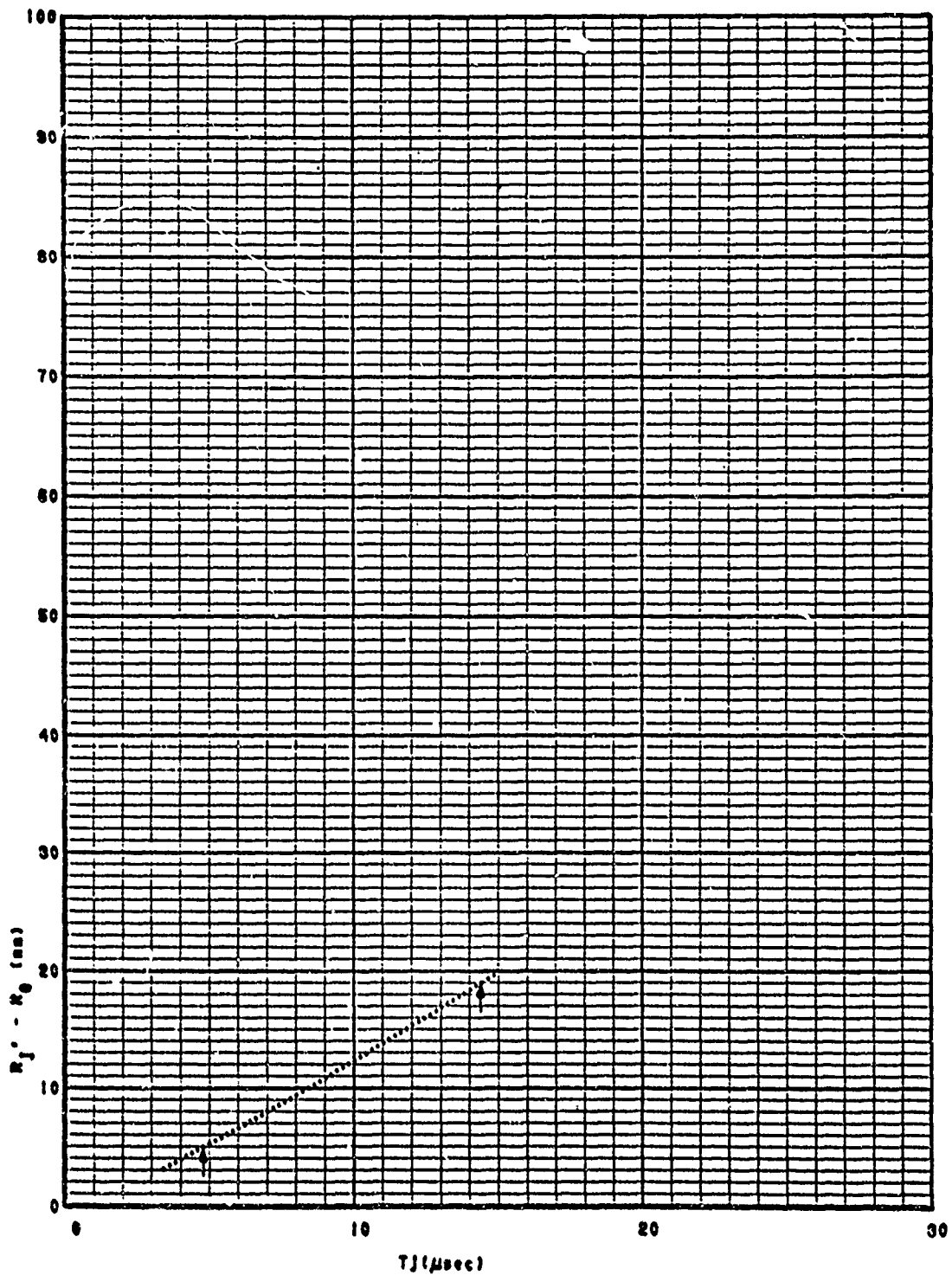
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TOP EXPERIMENT NUMBER R-17. DATE FIRED- 8 JANUARY 1968.



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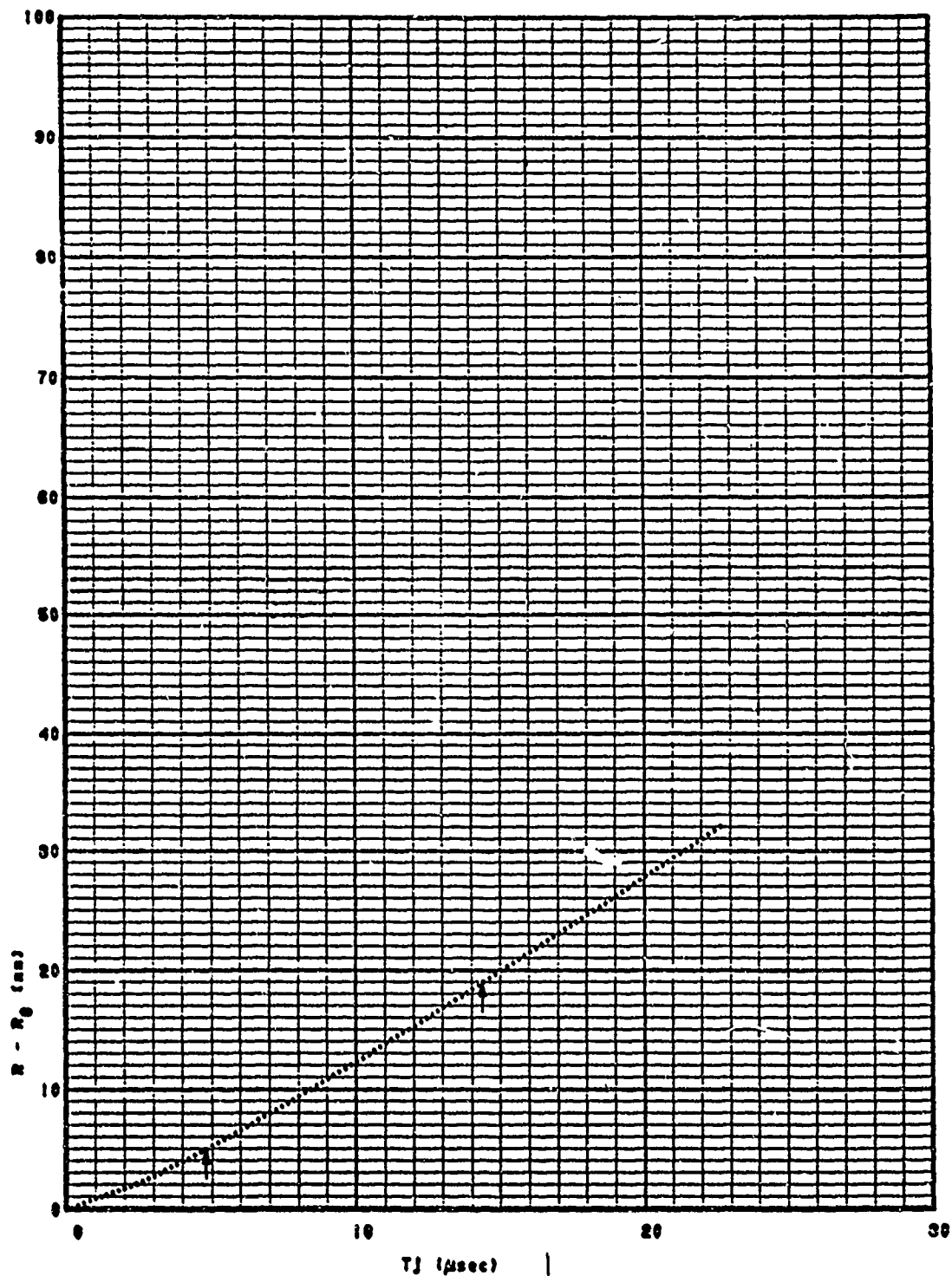


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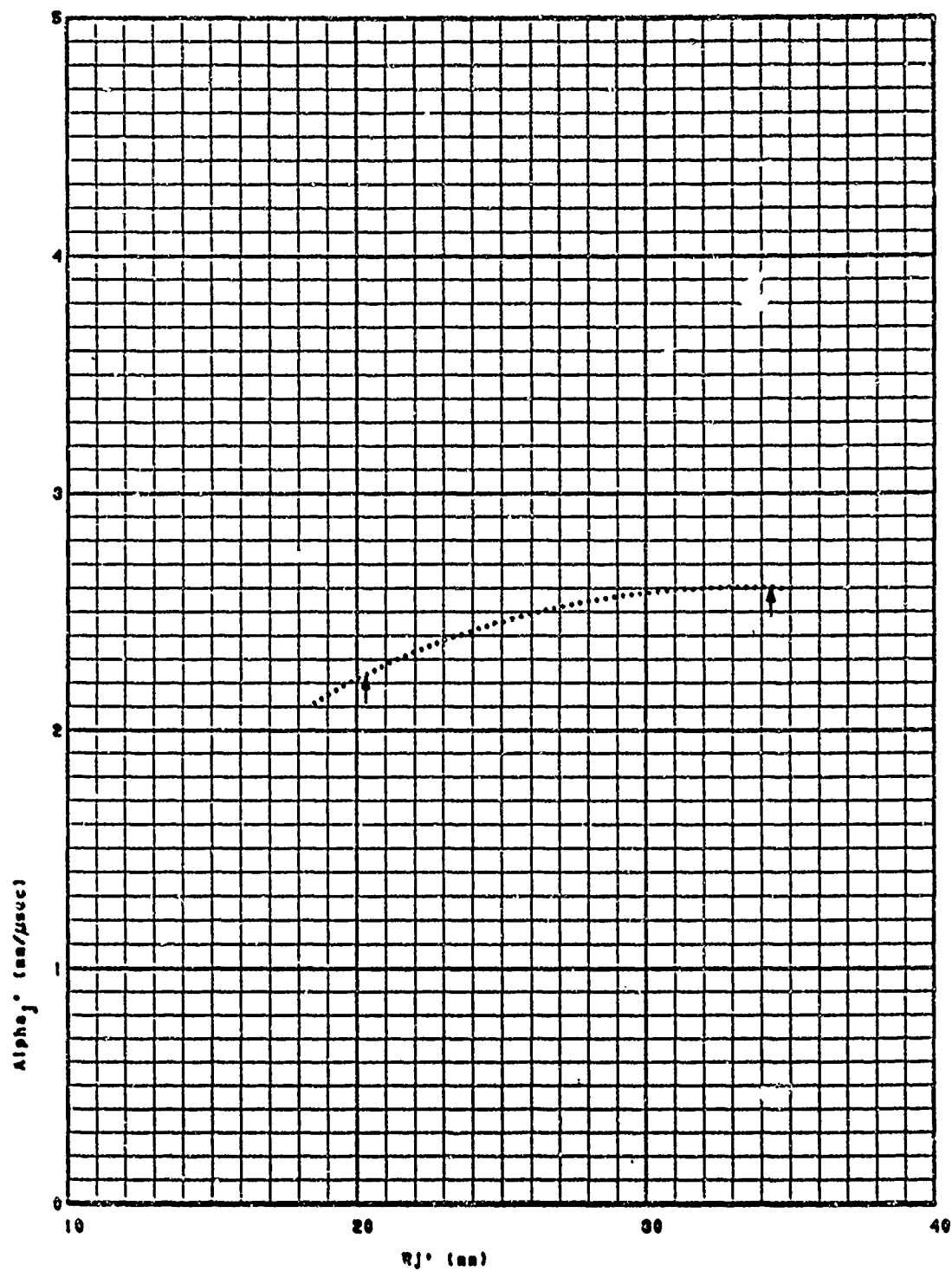


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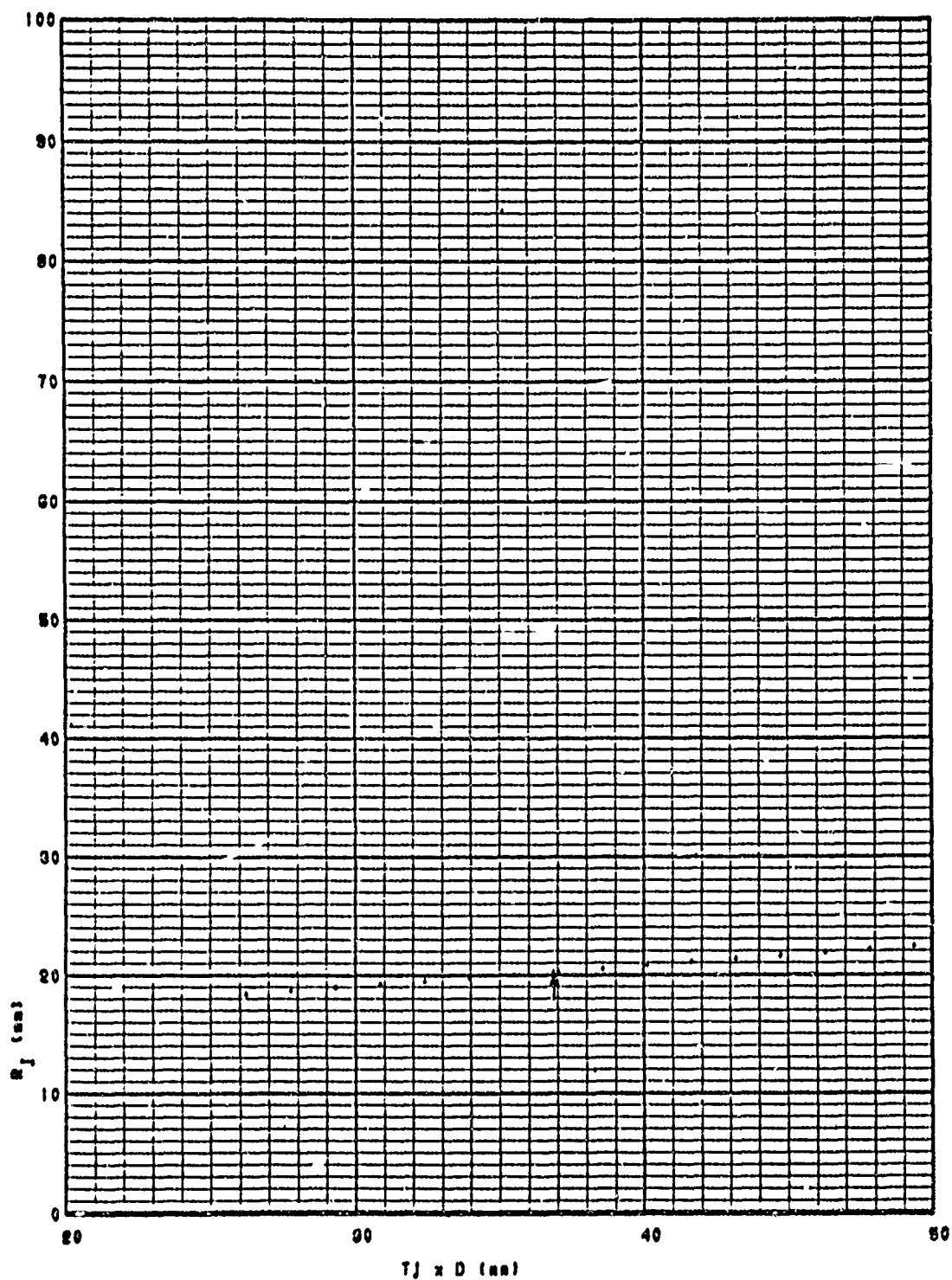
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NWC TP 5240
PART 2

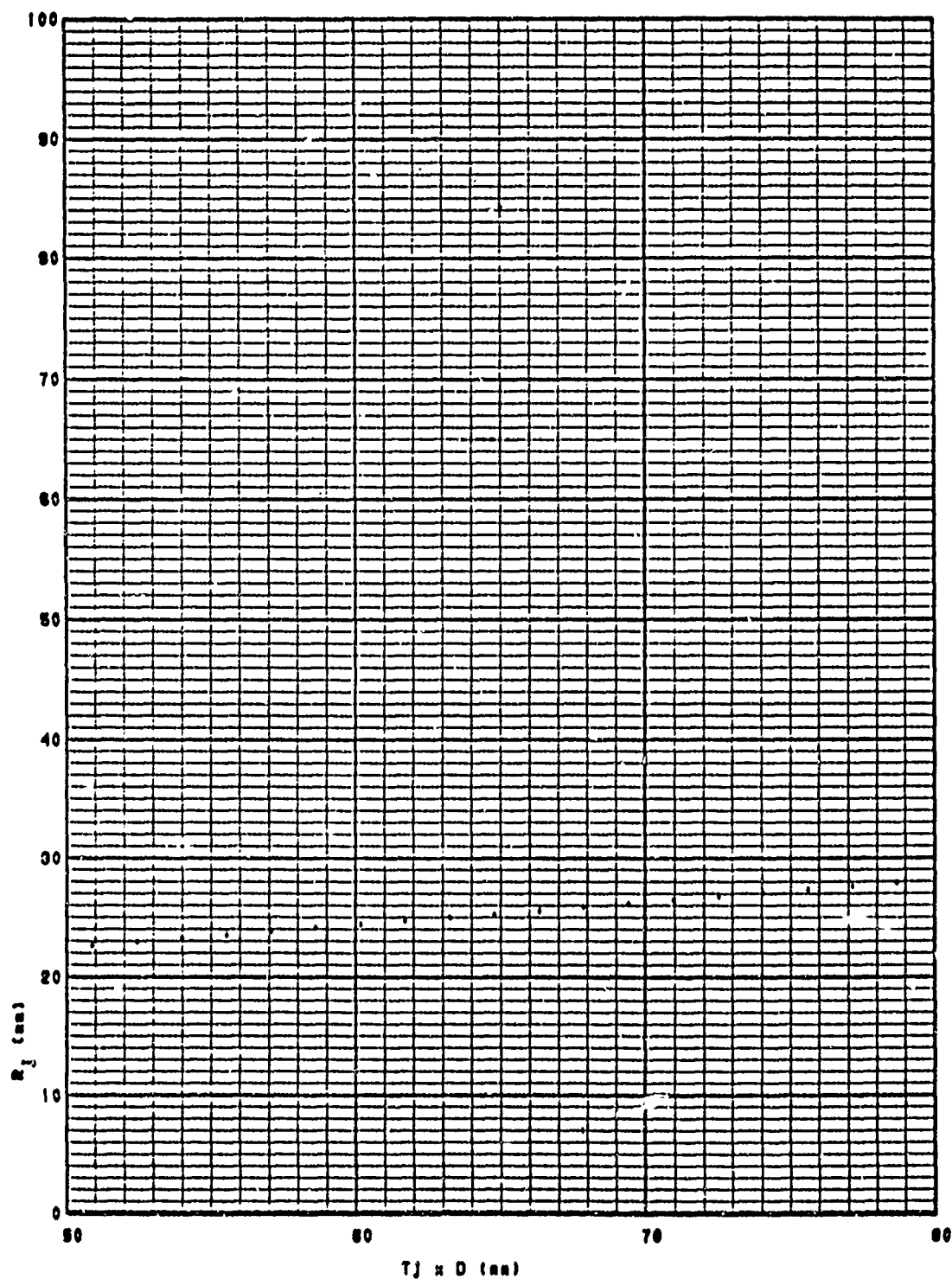
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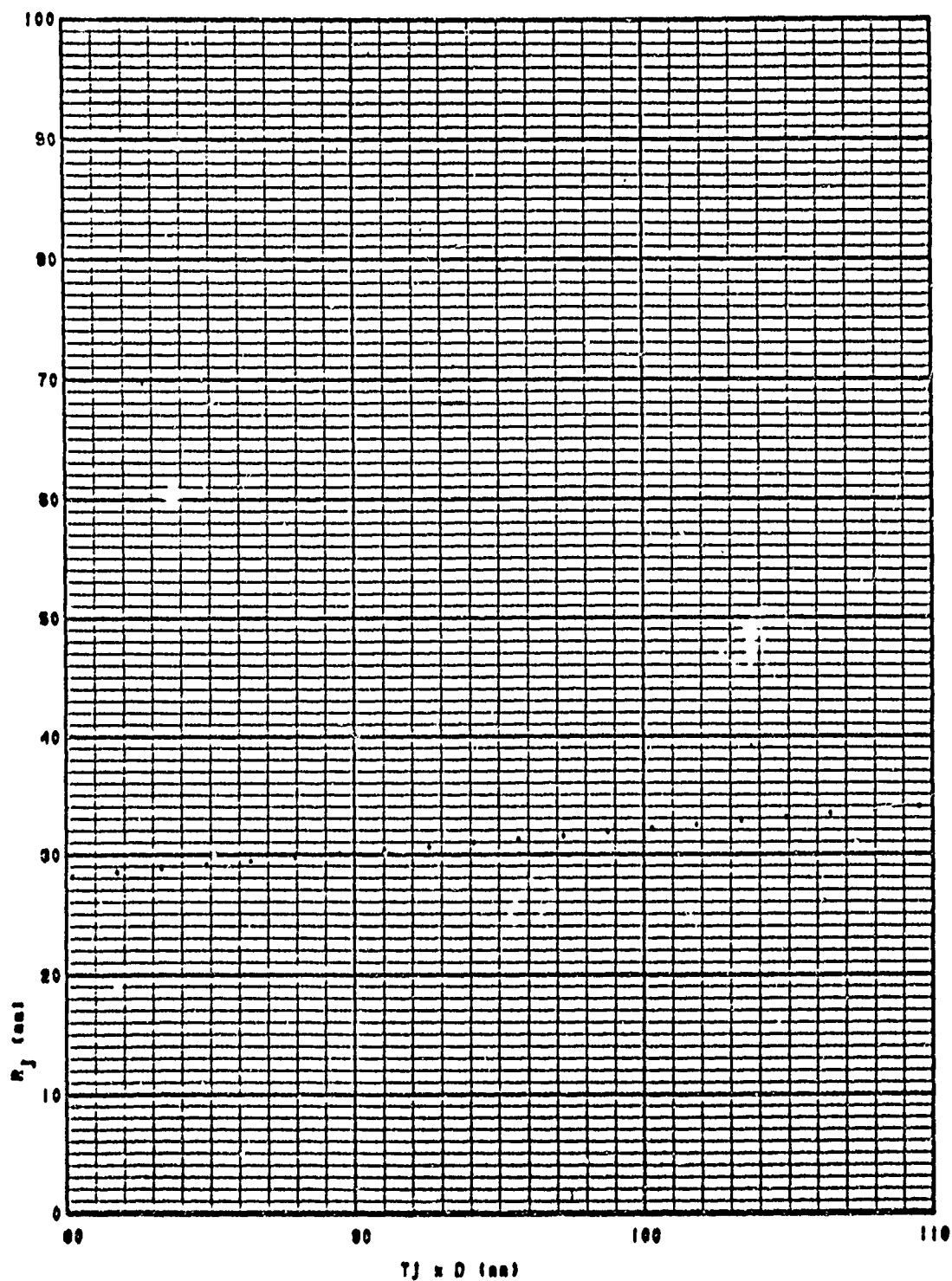
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NWC TP 5240
PART 2

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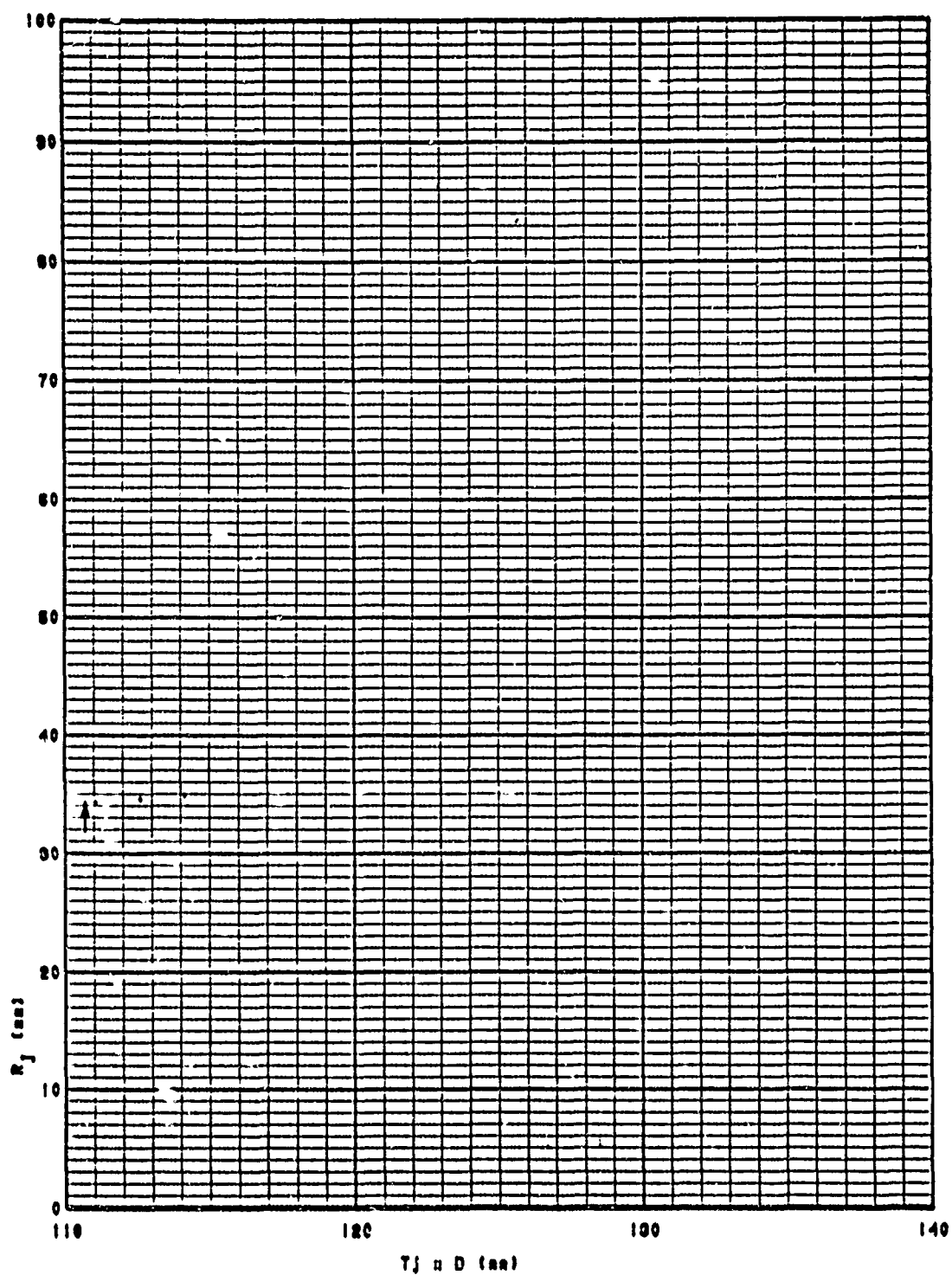


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TOP

EXPERIMENT NUMBER R-17.

DATE FIRED- 8 JANUARY 1968.



PAGE 1

EXPERIMENT NUMBER R-17.
MMC CODE 4501 CYLEX

FIRING DATE 8 JANUARY 1968.

MAGNIFICATION = .9960

OUTSIDE RADIUS = 15.31MM

MEAL CU(OFMC)

FIRING BY C. T. MITCHELL.

WRITING RATE = 1.491MM/USEC

INSIDE RADIUS = 12.70MM

EXPLOSIVE POIN-102

B = .0193

RWOC = 1.7006/CC

RWOM = 8.9606/CC

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1.00281	16.54696								
1.00321	16.72853								
1.00361	16.89234								
2.00401	17.05499								
2.00441	17.25680								
2.00481	17.42146								
2.00521	17.63732								
2.00561	17.89620								
3.00601	18.06800								
3.00641	18.32106	3.70601	18.32106	29.67976	18.29791	1.22909	2.06590	16.10116	1.62335
3.00681	18.56603	3.40601	18.56603	26.22224	18.54443	1.23336	2.10493	16.45941	1.57966
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3.00762	19.04495	3.40762	19.04495	29.30721	19.04368	1.25575	2.13909	17.01993	1.79601
4.00802	19.27447	4.00802	19.27447	30.84970	19.29632	1.26566	2.15690	17.30215	1.85606
4.00842	19.53190	4.00842	19.53190	32.39218	19.55094	1.27539	2.17359	17.58567	1.91730
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PAGE 2

VOLJ*/VOLT

RI
(MM)

TJ
(USBC)

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(MM)

TJ
(USBC)

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(MM)

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(MM)

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(USBC)

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(MM)

TJ
(USBC)

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		4.79046	20.30600	36.07234	20.30120	1.30260	2.32026		
BOTTOM VALUES AT 10. MM									
		9.43274	20.30600	64.00004	25.30900	1.43734	2.45178		
BOTTOM VALUES AT 15. MM									
		11.81443	20.30600	90.93004	30.30400	1.50701	2.57271		
BOTTOM VALUES AT 19. MM									
		14.44906	24.30600	111.21424	34.30500	1.52576	2.60397		
AVERAGE VALUES AT 5. MM									
		4.79034	20.30600	36.07124	20.30107	1.30042	2.32027		
AVERAGE VALUES AT 10. MM									
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AVERAGE VALUES AT 15. MM									
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AVERAGE VALUES AT 19. MM									
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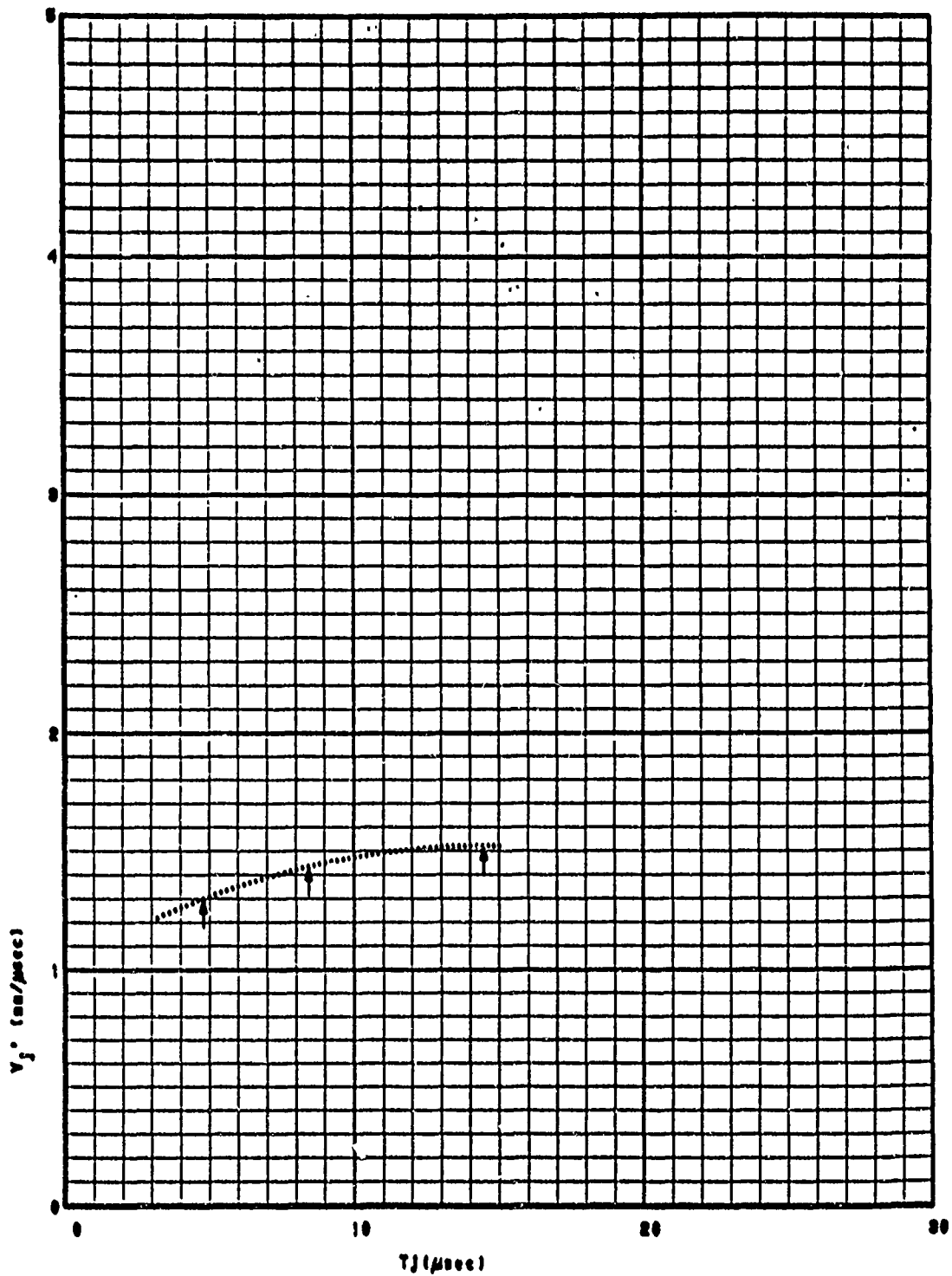
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VELOCITY
BOTTOM

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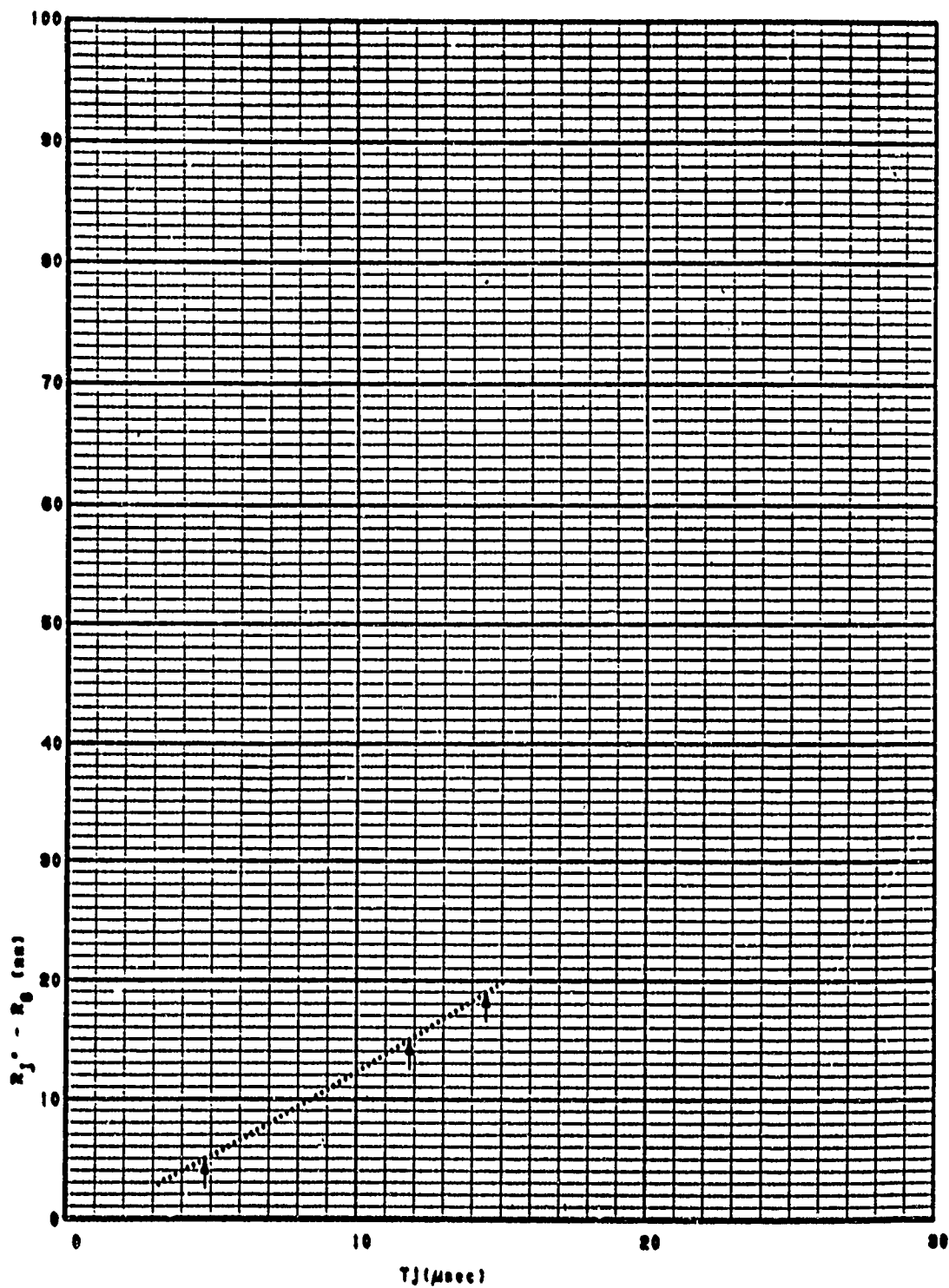
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AVE VALUES
OF RADIAL
WALL VELOCITY

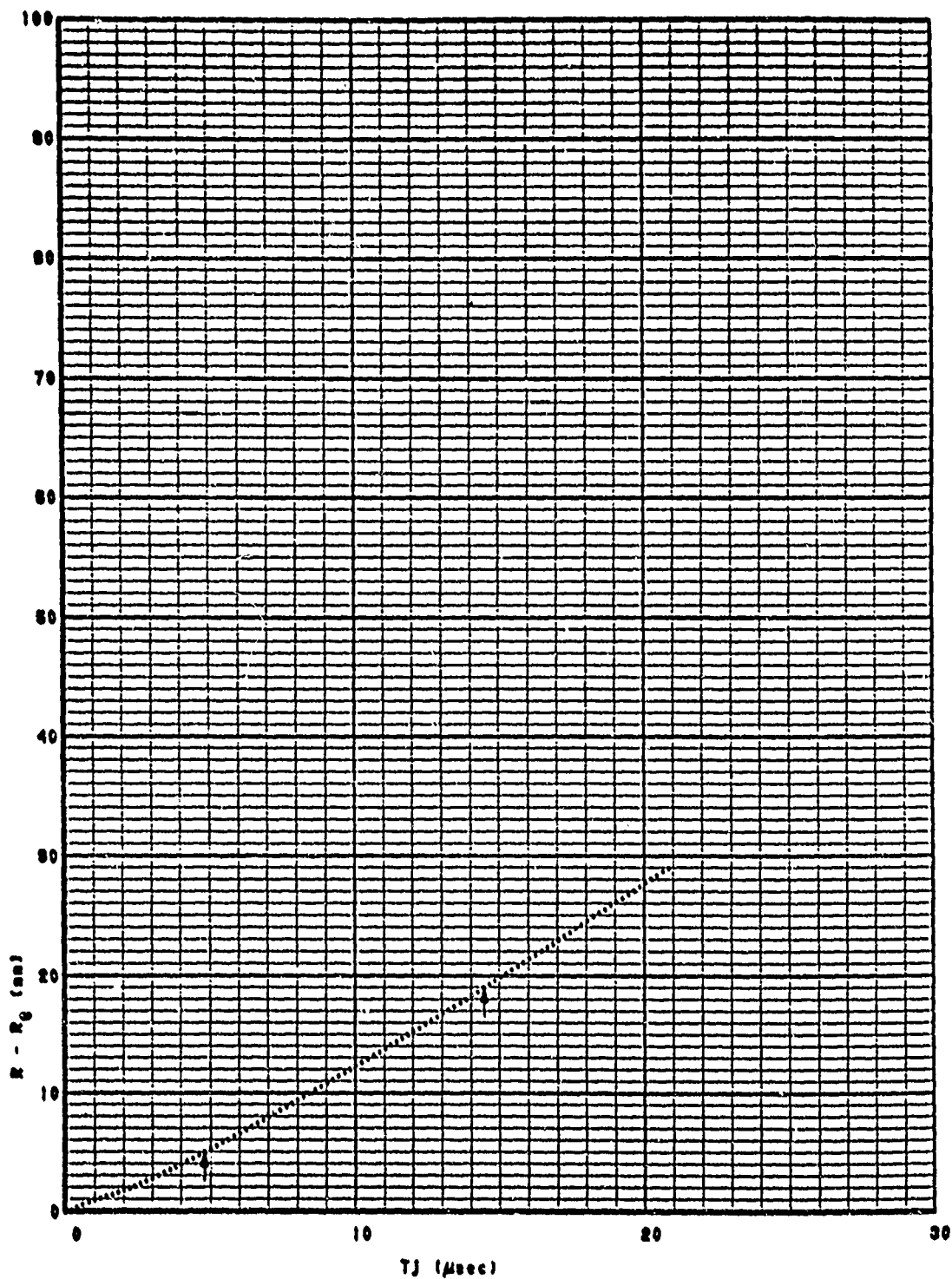
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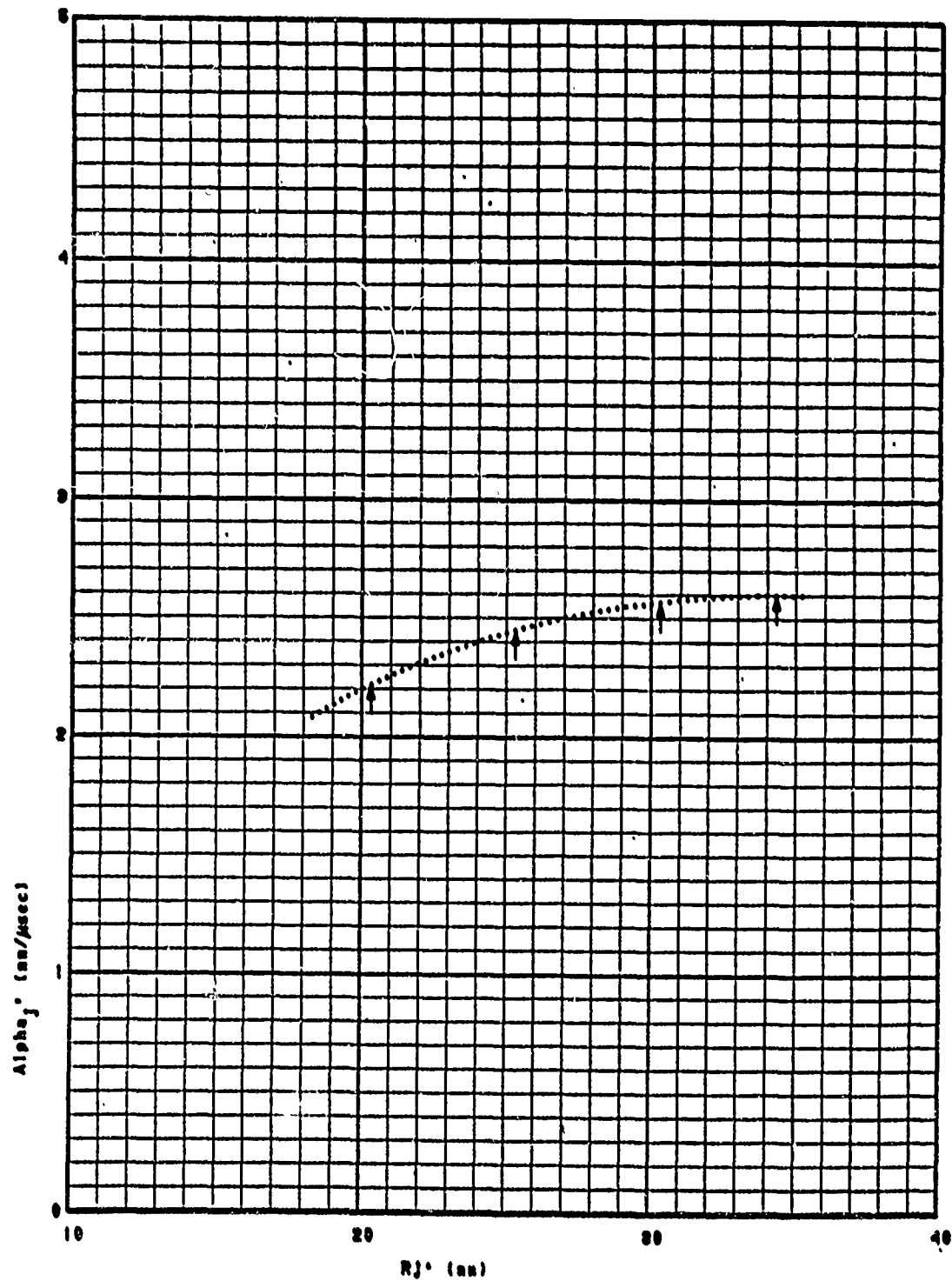


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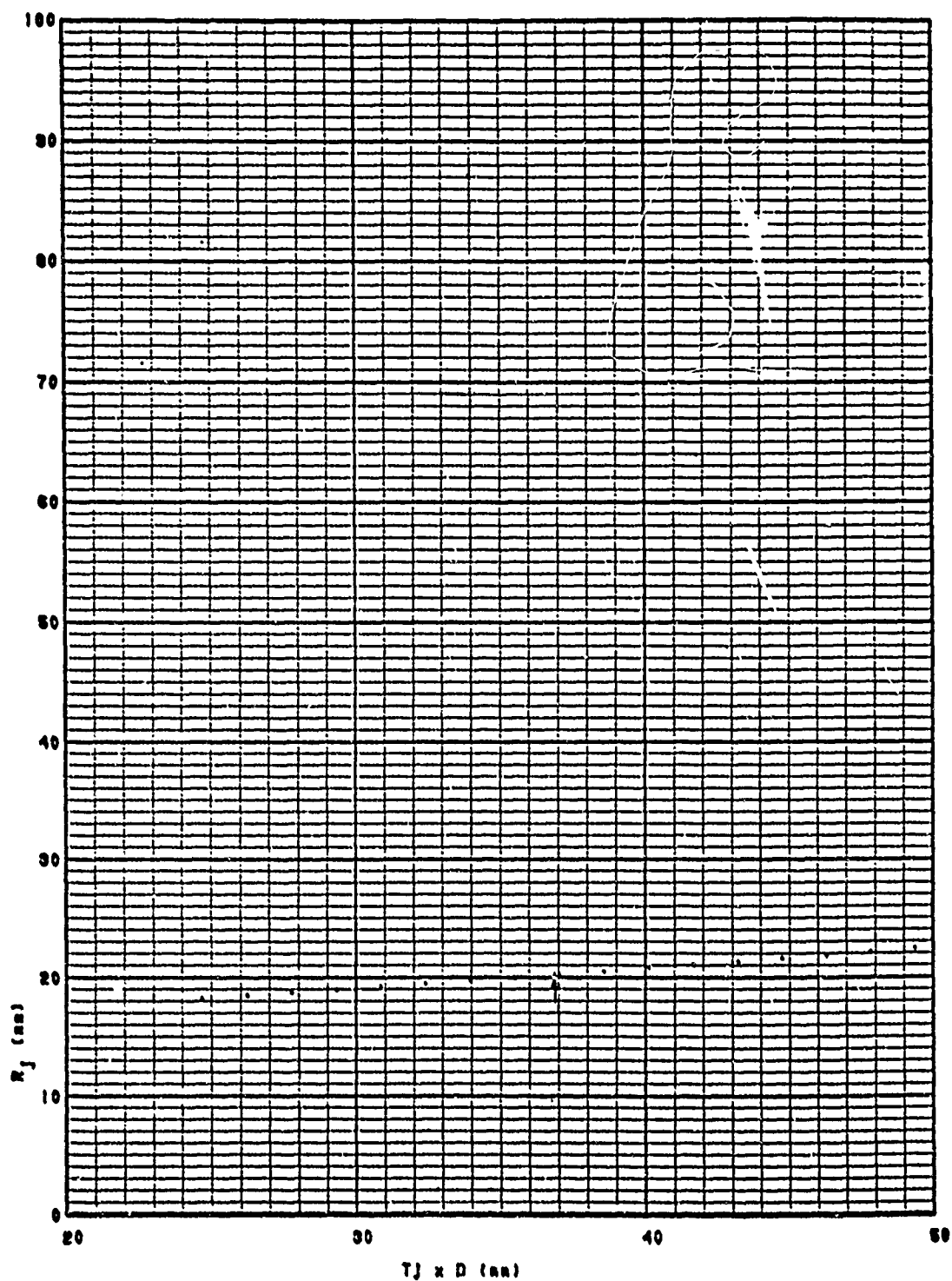


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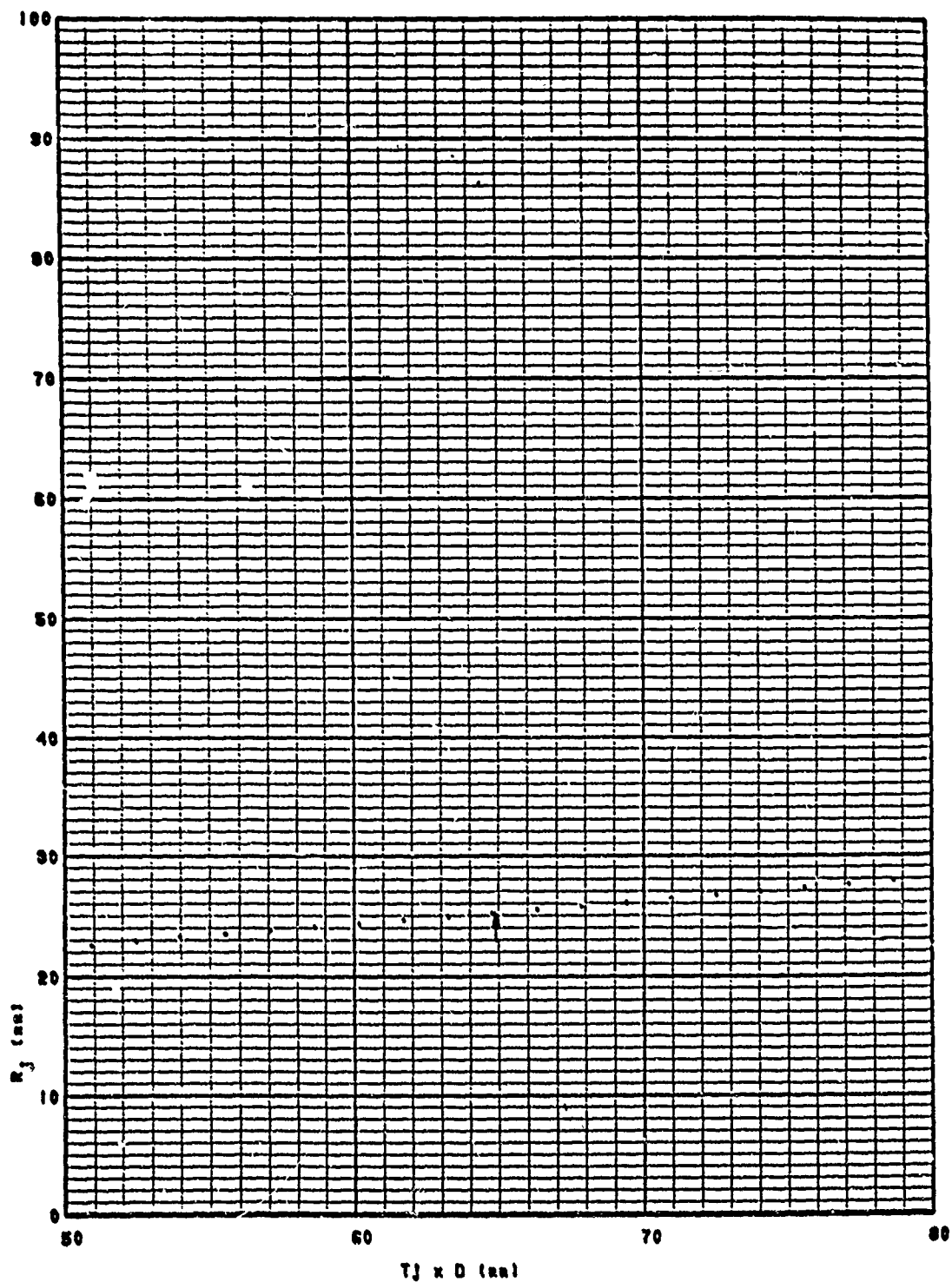
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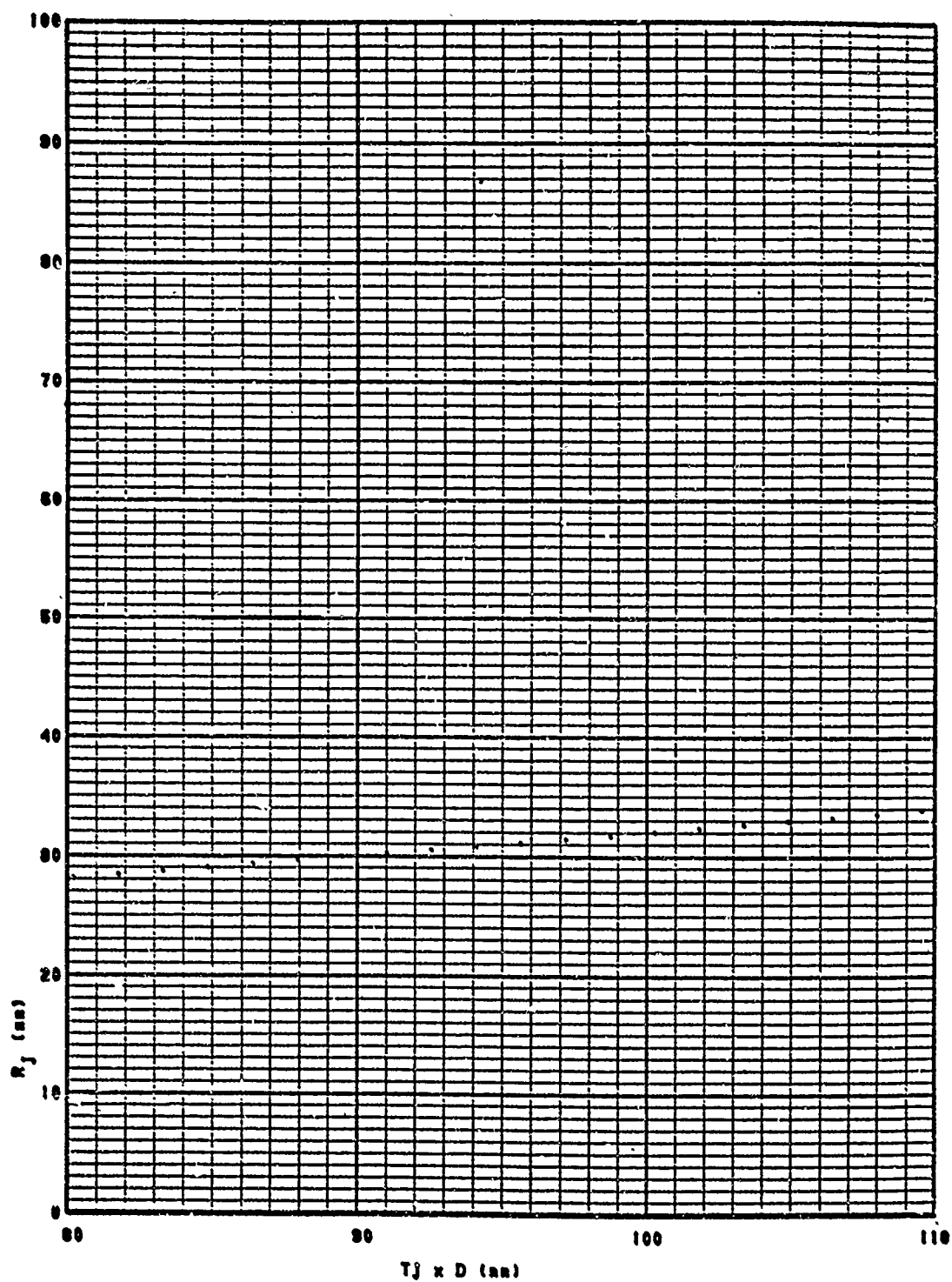


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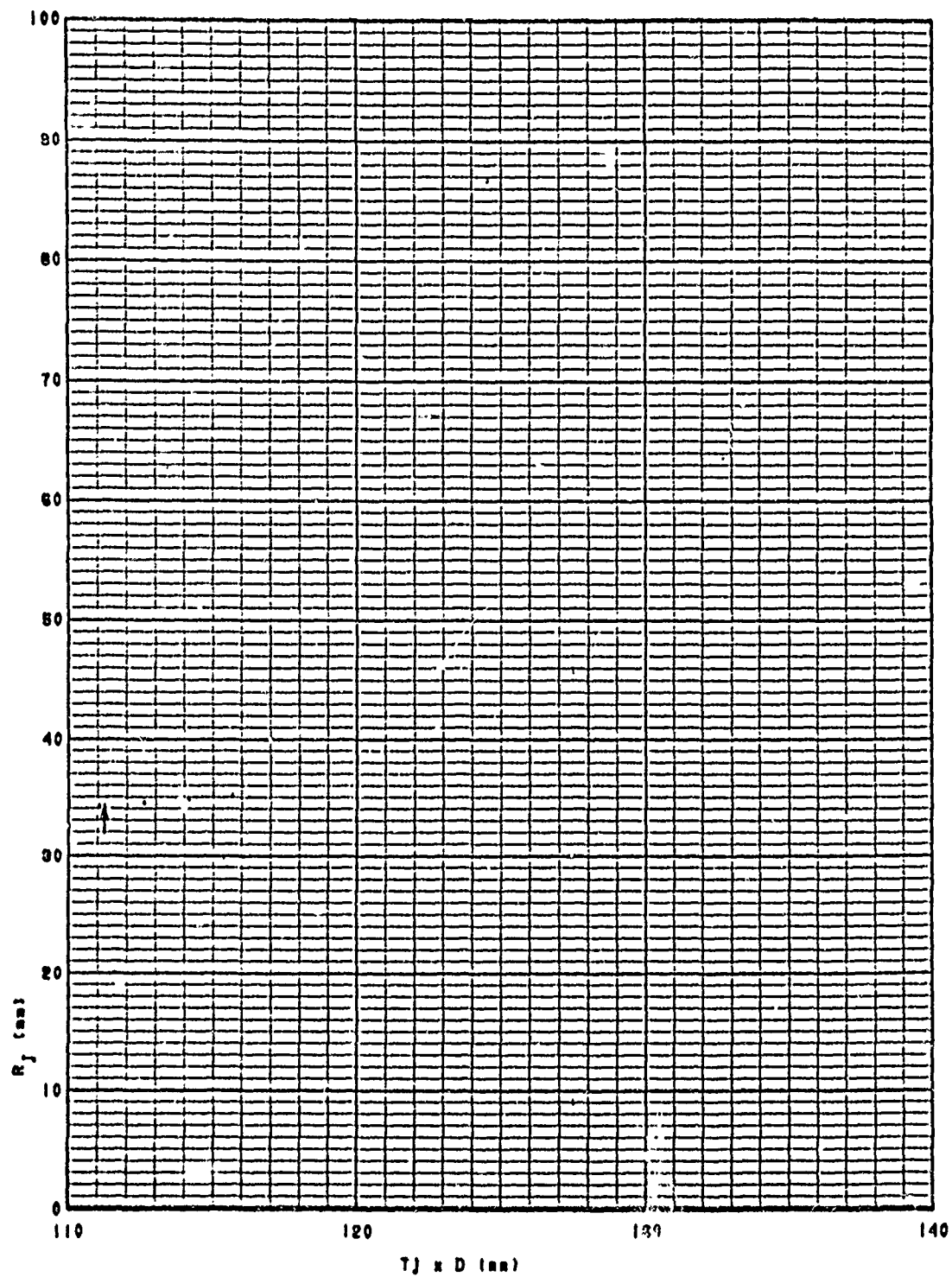
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13. ABSTRACT Development of a cylinder expansion test for use in assessing the metal acceleration capability of explosives is discussed in Part 1 of this report. A precisely manufactured metal cylinder is filled with explosive, and its wall expansion during detonation is observed with a streak camera. The photographic record of the cylinder expansion is analyzed by mechanized film reading and high speed computer techniques. The maximum velocity attained by the wall fragments is taken as a measure of the momentum imparted to the metal by the explosive. Both manual and automated methods of data reduction for attainment of test results are given. When standardized, this test procedure will permit the correlation of the evaluations of explosive compounds between laboratories. Part 2 of this report covers the computerized reduction of the pictorial data to tabular listings and graphic displays.			

KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Main line (CYLEX) Subroutines Tabulations Plots						

ABSTRACT CARD

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