

S C A L P
CODING SHEETS

GCM-8B

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Computation Center
Dartmouth College

Introduction

This memo contains the SCALP coding sheets as prepared by Stephen J. Garland and Anthony W. Knapp. For more detailed information on SCALP, CCM-7 (A Manual for SCALP), CCM-8A (SCALP Block Diagrams), and CCM-8C (SCALP Library Routines).

These coding sheets are compact and lack comments. One should therefore use the block diagrams in conjunction with the study of the coding sheets.

In the coding sheets, the addressing is absolute. The small addresses in the upper part of the boxes indicate either (1) the locations of the instructions using the given location, or (2) the location of the u or t instructions that transfer to the given location. The coding sheets have been proofread against the master tape for accuracy.

Date _____

SCALP

Track 00

Programmer _____

Page _____

00	01	02	03	04	05	06
Transfer				"compile"		Error
		1c30	7www wwwq	JGOF 234F		
P0043	I0000	N4124	E3353	S0040	Z1600	T4223
07	08	09	10	11	12	13
1c30	Compile	"patch" - 1c30 - "compile"	Error	1c30	Patch	"execute" - 1c30 - "patch"
S4122	T2200	S2252	T4223	S4126	T4311	S4463
14	15	16	17	18	19	20
Error	1c30	Execute	"continue" - 1c30 - "execute"			
T4223	S4144	T4334	S4532	U4513	8000 0000	4300 0000
21	22	23	24	25	26	27
	"done"	c.r.				Fct Temp
8 0000	B4237	P1602	U3934	Z4555	J000 0000	B 6306
28	29	30	31	32	33	34
Load Code	Load Code		NAM	EP		Store
E6357	H6357	U2601	C6303	B0039	R2441	U2416
35	36	37	38	39	40	41
#CC	T#CC			EP		
B1146	C6345	U4359	U0163	[]	JGOF 234F	,1000
42	43	44	45	46	47	48
<u>Boot trap</u>			C0003			
I0000						
B0107	H0000	C0002	B4203	C0001	U0000	,100
49	50	51	52	53	54	55
				Print Temp		
			,F			
W500 4000	147 FR14	9 wwwJ	B0231	N6318	E0819	U0632
56	57	58	59	60	61	62
	<u>Start</u>		<u>Continue</u>			
	Program Lo		U0163			a.dal
B6234	B4216	Y0200	B0038	Y1147	U0163	A6304
63						

← INS → ← TRACK → ← SECTOR →

Date _____

Track 01

Programmer _____

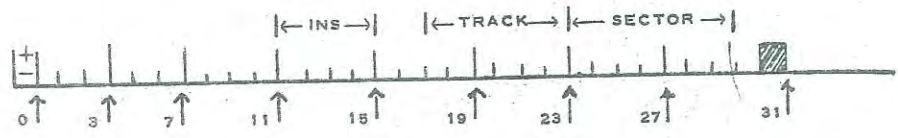
Page _____

LOADER

0114	00	0122	01	0118	02		03		04		05		06
				1e30	code	load routine							entr-1e11
,60 0000		,www0 0000		n4124	xh6353	t0119				xi0000			xh6349
	07		08		09		10		11		12		13
													entr-1e11
xi0000		xi0000		xi0000		xi0000		xi0000		xi0000			xh6349
	14		15		16	0142 LOADFR code	17		18	0104	19		20
6e11		end of routine											y[]
50100		t0117		u0106	xh6353	u0102		xi0000					y0135
	21		22		23		24		25	1340 2340	26	0455	27
end of load		,www0 0000		1e29	NHM								
t[0022 0059]		00101		a4145	xa6303	u0134		14000				14000 0000	
0157	28	0160	29		30		31		32	1347	33	0125	34
xz[] = modifier		load temp		store word		NHM							available
64100		xa6315		c[]	xh6303	u0142		z0032					xh6313
	35		36		37		38		39		40		41
		1e18		2e29		NHM		z[LF]		okay to load			storage exceeded
y[]		m1712		a1702	xa6303	s2756		t0148					u2422
0132	42		43	0150	44		45		46		47	0140	48
,wwwj				c[]		NHM							available
S4114		t0117		y0130	xc6303	xi0000		u0157					xh6313
	49		50	2008	51	2002	52	2102	53		154		55
xz[] = modifier											SWITCH Acc 1		
y4100		u0144		R0354	Z5828	S6360		xh6319					u1318
1213	56	0147	57		58		59		60	1225	61	1219	62
		load temp		-1e0									
,300 0000		xh6315		n0623	t0128	u0129		,200 0000					,30x39

BEGIN INTERPRETER 63

Z0.800



IQP-30 Optimum Coding Sheet

Date _____

Track 02

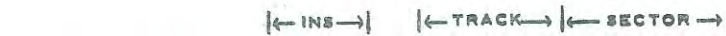
Programmer _____

Page _____

LOGICAL COMMANDS, TITLE

00	01	02	03	04	05	06
			1e12	z0300		
B[]	y0851	h0245	m1639	a1640	y0227	u0221
0431	07	08	TO 09	10	11	12
	1e29			a3		
a4136	y0209	b[]	t1104	r0454	u0451	u0430
UO 14	15	PO 16	0216 17	18	19	20
0251 0756				integer print		tab
y0200	u0163	y0217	b[]	r0612	u1214	u0962
0206	21	22	23	24	0928 0955	25
	1e29	title b[]				0230 to transfer table
b0200	a1701	y0209	u0228	xh6304	u0163	u[]
0224	28	29	30	0052 1159 1452	31	32
				ZO	33	34
y0200	b0851	u0227	,F	x66311	t0262	u0163
1613	35	4539 36	1007 37	0237 38	39	40
					a	41
,108F	2418F8KF	y0238	b[]	r0454	u1148	u0163
0863	42	HD 43	50 H4 AD 50 44	45	0203 0449 0933 1429 0559 0762 0438 0552 0547 46	47
	trace		execute			0260 48
T1837	800t0509	x66311	[]	xh6311	u0163	t0163
	49	50	51	0602 52	RJ 53	54
	1e29					55
b0200	a1701	u0214	,awa	x66311	t0562	s4106
	56	57	58	59	60	1311 61
		1e2				0233 0561 62
						-1e0
t0736	u0258	b0744	n0245	u0248	,wa 0000	m0320

63



u0246

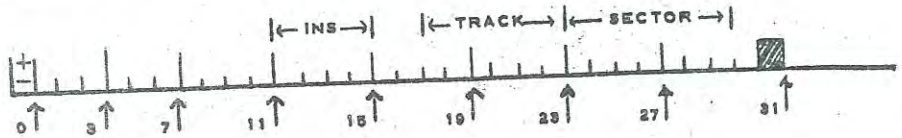


TRANSFER LIST

abs ZO	sign Z4	cos Z8	sin ZJ	bring int B0	bring real B4	3127 3241		
u0232	u0553	B1052	uL]	u0244	u0828	Z6363		
0642 1542	07	sub from, int Y0	08	sub from, real Y4	09	no op. Y8		
www www	u0544	u0738	u0163	u0444	uL]	IF		
14	relational RJ	15	16	divide into I4	17	float # subtract from YJ		
uL]	u0253	www www	u0711	E0000	u0718	,8000 0000		
21	change sign D8	22	float # divide DJ	23	mult int. NO	24	mult real N4	
u0721	u0560	u0539	u0758	u0914	,8000	u0439		
28	29	read int. M4	30	read real M8	31	print int. P0	print real P4	
u0531	A1308	H1259	U0403	u0216	u0814	Z0008		
35	power int # int EO	36	power real # real E4	37	entier E8	38	power real # int EJ	
u1007	uL]	uL .]	uL]	uL]	u0214	u0703		
42	43	title T0	44	curr. ret. T4	45	tab. T8	46	trace hold int. H0
u4529	Z6363	u0209	u0825	u0962	P0729	u0243		
49	50	trace hold real HJ	51	float CO	52	round C4	53	ln CJ
u0244	u1117	u1116	u1153	u1418	,8000 0000	uL]		
56	add int. A0	57	add real A4	58	arctan A8	59	float add AJ	
u0244	u1014	uL]	u0425	u0244	u1128	uL]		
float subtract SJ	63							
u0432	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">←INS→</div> <div style="text-align: center;">←TRACK→</div> <div style="text-align: center;">←SECTOR→</div> </div>							

MIXED OPERATIONS, ALPHANUMERIC

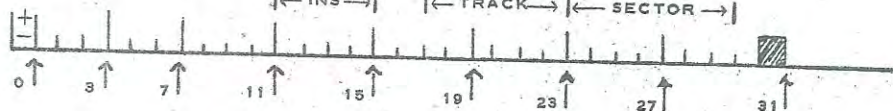
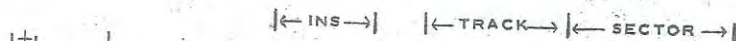
1914	00	0436	01		02	I2	03		04	number conversion	05	ERROR 1	06
		xh6313		u1131		y1146		u1759		r0420		u0409	
1200 0000			08	ERROR 2	09		10		11		12		13
0191 0332 2932	07			error temp		"error"		$\alpha 2$					
Z1600		u0000		xh6359		b4153		r0454		u1148		xz3235	
	14		15	0424	16		17		18		19		20
				error temp		$\alpha 3$							
xp0300		u0424		xh6359		r0454		u0451		xz3241		u []	
2535	21	0450	22	0415	23		24	AJ	25		26		27
								BAI				float	
				xp0309		u0416		r0911		u0908		r1013	
	28		29	0213 1106 1201	30		31	SJ	32	0432	33		34
				b []								float	
u1000		u1018		b0209		u0207		y0433		b []		r1013	
	35		36	0554 0549	37		38	NJ	39		40		41
				-1e30				BAI				float	
u1000		u0401		b0316		u0246		r0911		u0908		r1013	
	42		43	YJ	44		45		46		47	1319	48
				-1e0									
u1000		u0938		b0623		xm6311		xh6311		u0425		xh6313	
	49	0456	50	23	51		52		53	0	54		55
		1e25		turning		α temp		1e30		exit α		-1e6 + 1e30	
u0246		n0422		e1730		xh6317		s4104		t []		20127	
	56		57		58		59		60		61	0	62
		non-opt		7200 0000		200 0000		1e17				α temp	
t0450		e4131		a2016		m0845		y0461		b []		xh6317	
	63												



u0450

LOGICAL COMMANDS, TRACING

1417	00	01	1416	02	03	04	05	06
etable L0						α3		
S4243	t0749	bL]	X23246	r0454	U0451	X23256		
07	08	0243	09	10	11	1323 1326	12	0901
		trace subroutine						fr. sign
xp2400	u0744	r0745	u1414	u1860	Z0002	xc6349		
14	15	3911	16	17	18	19	20	
		trace subroutine			normalize			
u1901	Z4701	r0745	u1414	r1461	u1239	u0809		
0536	21	0536	22	23	24	0853	25	0524
								0523
			yL]					MO temp
y0200	bL]	y0527	u0526	www w800	xh6312	yL]		
28	29	1450	30	MO	31	32	33	34
								MO temp
u0163	Z0008	wwwQ	xa6311	xa6311	xh6312	u0535		
0534	35	36	37	38	DS	39	0539	40
		bL]	le29					float
b0200	y0522	a4123	u0521	y0540	bL]	r1013		
42	43	YO	44	0544	45	46	47	1454
								le1
u1000	u0723	y0545	bL]	xs6311	u0246	a0627		
49	50	0556	51	52	53	54	55	
result =-1e30	result =0	1456 0558 1452	acc → 0		[24]			
t0437	u0551	xc6316	u0246	xh6311	t0437	S4106		
56	57	0557	58	59	60	61	0254	62
		1457			DB			
0			le30					le4
t0551	u0558	b4144	u0246	xh6311	u0262	b6341		
63								



u0259

Date _____

Track 06

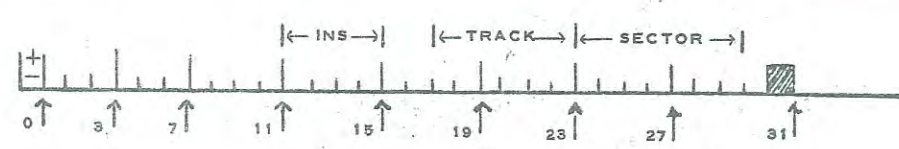
Programmer _____

Page _____

DIGIT PRINT SUBROUTINE

1478	00		01	0637	02		03		04	0633	05	0634	06
		-1@0			.2wg	digit=0							
		m0843		u 0662	s0252	t 1320		u 0608		,2800		,3300	
0635	07	0004	08		09		10	0824 1412	11		12	1455	13
					- number					exit digit print			
xz0209		pL]		b1052		u 0820		xz0061		uL]			,190
0752	14		15		16	0650 1657	17	1638	18		19	PRINT	20
								const 2				acc → 0	
y0200		bL]		u 1416			,Q	xd 6361		u 1527		xc 6306	
	21		22	0168 0444 2101	23	3554 4554	24	2053	25	1211	26	0548 1063 1448 1455	27
		exp inc											
xh 6307		u 1427		,8000 0000		,3wwJ			F		,10	,4000 0000	
1562 1437	28		29		30	2852	31	0055	32	DIGIT PRINT	33		34
		" "						print temp		10@21 =	,2800	,3100	
xz3207		xp 2308		u 0638		,1000 0000		xh 6318		m 0605		e 0606	
	35		36		37	0630	38		39		40		41
xz0609		pL]					acc → 0	print temp		+ number		print flag	
a 0607		y 0608		u 0602		xc 6317		xh 6318		s 0619		xh 6306	
	42		43		44	1863	45		46	0644	47		48
-7@29		print entr.								digit print			
b 0307		xc 6308		u 0647		xp 1624		u 0956		r 0612		u 0632	
	49		50		51	1224	52		53		54		55
		acc → 0				,8		print temp				print flag	
xp 0328		xc 6315		u 1653		a 0617		xc 6318		u 0655		xh 6306	
	56		57		58		59	0738 1131 2510 3738	60	1326 2632	61	0601	62
		-5@29		print entr.	(delay) print temp								
b 1028		xc 6308		xb 6318		u 0633		,8000 0000		,800 0000		xh 6313	

63
xp 0742



Date _____

Track 07

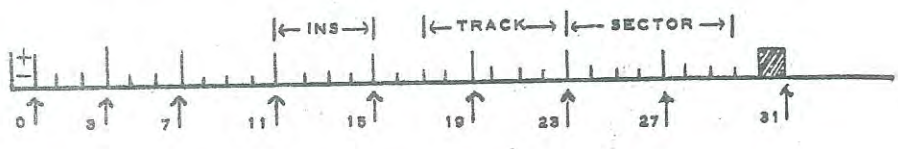
Programmer _____

Page _____

SWITCH COMMAND, DIVISION

00	3123 3436	01		02	[U4]	03	0703	04		05	u4 temp	06	1013
u1561	,1000 0000	,147 F014		y0704	b[]		xh6320			ma042			
07		08	2144	09	0774	10	[I4]	11		12		13	
m							invert 1					N4	
xh6357	u1053	Z0038		,102	r0840		u0960			u0914			
1053	14	15	1054	16		17	[IJ]	18		19		20	
m			swtch		error		invert 1					N5	
xs6357	t0753	b4358		u0405	r0840		u0960			u0439			
[D4]	21	22	0543	23		24		25		26		27	
BFP			-100		1023+1030								
r0850	u0851	m1052		a0710	xa6304		xh6312			xb6313			
28		29		30		31		32		33		34	
		1030		div 0						101			
t0732	S4144	t0906		u0732	xb6311		mos12			xd6313			
35	0256	36		37	[Y4]	38		39		40		41	
shift 1 or 0		103				-100							
u0947	b0808	u0259		b0660	xm6311		xh6311			u1014			
1256	42	2200	43	(0508) 0258 371 1311 delay x02	44	45	2004	46		47		48	
				exit trace subroutine		normalize							
,www www	W504000	,2000 0000		u[]	r1461		u1262			u1120			
0501	49	50		51		52	0715	53		54		55	
		b[]		1029						-101		u4 temp	
b0200	y0615	a4423		u0614	xb6311		00026			xa6320			
56	1407	57	[NO]	58	0758	59		60		61		62	
										101			
u0214	,7www www	y0759		b[]	xh6311		m1140			u0246			
0961	63												

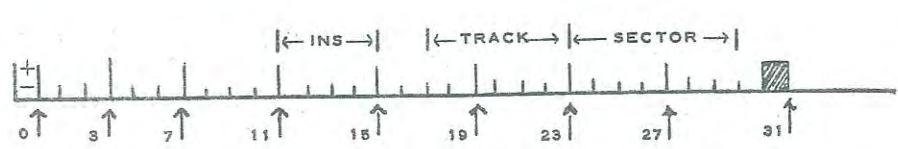
invert 2
t0802



FLOATING POINT BRING, DIVISION

00	01	INVERT 2	02	03	INVERT 3	04	05	06
1030	div 0				102			
S4122	t0906	r1461	u1239	b0826	u0841			,204
1522	07	0736 1336	08	0520	09	10	11	0733
			print					hold
J55 J555	,1000 0000	r1659	u0620	xp1654	,4000 0000	u1118		
P4	14		15	16	17	18	0054 1933 2304	19
			print			tab		print flag
r0850	u0851	r1659	u0620	u0962	,7000 0000	xh6306		
1522	21		22	23	24	T4	25	0463 0204
1029	print entr.							
b4107	xa6308	t0836	u0611	xp1604	,2000 0000	u0163		
B4	28		29	30	0102	31	0212	32
BFP			switch acc					
r0850	u0851	u1318	,85274	xc6311	xs6319	a0806		
	35	0223	36		37	0423 0450	38	0835
		print entr.						exit invert
u0839	xh6308	u0052	,4000 0000	xh6304	u[]	xd6313		
	42		43	1022	44	0454	45	1063
u0832	,8000 0000	,30440	,4000	xm6311	xh6305	xb6313		
	49		50	BFP	51		52	
					BFP temp	,4000 0000		
u0917	u[]	b[]	xh6317	e0525	u0855	xh6313		
	56	2107	57	0856	58		59	60
					BFP temp	,1000		
u0858	u1947	xh6316	xb6317	e1939	xh6319	u0850		

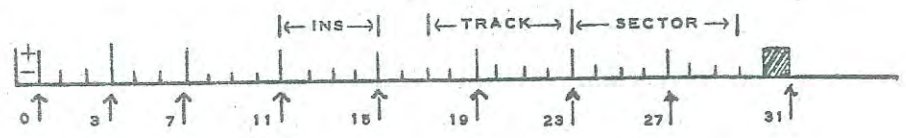
(112) 63
t1837
b0242



MULTIPLICATION, SHORT NORMALIZE

00	01	2851	02	2824	03	2046	04	05	0730 0801	06
digit switch 1						exp			div 0	
C1915	u0513	,10003ww3		,5www3		xm6326	u1950		b4160	
07	BAT	08	09	10	11	12	13			
error						,8000 0200				
u0405	b0851	y0910	b[]	u[]	b4234	u1144				
N4	14	15	16	0849 1059	17	18	0918	19	20	
BFP										
r0850	u0851	u0938	m[]	u0919	x26305	u0947				
1120	21	22	0951	23	0937	24	25	26	27	
			1e1		1e30					1e30
x6357	u1146	20838	n4146	xh6311	xb6312	S4106				
28	29	30	ZERO	31	32	33	0947	34		
	1e1-1e30		acc → 0							1e1-1e30
u0225	S1208	u0953	x6310	x6304	u0246	a1206				
35	36	37	0916 0443	38	39	40	41			
no shift	1e1-1e30		1e23							
t0929	S1208	u0924	S1024	x26304	xh6312	xb6313				
42	43	44	45	46	47	48				
	1121 1557	1758	1304	0942	SHIFT 1000					1e30
u0946	,200	,w300 0000	www 0000	xm6311	t0934	S4106				
49	50	51	52	53	54	55				
zero	1e1-1e30	shift	1e1							
t0931	S1208	t0923	a0838	xh6311	xb6312	u0225				
0046	56	57	1123	58	59	60	61	62		
			"ovflo"	error	INVERT 1					F8 0918
xZ0035	u0244	b4200	u0405	xb6311	u0763	xp2441				

63
u0826



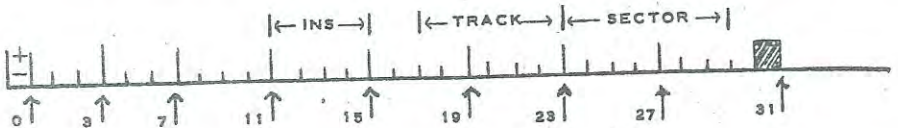
Date _____

Page _____

Programmer _____

ADDITION, FLOAT SUBROUTINE

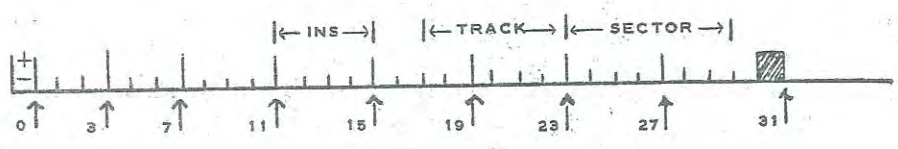
Float	00	01	02	03	04	1402	05	06
	11<0	1030	zero	1015-1030			intgr	error
	t 1401	s4144	t 2239	s 2139	t 1439	b 4217	w 3928	
PJ	07	08	1442 11g =143030	09	10	11	12	2242 exit float
	800t0237	u0163	b1152	xh6319	r1461	u1248	u []	
A4	14	15	16	2330 2859	17	18	19	20
	BFP			1016 0425 1136			shift operand	1030
	r0850	u0851	u1018	3www 3000	xs 6304	t 1035	a4106	
	21	22	23	0138 2030 2154	24	25	26	27
	xh6357	xh6358	u1025	30100	xa6304	xc6312	u1042	
0656	28	1033	29	30	1051 1045	31	32	33
	wwwwww 3	xa6315	u0947	b []	xm6311	u1029	wwwwww	wwwo
1019	35	36	37	38	39	40	41	41
	u 9124		xh6314	1030				
	xh6314	xh6315	u1038	b 4124	xa6304	xh6312	u1056	
1027	42	43	44	45	46	47	48	48
			table const Lf+1		table const Lo	switch acc 1		
	xs6357	xs6358	a2116	y1031	s2118	t0154	x66313	
	49	50	51	0004 0723 1602 0302	52	0708	53	54
	101							
	m1928	xh6315	u1031	38000 0000	xs6311	t0716	u0714	
1041	56	57	58	59	60	61	62	62
			table const Lf		table const Lo			101
	xa6314	xa6315	a3909	y0917	s2118	t0163	b0627	
	63							
	u0846							



FLOATING POINT HOLD, SUBTRACTION

1105 00	01	02	03	0210 04	05	06
1e1-1e29	exit title			1e1		
a1450	t4402	c1163	u1163	a1140	t1100	c1107
1106 07	08	1115 09	10	11	12	2111 13
		digit cnt	integer	exp		+ number
pL]	u0430	xc6331	xc6305	xc6326	u0863	s1156
14	15	HJ 16	H8 17	18	19	0748 20
digit flag		trace				underflow
xc6329	u1109	800t3910	y1146	r1461	u1239	t0921
21	22	23	1142 24	25	26	27
,200		ovflo	,7mmw w9.00		,7mmw w9.00	
s0943	t1137	u0958	a1260	t0912	s1205	u1144
S4 28	29	30	0402 31	32	1504 1459 33	1132 34
BFP			-1e0			
r0850	u0851	xb6316	m0660	u1134	p0329	xh6313
35	36	1122 37	38	39	0701 1104 1325 40	1139 41
		,200 -256@30				
xb6319	u1018	a3316	xh6317	u1141	,w000 0000	xb6313
42	43	1143 44	45	0922 46	47	022 48
fr < 0		1127 0913 ,www w9.00		1831 1520 2120		
t1124	u1144	e3323	xa6317	hL]	u[0163]	xp1627
3006 3563 49	50	1615 51	1019 52	CO 53	54	1054 55
						float
,300 0000	u0451	Z1635	,11Q	xb6311	u1155	r1013
56	57	1529 58	59	60	1643 61	62
	switch acc.	.1e0 = jjjjjjj	f		±1e30	
u1000	u1318	a3816	no231	u1641	xs6312	u1521

1102 63
1103
pL]



Date _____

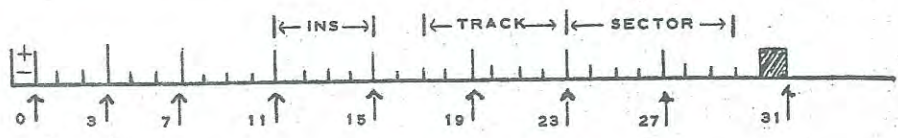
Track 12

Programmer _____

Page _____

NORMALIZE, INTEGER PRINT

1421	00		01	1330	02		03		04		05	0934	06
	delay			1e6			1e25						
	,1Q	u0430		2,724			n2018		u1255		,7www wq00		,3www wwwq
1656	07	0121 0436 0450	08	2630 3158	09		1316	10		11		12	2055
							1e4		1e27				
	,8	,3www wwwq		,1000 0000			22560		n0626		u1355		,131 2k00
INTEGER PRINT	14		15		16		1245	17		18		19	20
							1e30		zero		,30K3q		
t1243		xp0301		u1217			54146		t1405		50162		t1222
	21	1220	22		23			24	1331	25		26	27
(error) print		,30K40		,30K40					1e6		1e26		
u1559		20844		d4252			u0652		20161		n0334		x66313
	28	1356	29	1335	30	1363	31	1328	32	1257	33		34
		1e30		1e30			1e30		1e30				
S1700		54144		54102			54146		54104		x26319		xh6319
1305	35		36	1651	37			38	NORMALIZE 1	39		40	41
xh6314		u1432		,38					x66311		u1241		xh6313
	42	1214	43		44			45	1242	46		47	NORMALIZE 2
		-1e0											
u1246		m1308		xp0723			u1217		x66304		xh6319		x66313
	49		50		51			52		53		54	1204
		1e30		zero			u1461						
t3754		54122		t1459			b1324		h1432		u1262		xh6313
	56		57	3008 3622 3722	58	0330	59	1124	60	1344 1351	61	1254 1354	62
		-6e30					ITemp						NORMALIZE 3
b0740		u1233		,3www			[]		,7www wq00		xh6319		x66313
	63												
		1e2											
		S1728											



Date _____

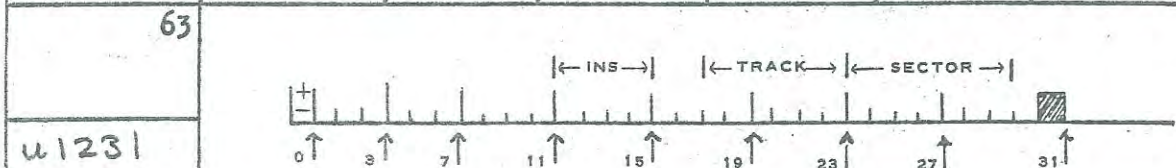
Track 13

Programmer _____

Page _____

NORMALIZE

00	01	02	03	1303	04	05	1600	06
<102	101-102	shift 1	no shift					
t 1336	50744	t 1325	u 1304	x 66319	u 1235	z 2256		
2440	07	1245 3022 0321	08	1337	09	10	11	12
		103-1014	<1014	107-1014	<107	105-107		13
z 0229	, 2000 0000	a 0945	t 1339	s 0261	t 1346	s 0156		
14	15	16	17	SWITCH ACC 2	18	19	0603	20
<105	104-105	shift 4	shift 3				print flag	
t 1329	s 1458	t 1210	u 1332	xh 6304	u 0448	x 66306		
21	22	23	1452	24	1302	25	26	27
					101	1030		
t 0608	x p 0323	u 0821	u 1461	a 1140	n 4148	x 66313		
28	1314	29	30	31	1317	32	33	34
	105-106	shift 6	shift 5	104	1028			
u 1232	a 1958	t 1202	u 1225	a 0661	n 0512	x 66313		
35	1300	36	37	38	1310	39	40	41
	102-103	<103	shift 2	1014	1017			
u 1230	a 0808	t 1309	u 1360	a 2025	n 0126	xh 6313		
42	43	44	416	45	1312	46	47	48
	14030				107	1024		
x 66319	s 2222	u 1261	h 6301	a 2218	n 0133	xh 6313		
49	50	51	13756	52	53	54	1212	55
	7030		b -100					
x 66319	s 1836	u 1261	b 4531	h 1432	u 1262	x 66313		
56	2514 2607 3021 3021	57	0236 1415 4012 4100 4024	58	2330	59	1338	60
			Δ				103	1029
u 1229	, 400 0000	z 0229	u 2753	a 4218	n 4147	x 66313		



LGP-30 Optimum Coding Sheet

Date _____

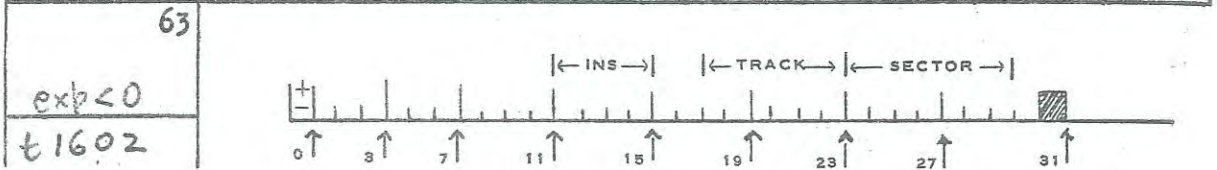
Track 14

Programmer _____

NORMALIZE, ROUND INSTRUCTION

Page _____

1001	00	1000	01	02	03	04	1218	05	1409	06
		1e15-1e30	x int	1e15-1e30			-4e29			
1800	0000	a0530	t1005	s2139	u1440	b1034	xz0056			
	07		08	09	10	11	12	13		
		1e29								
xp0357		a4123	t1406	xz0053	xp0261	u0611	2wfw	0800		
TRACE SUBROUTINE	14		15	0616	16	17	18	19	20	
		Δ						,102		
xp2400		a1358	y0502	u0500	x66304	s4248	t1451			
	21		22	23	1422	24	25	26	0622	27
		,1g		intgr	,g0					
s1200		t1424	u1005	s1610	x26304	u1443	x66313			
	28		29	30	31	1236	32	33	34	
				1e30		u1461 or	b -1e0			
t0600		xp0308	s4102	u1437	[]	xm6313	xh6313			
	35		36	1431	37	38	1004	39	1404	40
				zero			1e15	1e16		
x66314		u1461	t0628	u1561	a4154	n0326	xh6313			
	42	1426	43	44	45	46	47	48		
		Loc of 1e29				form E021	.5 =1e30	1e1		
u1009		a0515	y1445	b[]	xm6311	a4126	m0627			
	49	1100	50	1420	51	52	53	54	55	
				1e30	result =0				1e1	
u0246		3www wwws	a4102	t0551	x66311	t0548	s0627			
	56		57	1515 3022 2836	58	1251	59	60	61	1558
						acc → 0		exit normalize	,100 = 128e30	
t0551		u0558	x00 0000	x66317	x66319	u[]	a0048			
	63									



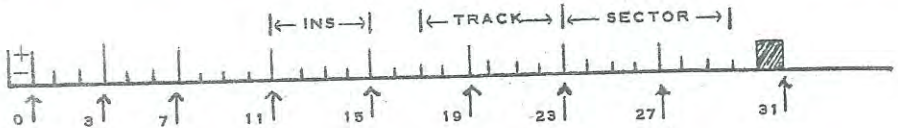
Date _____

Programmer _____

PRINT SUBROUTINE

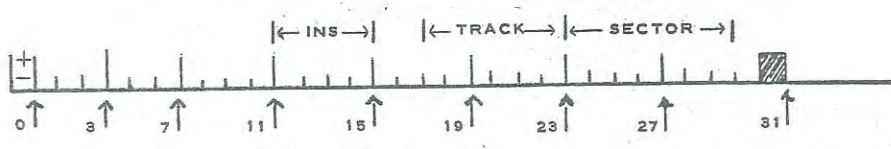
Page _____

00	01	02	03	04	05	06
1030	exp=0	1030	|exp|	xp0329		
54122	t1509	24124	xh6353	b1133	u1607	Z1742
2063 2106	07	1501 08	09	10	11	12
m or d		1030	|exp|	1030	±1030	const 1
h2136	u4544	24124	xh6353	b4126	xc6312	xh6309
14	15	16	17	18	19	20
const 2	c6359	u4959		-100	integer	
xh6361	xh6313	t1528	7www ww80	b0354	xm6305	u1146
1162	21	22	1635 23	24	25	26
exp inc		const 1		const 2		1526 0619
xh6307	u1762	xh6309	u1525	xm6361	u1527	xm6313
1763 1462 1514	28	29	30	31	32	33
.100= jjjjjjj		.100= jjjjjjj	7www ww80		±1	exp inc
s0807	t1158	23816	s1517	t1537	xh6312	xa6307
35	36	37	38	39	40	41
exp inc	-.900= jjjjjjk0	" "	7www ww80	print temp	+ number	print flag
xh6307	b2715	xp2316	23353	xc6318	s1519	xh6306
42	43	44	45	46	47	48
u1543 -7029	b0307 print contr.	xh6308	2002 d0000 (does nothing)	1544 print temp	digit print	
b0307	xh6308	u1546	D0000	xh6318	r0612	u0632
49	50	51	52	53	54	55
	mask =,7g	const 1	const 1'	const 2	mask =,g	const 2'
xp0328	b2722	xe6309	xh6317	xh6361	e2126	xh6320
56	57	58	59	60	61	62
	.200= 256@30		print	error	1438 0700	underflow
u1644	s0943	t1462	b6222	u3907	xh6319	t0628
063						
u1557						



1605	00		01	1443	02		03		04		05	1648	06
				-100		lexpl		xp0729					
c1650		u1611		m1062		xh6353		b0347		u1600		gag3200	
	07		08		09	1424	10	1601	11	1609	12	-1030 +21635 =,1084	13
		1030						1030		±1030			
h1650		b4144		u1612		,00		S4126		xh6312		a0235	
	14		15		16		17		18		19	print loc. const 1	20
		z1635		-2 or 0		lexpl		103		,lj			
y1633		S1151		xh6359		xh6353		m6354		e2005		a1306	
	21	1621	22		23		24		25		26	print loc. const 2	27
				const 1		lexpl		1030		(int dpt) ,3j			
y1622		bL]		xh6309		xh6353		n4104		e4220		a1506	
	28	1622	29		30	359	31	1630	32	1614	33	1633	34
								const 2		print switch			
y1629		bL]		u1632		1500 0000		xh6361		uL]		u1636	
1633	35	1634	36		37		38	0903	39	0904	40	1160	41
		.0100 = ,147fg14		const 1				1012					
u1523		b0050		xd6309		u0618		P0000		Z0300		xh6313	
	42		43	1556	44		45		46	1646	47		48
		exp inc		-2 or 0		const 1'						const 2'	
xh6307		u1161		xh6359		xh6317		u1647		xz3226		xa6320	
	49	1607 9960	50		51		52	0651	53		54		55
		print sp. or "-"		10 ² 030 =j8		fudge = ,g		print temp		+ number		flag	
xa6307		pL]		d1237		a0617		xc6318		s1626		xc6306	
	56		57		58	1663	59	1658	60		61		62
		2029		print ctr.		exit floating point print		print temp		digit print			
S1207		xh6308		u1660		uL]		xh6318		r0612		u0632	

63
u1659



Date _____

Track 17

Programmer _____

Page _____

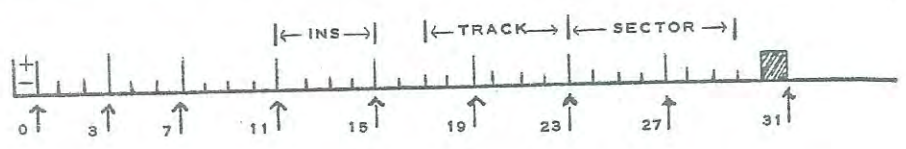
SHIFT TABLE, CONSTANTS

SHIFT TABLE	00	01	02	03	04	05	06	
	1e30			1e27				
	,2	,4	,8	,10	,20	,40	,80	
07		08	09	10	11	12	13	
	1e23				1e19			
	,100	,200	,400	,800	,1000	,2000	,4000	
14		15	16	17	18	19	20	
		1e15				1e11		
	,8000	,10000	,20000	,40000	,80000	,100000	,200000	
21		22	23	24	25	26	27	
			1e7				1e3	
	,400000	,800000	,1000000	,2000000	,4000000	,8000000	,10000000	
28		29	30	INPUT CONSTANTS 10 ⁻¹ e-3 1	31	32	33	34
					10 ⁻² e-6 2	10 ⁻³ e-9 3	10 ⁻⁴ e-13 4	
	,20000000	,40000000	,70000000	,66666606	,5199850j	,41893712	,68K98j1f	
	35	36	37	38	39	40	41	
	10 ⁻⁵ e-16 5	10 ⁻⁶ e-19 6	10 ⁻⁷ e-23 7	10 ⁻⁸ e-26 1	10 ⁻¹⁴ e-53 2	10 ⁻²⁴ e-79 3	10 ⁻³² e-106 4	
	,5392 K620	,4319 Kw26	,625w jf29	,5596 3234	,734f jf6f	,4K5w 0999	,67K8 8wk4	
OUTPUT CONSTANTS	42	43	44	45	46	47	48	
	10 ⁰ e0 0	10 ⁻¹ @-1 1	10 ⁻¹ @-2 2	10 ⁻¹ @-3 3	10 ⁻² e-4 4	10 ⁻² @-5 5	10 ⁻² @-6 6	
	,70000000	,19999992	,33333332	,66666662	,147f 9144	,28w5 j294	,51998524	
	49	50	51	52	53	54	55	
	10 ⁻³ e-7 7	10 ⁻³ @-8 8	10 ⁻³ @-9 9	10 ⁻⁴ e-10 10	10 ⁻⁴ @-11 11	10 ⁻⁴ e-12 12	10 ⁻⁴ @-13 13	
	,1062 4KK6	,20j4 99f6	,4189 3746	,0K19 7178	,1f36 9298	,346K j5K8	,68K9 89f8	
	56	57	INPUT 58	59	60	61	1522 62	
	10 ⁻⁵ e-14 14	10 ⁻⁵ e-15 15	-1@5	type	xCG349			
	,14w8 958f	,29w1 69df	b0944	xCG310	b3939	w2014	x66313	
	63							
	u1528	<div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>← INS →</p> <p>↑</p> </div> <div style="text-align: center;"> <p>← TRACK →</p> <p>↑</p> </div> <div style="text-align: center;"> <p>← SECTOR →</p> <p>↑</p> </div> </div>						

INPUT

1835	00	01	02	03	04	05	06
	temp #	word		acc → 0			
b[]	xh6344	xm6359	t1827	xc6326	u1822	1000 0000	
07	08	09	10	11	12	13	
input		word	h[]	h[L+1]	l@13	b[L0]	
r1147	u1758	xh6359	b1146	s2033	n4141	20056	
14	15	16	17	18	19	20	
		xh6301	h[]	l@29		b[] NHM	
y1800	u1833	a1345	y1146	s4147	u3722	xh6363	
21	22	23	24	25	26	27	
	temp #	word		l@30		b[] NHM	
u3722	xs6344	xa6359	t1827	s4104	t1820	xh6363	
28	29	30	31	32	33	34	
wwwj		acc → 0		b[]		b[] NHM	
s4114	u1832	xc6302	u1146	y1800	t1841	xh6363	
35	36	37	38	39	40	41	
b[]	INTEGER	DIGIT	input word	l@26	digit@30	h[]	
u1800	Q	xh6359	m2624	xc6325	u1943	b1146	
42	43	44	45	46	47	48	
xh6300	"cond."	error	digit@30	integer	10 ⁸ @30		
s2428	t1816	b2224	u3928	xa6325	xh6305	s1606	
49	50	51	52	53	54	55	
"digit"	error	digit contr.	signed exp	integer			
t1930	b2253	u0405	xs6331	xh6329	xh6305	u2021	
56	57	58	59	60	61	62	
-100	sign switch				integer print		
b3728	c [0 ⁵⁴⁴ 0360]	u1930	8000	xh6311	r0612	u1214	

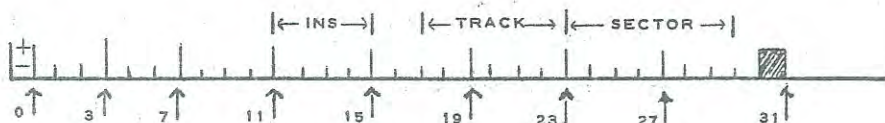
63
u0645



INPUT

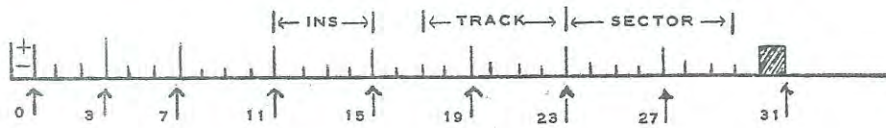
1935 00		01		02		03		04		05		06
acc → 0						1030		convert		1030		1030
xc6343	xp0044	xi0000	s4146	t1940	a4148	n4135						
07		08	1937 09		10		11		12		13	ten switches
7mmwwwg	106	input word	advance	306	106	letter						
e0757	s1958	xh6359	t1932	e2840	s1927	t [2026-1930]						
14	digit switch 1r	15		16		17		18		19		20
106	digit	input word	104	space	advance	104		"_"				
s0400	t [1827-2037]	xb6359	s2560	t1930	s6341	t1856						
21		22	"."	23		24		25		26	1912	27
104	advance	acc → 0	type	b 1029 = b4123								
s1400	t1930	xc6302	xc6310	b4061	u1929	200 0000						
1044 28	1926 29	ADVANCE 30		31		32		33		34		
	digit switch 2	input word				1025	7mmwwwg	1030				
14000 0000	c1944	xb6359	u1932	n2018	e0819	s4106						
35		36		37	2000 38	0000 39	CONVERT 40			41		
	106-1030						type	integer				
t1900	s6322	u1909	z2204	11wq	xb6310	t2113						
42	1040 43	digit switch 2	44	45	46	47	48					
	digit flag	b 1029 or u1447	digit entr.	digit entr.	integer	f						
u2043	xc6329	[]	xa6331	xh6331	xb6305	n0313						
49	0905 50		51	2041 52		53		54		55		
	8029		f	digit 029	exp	100029 = 190						
u1846	a0529	u1852	n0231	xa6325	xh6326	s0613						
56		57	1329 1908 58	NO DIGITS 59		60		61		2122 62		
	advance	"digit"		2044	1030	integer						
t1930	u1850	1200 0000	b4124	xh6305	u2045	xh6313						

63
fr. sign
xb6349



INPUT

00	01	02	2002 2009	03	04	1619	05	2034	06
	u1461								
t2008	b2530	u2003	h1432	u0746		.15		c6360	
2022	07	2000	08	09	2146 2146 SIGN of exp	10	11	12	13
	b0354-100				zero		"input"		error
T2037	b0151	u2003	xh6360	t1830	b4423	u0405			
1761	14		15	0458	16	2445	17	1803 1432	18
	sign switch							2147	19
c1857	u2231	.200 0000	,48000	,40	Z0030	D6315			
1855	21		22		23		24	1327	25
	1030	zero	1030					LETTER	26
S1700	t1830	a4102	u2055	.2 0000	b4062	y1913			
	28		29		30	2030	31		32
	t2037	digit switch 1			type			1811	33
b2007	c1915	u2031	xh6310	u2034	h6235	b2006			
	35		36	EXPONENT DIGIT	37		38		39
	sign switch	advance	input word	(not digit) 1025			digit @29	exp	40
y1857	u1930	xh6359	m1705	xh6325	xh6326	u1952			
0706	42	1942	43		44	1961	45		46
	digit flag	no digits	Sign of exp					exp	47
H 0000	xh6329	t1959	xh6360	t0904	xh6326	a0334			
	49	2056	50		51		52	2014	53
	signed exp	1029				f	integer	10 ⁷ @30	54
u1852	xh6329	S4123	u4453	n0625	xh6305	S1213			
	56	FINISHED BASE 10 NORMALIZE	57		58		59		60
	signed exp			1exp1	xh6360	a or s	xh6315		61
t2050	xh6329	t2101	xh6331	b4232	h2133	b2020			
	63								

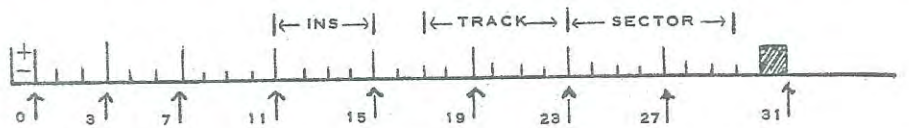


u1507

INPUT

2114	00	2058	01		02		03		04		05		06
		-1e0		lexpl		x56360		a or s		xm6315			
800w	www3	m0623		xh6331		b0153		h2133		b4055		u1507	
2235	07		08		09	2109	10		11	1026	12	1941	13
	u1947	digit switch 2				sign of exp						fr. sign	
	b0857	c1944		u2110		x06360		u1113		Z0031		x66349	
	14		15	1044	16	1045	17	1046 1060	18	2115	19		20
										integer			
	t1518	u2119		Z1730		Z5804		Z1700		x66305		u1146	
2162	21		22		23		24		25	1054	26	SUBROUTINE	27
	x66300	u1962		r2138		u2127		u2152		,a		y2128	
2127	28		29		30		31		32		33		34
		routine temp 1		,wq		routine temp 2		bin exp		a or s		bin exp	
	b[]	xh6315		e2352		xh6360		x66318		[]		xh6318	
	35		36		37		38	1003 1063	39	1056	40		41
										integer		10 ⁸ @28	
	x66300	[]		xh6300		u[.]		,wwwq		x66305		d1413	
	42		43	2143	44		45		46		47		48
				38e29 =x20038		lexpl		overflow or underflow		x20030		-1e3	
	xh6300	u2144		b0709		x56331		t2010		s2019		m1806	
	49		50		51	2125	52		53		54		55
	[lexpl/8]=0	loc. const 1 =Z1738				lexpl		,lj		1e29		exp=0 mod 8	
	t2152	a6336		u2123		x66331		e432		s4105		t2159	
	56		57		58		59		60		61		62
		loc. const 2 =Z1731				,100		bin exp					
	a2435	r2138		u2127		b1024		x26318		xh6319		u2121	

3034 63
- 4000



LGP-30 optimum Coding sheet

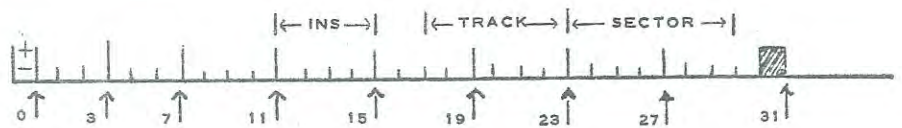
Date _____

Track 22

Programmer _____

Page _____

Compils Z6029	00	01	02	03	04	05	06
		avail	U8.441Z	EP	Program ho		set up store
B4243		Y6351	B4417	C0039	B4216	R2441	U2437
	07			10		12	13
H6234		T#CC		load code	two 2000	no load necessary	"load"
B4257		C6345	U4040	H6353	A4533	T0121	B4231
	14				17	18	19
		α 2					
R0454		U1148	Z3202	U4536	,100 0000	,300 0000	,5000 0000
2699	21		3102	24	2639	2854	3141
				"const"			
90898		Z0067	400 3000	GGIG 3000	,300 0000	,1000	,U4000
2999	28	2400 3207	3099	3015			
			"end"	1e29	bin exp	+2026	ten switch
C4000		W302 0000	4 FJFF	b4103	XC6318	b3819	C1913
	35	2550	2308	3009	38	1002	39
							40
							41
u2107		,400 0004	Z5918	U0000	XC6318	XC6319	XC6313
	42	3214	3202 3601	3023	45	2000	46
		SCF=1				'-id1 305	'-id
u1013		Z5804	U0000	Z6202	,500 3020	,8003032	,8 0000
2903	49	3521	3236	0009	52	1800	53
						2434	54
							55
						"digit"	
,W0003004		,2000 0000	,8	853 9796	2F8K 38KE	Y6362	,W300 3000
OUTPUT CONSTANTS	56						
10 ⁰ @0		10 ⁵ @-16	10 ¹⁰ @-32	10 ¹⁵ @-48	10 ²⁰ @-64	10 ²⁵ @-80	10 ³⁰ @-96
0		16	32	48	64	80	96
,7www wW80		,5322K60F	,36w9 2w94	,2407 5w1q	,179j f128	,0w79 6832	,6569 7e8f
	63						
10 ⁻³⁴ @-112							
112							
,4276 1q44							



Date _____

Symbol Input

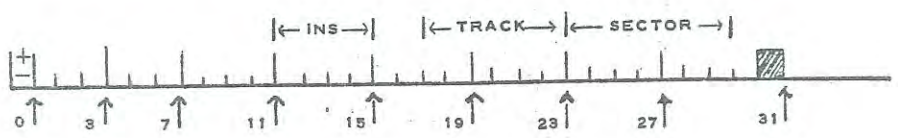
Track 23

Programmer _____

Page _____

00	01	02	03	04	05	06	
<u>Input</u>	0 → acc.		1e30	Turn mwa	α	Reduces	
P0043	C6344	I0000	N4146	E0819	H6320	M4535	
07	Primary table to 25918	08	09	10	11	12 (4002)	13
W3							
E3250	A2237	Y2345	Y2325	Y2326	U2344	Y2356	
14	Def Type	15	16	17	18 α-del	19 (3718)	20
							ZELI
H6350	A6358	HE 1	U2318	H6304	U2355	H2756	
21	22	(4600) 23	24	(2434) 25	26	(2350) 27	
MM		"symb"	Error		table el.		-1e29
B6303	U3734	B4258	U3928	AE 1	CE 1	B4263	
28	29	(2407) (2741) Repeat Ext U2753	(2436) 30	31	32	(2344) (2350) 33	34
avail			Return	M Comp	table el		α
A6350	U4563	B1359	C2617	UE 1	BE 1	S6320	
35	36	37	38	39	40	41	42
α ≠ table el	1e30	α = table el	Turn 3000	α-del	1e17	α not in table	
T2338	S4122	T2424	B1017	E6304	S0126	T2429	
42	43	(2312) 44	45	46	47	48	49
1e12			table el.	α-del		α-del +0	
M0021	U2309	Y2316	BE 1	H6304	Y2333	T2333	
49	50	51	2130 52	(2502) 53	54	(2314) 55	56
1e30	no words in equiv class	α-del +0		SCC		α	
S4135	T2327	U2333	NR	C6332	U3162	B6320	
56	57	(2450) 58	59	60	61	(2734) 62	63
table el.		3e3	Store and Read	1e3	Transfer on α	<ccc>	
CE 1	U2424	A4130	T2460	S4218	T2649	BE 1	

SCA
63
H6314



Date _____

Track 24

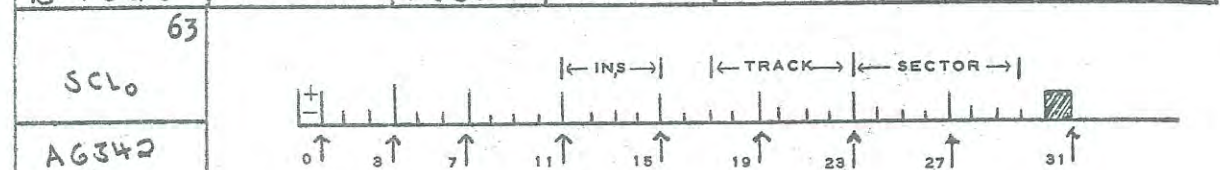
Programmer _____

Page _____

Symbol Input

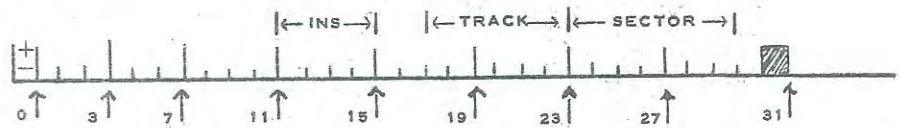
Store
Read
Store and Read

00 JWWJ	01 Variable Flag	02 MComp L23743	03	04 103	05 α-id	06 α in Group 2
E0343	HG330	S1938	Y2332	BG354	AG348	T2735
07 (2351)	08 Switch Flag	09	10 2424	11 (2351) NCC	12 α-id	13
U2330	BG344	U2731	W500 JWWJ	CG340	BG348	U2442
14 800W WWWW	15 Store	16 Store Word	17 NAM	18	19	20 Z[L+J]
E2100	T2554	CE 1	BG303	U2419	YE 1	S2756
21	22 Error Storage An Exceeded	23 Error	24 (2337) (2357) W500 JWWJ	25 α-id	26 α-id	27 Exit Input
T2436 1842	B4244 (2341)	U3928	B2410 1029	EG304	H6348 1019	UE 1
28	29 avail	30	31	32	33	34
H6300 2150	BG351 (4441)	Y2316	A4103	HG351	N0041	U2325
35	36 Z[L+J]	37	38 NAM	39 Y6362	40	41 Exit Store
Z1731 (2413)	AG301 (2363) (2003) CHECK OF	Y2416	CG303	B2254	C2419	UE 1
42 Z0229 Diff	43 <SC> or table	44 Read Variable Flag	45 Prev.	46 SCC	47	48
S1307	CE 1	BG330	CG317	BG332	Y2362	R2427
49 Input	50 α an ALGOL symbol	51 Variable Flag	52 Error Two adjacent Variables	53 JWWWWW- 25803 JWWW JSW2	54 NCC	55 Error var.
U2300	T2358	BG330	T3923	B4239	AG340	T4525
56 JWWW WWWW Z5804	57	58 Variable Flag	59	60 Store and Recal SCC	61 SCLO+1	62 Error SC J.Ned
JWWW JSQQ						
S4528	Y2443	HG330	U2411	BG332	SG333	T3927



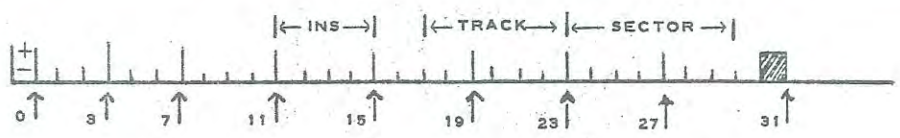
(2461) 00	Variable Flag 01	02	03	(2471) 04	05	Unary & Read 06
Y2443	HG330	U2353	I 1	B4353	AG348	T2444
Unary read 07	read 08	Store 09 and Read	(2481) 10	11	(2491) 12	13
B4357	C6348	U2460	B0660	U3226	AG334	U2642
Bring Generator -105 14	Switch Flag 15	16	Inst. 17	18	19	20
S1357	HG344	E2752	C2503	B6340	R2648	U2652
Eliminate B,B Switch 21	(2737) 22	Temp op Loc 23	24	25	26	27
T2408	B6308	C6359	S4103	AG340	R2648	U2652
Eliminate B,B 28	29	30	(2527) 31	32	33	34
T2535	U2531	U1461	B2503	T2557	R2700	U2723
(2528) (2557) 35	36	Temp op Loc 37	38	39	40	41
1017	BTP	op Loc	1017	1029	Types match	BGT
B0421	EG308	AG359	E4060	S4125	T2550	B6356
42	43	44	45	46	47	48
105	1029		Inst.	Convert acc.	105 +3017	BGT
EG328	S1701	U2545	M2503	T2561	B4119	HG356
49	(2540) 50	51	52	53	(2415) 54	55
	105 11029	op Loc	Inst.	Exit Bring Gen		W3000
U2551	A2236	AG323	A2503	U2551	Y2419	E3513
56	(2552) 57	58	59	60	61	62
	BTP	op Loc		1203 1217 1224	(2546) 62	
					C0300	
U2416	B6308	HG323	U2535	1,800 0000	B4133	R2441

63
Store
U2416

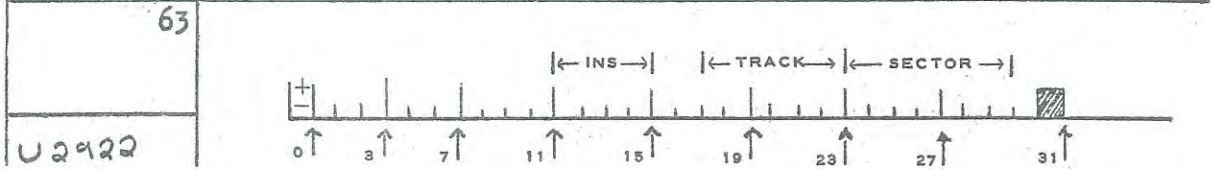


00	(2721) (2714) End Arith TSC	01	Z5828 TSLF	02	03	04	"temp"	Error 05 Temp. storage extended	(2603)	06	BGT
U4405	B6337	S0152	T2606	B4534	U3928	B6356					
07	TSC	08	1029	09	10	11	12	13			
105					<NCC> FAH	105	integer	-105+1017			
E1357	A6337	A4145	HE]	S4247	T2614	A0049					
14	TSC	15	HTP	16	Return 17	(2654) 18	(2654) 19	20			
105+12015+1017						<NCC>	W300 JWWJ	BGT			
A2943	Y6337	H3902	UE]	BC]	E2255	H6356					
21	22	Error 23 Illegal variable	1038 24	Unary 25 Bring Gen NCC	26	27					
102											
S3807	T2630	U4613	Z0008	B6340	R2648	U2652					
28	29	(2622) 30	31	32	Error 33 Array not subscripted	34					
Eliminate H, B		103	not an array	104		-101					
T2750	U2748	A1209	T2639	S0661	T4005	R2220					
35	36	37	38	(2631) 39	40	41					
BGL	BGT	W00 JWWJ		103-105	Integer	1017					
CG321	B6356	E2223	U2619	A2225	T2512	A1713					
(2512) 42	43	44	45	46	47	48					
BGL	BTP	HTP		JWWQ	1030	Ex 1 BLoop					
A6321	H6308	S3902	U2646	E4161	S4126	UE]					
(2361) 49	50	51	52	53	54	55					
-0206 +U3844 UE Trans. 101			BLoop		NCC						
A2221	C2651	UE]	Y2610	Y2618	C6340	U2656					
56	57	58	59	(2755) 60	61	(2750) 62					
BGL	BTP	op. loc.			SCC						
CG321	B6308	C6323	U2618	H6332	U2733	R2441					

63
Store
U2414



Exit 00 Store BTP	(2707) 01	02	03	04	(2903) 05	06
		Unary BG	Change Sign with 0800		SCA	1030
UC]	R2751	U2625	B4253	U2712	EG314	S4135
07	08	09	10	11	(2704) (2801)	13
Unary -	U2709	15E15		Bring Generator		Store
T2701	U2709	B2752	R2553	U2517	R2441	U2414
14	15	X+ 16	17	18	19	20
		14E15		Bring Generator		Store
U2601	18333330	A4138	R2553	U2514	R2441	U2414
21	22	Store BTP	23	24	25	26
		HTP				Store
U2601	17a	B3902	T2728	U2726	R2441	U2414
(2724) 28	29	30	(2409) 31	32	(2661) 33	34
1015	BTP		Inv			
B34400	A6308	U2662	C2503	U2522	Y2362	U2362
(2406) 35	36	37	38	39	40	41
Arith Trans. SCA	103-106	check for leading 4,-	105	Compile and Read	103 - 105	Compile and Repeat
SG314	S4401	T2742	S2924	T2934	S2219	T2330
42	43	44	45	46	47	48
1030	1030	Store and Read	Prev	Store and Read	Unary + or -	(2624) 48
E1700	S4122	T2460	B6317	T2460	U2504	R2700
49	(2622) 50	51	2506 2701 52	53	54	55
Store BTP	BTP	Exit Unary BG		Repeat		
				SCC	1029	
U2723	B6308	UC]	W0000	B6332	A4105	U2660
56	(339) 57	58	(3437) 59	60	(2946) (2452) 61	62
Z[L+]					NCC	1029
[]	Y[]	U3260	Y[]	U2753	B6340	S4127
63						



U2922

LGP-30 Optimum Coding Sheet

Date _____

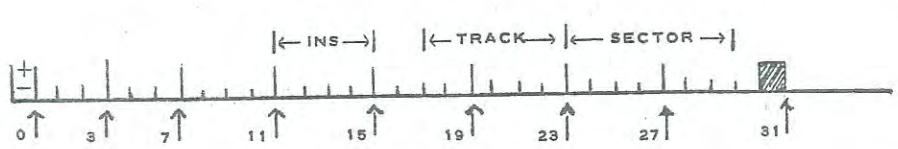
Track 28

Programmer _____

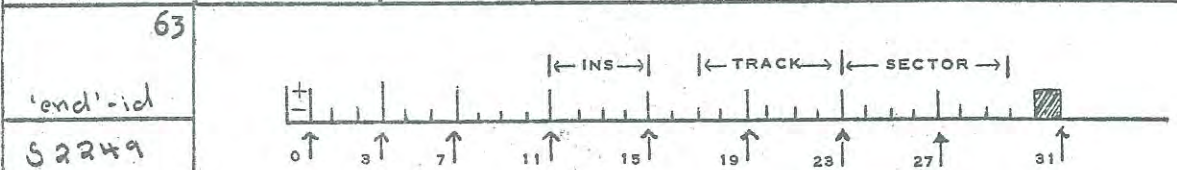
Page _____

<u>K1</u> 00 -105 +4015	01 Switch Flag	02 5015	03	04 Bring Gen	05 Command	06 3017
80743	CG344	B1545	R2553	U2517 (2800)	H6359	E4142
1029	07 Integer op	08 Command	09	10 C0000	11	12 Store
54136	T2811 (3134)	B6359	U2712	B4133	R2441	U2414
Form convert Inst.	14 Variable Flag	15	16 HTP	17 array-id	18 3000	19 M0000
U2547	H6330	C3902	BE]	E4161	A4134	R2441
21 store	22	23 (2413) Tsub	24	25 -1029 N0000	26	27 store
U2416	U2925	B6309	A0903	U2826	R2441	U2416
28 SCA	29 +GWW WWWJ	30 2017	31 <SCC>	32 41-id	33 α-id	34 Store and Read
B6314	E4101	S1859	CE]	B2247	C6348	U2460
<u>K subscript</u> SCA	35 105	36 1030	37	38	39 First subscript	40 1911 41 (2439) 3000
B6314	E1458	S4102	T2944	U2929	600 0000	B6327
42 SCA	43 1012	44 Tsub	45	46 (3137) SCC	47	48 (2908) <NCC>
E6314	M4115	H6309	U2918	B6332	U2909	BE]
49 Temp I	50	51 108+3000	52 103	53 Error Array not declared	54 1019	55 104
H6327	Y2858	E0902	S0631	T4005	N2226	H6341
56 Temp I	57 <NCC>	58 array id.	59 3000	60 E-id 305	61	62 α-id
A6321	HE]	BE]	E1017	A2246	U2862	C6348

Store
and
Read
U2460



<u>K</u> 00	01	02	03	<u>K</u> 04	05	06
-105 2015	Switch Flag	1030		NCC		
B 2229	C 6344	B 4124	U 2705	B 6340	Y 2848	U 2907
07	08	(2847) 09	10	11	12	13
			1029	NCC	NCC	
Y 2857	U 2848	Y 2831	B 4125	A 6340	C 6340	U 2823
(3310) 14	15	(3028) 16	17	(2848) 18	19	20
:= Temp		HTP		50000		Store
B 6343	U 3021	H 3902	U 3154	A 4240	R 2441	U 2416
21	(2763) 22	23	2738 3059 24	(2822) 25	(2942) 26	27
				NCC		Store
U 3133	Y 2937	U 3511	, 400 0000	B 6340	R 2441	U 2414
28	(2859) 29	30	31	32	33	(2734) 34
Erase SCA and Read		Unary BG		Form HTP		U 2960 Read Exit
U 4450	R 2751	U 2625	R 2617	U 2601	U 2944	B 4063
35	(3512) 36	37	38	39	40	41
	101	<NCC>		array	3000	U 4000
U 2331	S 4158	AL 1	Y 2817	T 2841	E 6355	A 2227
42	2014 43	(2838) (2933) 44	45	46	47	48
		HTP	H8000	Integer subscript	H4000	HTP
U 2926	H 034000	B 3902	S 2017	T 2761	A 4162	C 3902
49	50	51	52	(4452) 53	54	55
C 4000		Store		SCC	1029	SCC
B 2228	R 2441	U 2416	U 2761	B 6332	A 4105	C 6332
56	57	58	59	60	61	(2954) 62
Read	<u>K</u> begin Z 5742	TSC		Read Exit SCC		α-id
U 2444	B 4143	C 6337	U 2962	B 6332	U 2500	B 6348
63						



LGP-30 Optimum Coding Sheet

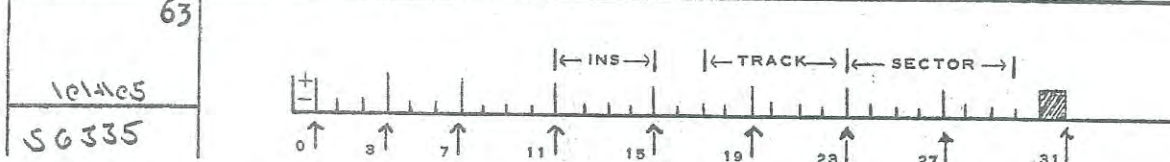
Date _____

Track 30

Programmer _____

Page _____

Error 00	01	02	03	Read 04	Error 05	(3148) 06
	1029	a = 'end'	1029	a = ':'		103-105
T4428	S4123	T3210	S4125	T2444	U4428	A1149
label defined 07	08	09	10	k: 11	12	13
	3wwj	U0000		Ncc		1029
T3225	E1258	A2238	U3226	BG340	Y3062	S4149
14	k:= 15	16	17	18	19	20
		Unary BG	-1029	NCC	NCC	BGT
U3061	R2751	U2625	B4139	AG340	CG340	BG356
(2915) 21	22	23	24	25	26	27
105	-100	Prev Type		NCC		1029
E1357	M1308	CG359	U3025	BG340	Y3155	S4149
28	(3161) 29	30	31	32	33	34
	105	Prev Type	intgr = real	105	types match	-1017
U2916	E1458	AG359	T3035	S4247	T3107	S2163
(3021) 35	36	(3045) 37	38	39	40	41
105 + C4000		"end" = ":" -1030		Comment Loop	0 → acc	
A4221	U3105	A4059	T3114	P0018	CG362	I0000
42	43	44	45	46	47	48
1030	CT	"end"		1030	Exit	"else" = "end" +1030
N1700	HG308	S2230	T3037	S4104	T3116	S4113
49	50	51	52	(3224) 53	54	55
	1030	Exit		d-numeric label		Input
T3039	S4122	T3116	U3039	BE 1	R2427	U2304
56	57	58	59	60	(3014) 61	62
loc. itable el		Var. Flag	105	store itable el. and Read	NCC	<NCC417
B2345	Y2443	CG330	S2924	U0062	CG340	BE 1
63						



LGP-30 Optimum Coding Sheet

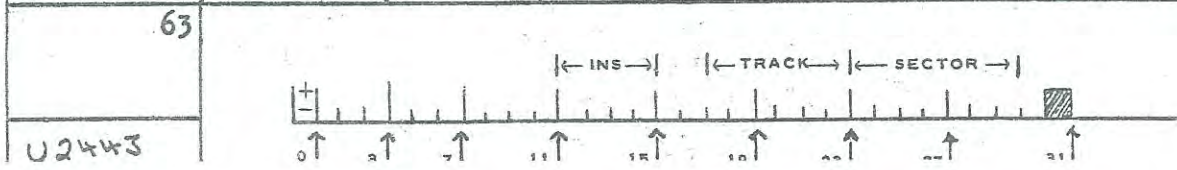
Date _____

Track 31

Programmer _____

Page _____

Error 00 Illegal label	01	02 PS Error	03	04	(3036) 05	06 Store
T4434 (3033)	Y3223	A0831	Y3053	U3219	R2441	U2414
:= Temp	1e5+3mmj	1e5		-1e5+3m7	(3110) 12 1e5-1e3 +40000	13
B6343 (3038)	E2223	S6352	T3112 (3115)	A4140	A4155	U3117
1e30	14	15 Exit Comment Loop	16 17 Array Flag	18	19	20 Store
A1700	T3039	U1	AG339	U3119	R2441	U2414
21 := Temp	22	23 no array	24	25 Error Array not subscripted	26	27 Jump
B6343	S0701	T3245	S2560	T4005	M2248	E0306
28	29	(3045) 30	31 Comment Loop	32	(3221) 33 a-id	34 j-id
Y8274						
A4157	U3719	R3116	U3039	U3229	B6348	S4163
Error 35	36	37 a=3	38	39 a=7	Error 40	41 k goto
1e29			1e29			
T4428	S1701	T2846	S4103	T2815	U4428	R2427
42 Input	Error 43	44	Error 45	46	47	48 Label
		1e1000			1e3	
U2300	T4425	S4230	T4434	Y3225	S4219	T3006
49 Store Switch	50 Comment	51 Comment Loop	52 Comment Loop	53 Read	(3217) 54 NCC	55 left part variable
U2453	R3116	U3039	T3039	U2444	C6340	BE 7
56	57	58	59	60	61	(3354) 62 a-id
1e1000 0000	:= Temp	1e3	1800 0000	Array Flag		
E4128	AG343	S1209	E1631	H6339	U3029	B6348
63						



U2443

LGP-30 Optimum Coding Sheet

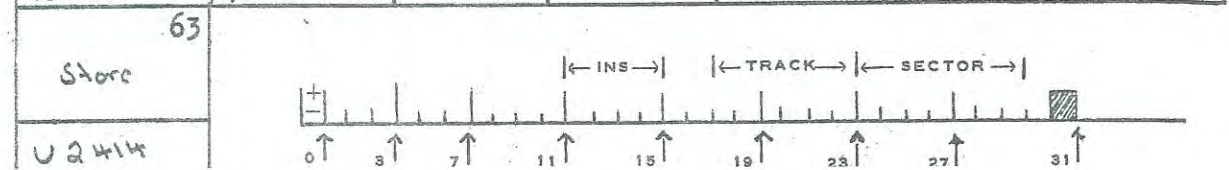
Date _____

Track 32

Programmer _____

Page _____

(3324) 00	01	02	(3331) 03	04	05	06
SPITL	ALGOL symbol	acc	Erase element	PITL	1011 1029	
BE]	π3609	C6331	CE]	BG347	A4241	T3321
07	08	09	(3009) 10	11	12	13
neg. word	Var. Flg		SCC	1029		SCC
B2229	C6330	U4045	BG332	A4147	Y2362	HG332
14	15	Done 16	17	18	(3004) 19	20
SCLF41 Z5804	not done	1029	NHM			store
S2243	T3130	S4145	A6303	U0031	R2441	U2414
21	22	23	24	(3007) 25	(3006) (2511) 26	27
NHM	U0000 -1	parallel enable cl.		U Invt.		store
B6303	A0091	CE]	U3053	BE]	R2441	U2416
28	(3132) 29	30	31	32	33	34
Read	CT		Input	Repeat	$\frac{K \text{ relational}}{P \text{ or -id}}$	"then"-id
U2444	B6308	R2427	U2304	U2362	BG348	S4156
35	36	37	38	39	40	41
Error	2029	d: "then" or "while"	Error	K for or -id	"while"-id	Jump
T4428	S2251	T4446	U4428	B6304	S4205	E0306
42	43	44	(3125) (3721) 45	46	47	48
1029	Read Exit	Error	1029	SCC		
S4107	T2960	U4428	B4103	A6332	Y2362	Y3306
49	50	51	52	53	54	55
		Stand For NCC	1029		NCC	
U3303	Z0063	BG340	A4103	Y3525	C6340	U3524
(3454) 56	57	58	59	(2255) 60	61	62
SCA	14 OR 3000 = 6156		Store	U0000	NCC	
BG314	A4129	R2441	U2416	B4246	A6340	R2441



LGP-30 Optimum Coding Sheet

Date _____

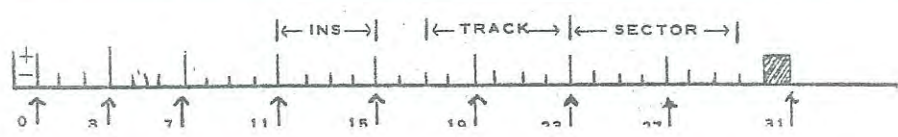
Track 33

Programmer _____

Page _____

00	01	02	(3294) 03	04	05	06
E5742	TSC		SCC	"i" id		<ccc>
B4143	C6344	U3529	C6332	S4233	U3306	AE 1
07	08	09	10	11	12	13
Jwwj	1029	Compile another :=	Repeat	<u>K</u> <u>4</u> <u>hon</u> NCC		<ncc>
E0343	S4123	T2914	U2362	B6340	Y3313	BE 1
14	15	16	17	18	19	20
		137	(4002) NHH	1029		Reset -75011 16118021
Y2757	U3962	Z0200	B6303	A4147	U2757	B4206
(3200) 21	22	23	(3322) 24	25	26	(3613) 27
				PITL		overflow et.
Y3200	U3324	www w000	Y3203	C6347	U3200	BE 1
ALGOL symbol 28 (leave d. i. l. w.)	29	30	31	32	33	34
	w300 jwwQ	Reset Temp		<u>Title</u>		1030
T3204	B4201	E6359	U3203	P0004	I0000	N4106
35	36	37	38	39	40	41
"c"	<u>Error</u>	1030		<u>Error</u>	(3405) 1018	333
S6163	T3709	S4102	T3439	U3709	M1712	E4220
42	43	44	45	46	47	48
Thut lo Z4106			Store	<u>K</u> SCC	1029	
A4121	Y3344	BE 1	U2416	B6330	A4105	Y3434
49	50	51	52	53	54	55
-100		Variable Flag		1538 0003	<u>K</u> <u>cto</u> NCC	
B3728	U3351	C6330	U3433	7www www	B6340	Y3429
56	57	58	(4008) 59	60	61	62
1029		Z4204		normal (	<u>Print - Read</u> NCC	
S4107	Y3615	U3617	S6338	T3505	B6340	Y3520

63
1029
S4149



LGP-30 Optimum Coding Sheet

Date _____

Track 34

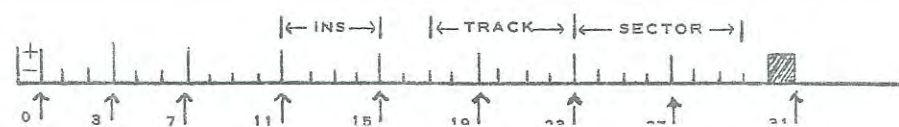
Programmer _____

Page _____

00	01	<u>ε tab</u> 02	<u>ccarr.</u> 03	04	05	06
NCC		1017	T4000	Temp		Input
CG340	U3516	B4238	A4225	H6347	R2427	U2300
07	08	⁽³³⁰⁰⁾ <u>Fct</u> 09	10	11	12	13
Temp			sec	2029	sec	U2444
B6347	U3459	Y3419	B6332	A4254	CG332	B4242
14	15	16	17	18	19	20
Return		Unary BG	1017	1015	proc. id	Fct Temp
C2617	R2751	U2625	E4060	N4154	AE 1	H6306
21	^{(3703) (3708)} ⁽³⁷⁵³⁾ 22	23	24	25	26	27
		Store		<u>W else</u> NCC		1029
T3701	R2441	U2555	U0027	B6340	Y3429	S4149
28	29	30	31	32	33	34
NCC	¹⁰ NCC+17		NMM		⁽³³⁵⁷⁾ 403-2018	cccc7
CG340	BE 1	Y2759	B6303	U2759	B4255	AE 1
35	36	37	38	39	40	41
Special Fct	103	normal (		T0000		Store
T3409	S0701	T3505	U4457	B4260	R2441	U2416
42	43	44	45	46	47	48
		1030		"5"		1030
P0000	I0000	N4102	T3340	SG203	T3514	S4106
49	50	51	52	53	54	55
End of Title	"5" + 1030	Store		K-		<u>Print</u> 103-105
T2510	A4229	U2416	R2617	U2900	U3256	A4227
56	57	58	59	60	61	62
	105417	105 + P0000	⁽³⁴⁰⁸⁾ ⁽⁴⁰⁵⁰⁾	Store	-id	-id
T3458	S4222	A4137	R2441	U2414	S4226	AG348

Error 63

T4428



LGP-30 Optimum Coding Sheet

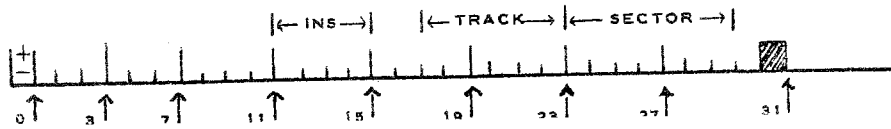
Date _____

Track 35

Programmer _____

Page _____

00	01	02	03	04	05	06
1029	Variable Flag	a=)	1029		and	)-id
S4136	H6330	T3903	S4125	U3527	B6348	S4235
07	08	09	10	11	12	13
Jung	1029	Overrun sec & Read	Error	(2423) NCC		2525
E3343	S4123	T2953	U4428	C6340	U2936	WS000
14	15	16	17	18	19	20
	store	(3401) HTP			store	<NCC>
A6203	U2416	B3902	T3520	R2441	U2414	BE 1
21	22	23	24	25	26	27
100		Error Manual Variable	NHM	<NCC>	store and Read	(3501) 355 Read
S2250	T3532	U4013	B6303	CE 1	U2460	T2444
28	29	30	31	32	33	34
Error	(3301) -100	HTP	Read Exit	(3327) 103	no array	104
U4428	B4201	C3902	U2960	A4218	T4443	S4256
35	36	37	38	39	40	41
Error Array not scrapped		105	NHM		103	print or read
T4005	Y3539	E6352	A6303	YE 1	S4219	U4443
42	43	44	45	46	47	48
(3501) 101105	def Type	ZLH]	SL0		(3916) Def Loop AFlag	(3755)
B6335	C6358	B2756	H6317	U3607	C6362	R2427
49	50	51	52	53	54	55
Input	ALGO Symbol	101+0.77		103	label in switch dec.	switch store
U2300	T3622	S4230	T3746	S4218	T3563	Y3842
56	57	58	59	60	61	62
	Input	!:=)-id	Jung	1029		Error
R2427	U2300	SG004	EOG24	S4125	T3542	U4438
63						
103-105						
A1149						



LGP-30 Optimum Coding Sheet

Date _____

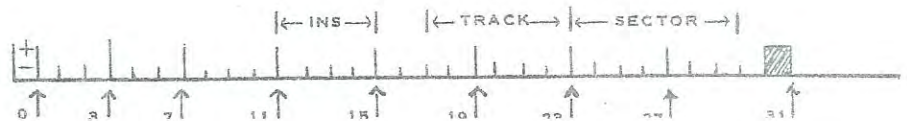
Track 36

Programmer _____

Page _____

Label defined	00	01	02	(381P) 03	(360P) 04	05	06
		V0000			several		ZFLJ
T3817	A2244	U3604	BE]	HE]	B3604		Y2756
(3540) 07		08	(3201) 09	10	11	12	13
1029		Rand Temp	1017	1012			
S4136	U3925	H6359	S4060	H4261	Y3327		U3327
(3619) 14		15	16	(335P) 17	18	19	(375P) 20
JwwJ	chrc17		1021	NCC			loc. "bound"
B0343	FE]	U3661	S4103	C6340	U3614		B4425
21	(3550) 22	23	Error 24	Z3636 25	26	27	Z3644 27
	JwwJ	Z6202		OTL0			OTL0 18
U4006	F1258	S2245	T4438	A4204	Y3628		S4249
28	Error 29	D (blank) 30	31	32	33	34	34
		VB	LB		#C		VB
TE]	U4438	B6309	C6353	R1147	U1758		C6309
35	OTL0 36	Error 37	38	39	40	41	41
Input	;	)	,	]	:		(blank)
U2300	U3834	U4438	U3940	U3711	U2300		U3630
42	43	R K 44	45	46	47	48	48
E	array	Rand HTP			Store		NCC
U3547	U3820	B3902	T3648	R2441	U2414		B6340
49	50	51	52	53	54	55	55
1029		Variable Flag			NCC		t2444
A4107	U3651	H6330	Y2610	U3654	C6340		B3527
56	57	58	Error 59	60	(3610) 61	62	62
R I Return.	?	K blank Variable Flag			U0000		
Y2617	U3732	B6330	T3423	U1807	A0047		R2441

63
Store
U2416



LGP-30 Optimum Coding Sheet

Date _____

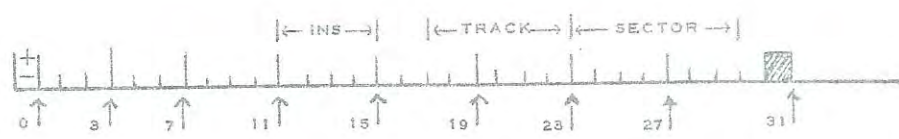
Track 37

Programmer _____

Page _____

00	(2479)	01	02	03	04	05	06
	100	BGT			0000		store
U3429	A0744	HG356	T3422	R4133	R2441	U2414	
07		08	(3336) (3337) 09	10	03 11	12	(3441) 13
BGT		"idle"		0→acc	AFlag	Z[LS]	
BG356	U3422	BG214	U0405	C6347	C6362	B2756	
14	15	16	17	18	(3129) 19	20	store
1029		1029					
S4136	Y3741	S4145	Y3736	U2320	R2441	U2414	
21	(1114)(124) 22	23	24	25	26	27	
Jung	105	Type	Z0229	did			
U3245	E1258	AG352	AG310	A4111	HG348	U2453	
1856 3349 28		29	30	store and read 31	(3227) 32	33	(2322) 34
	<u>X Read</u> Z4057			read out			Error out of store
18000 0000	A4251	Y4445	U2460	B4354	U5420	T2422	
35	36	37	38	Error 39	40	41	
LB		UB	-100		1030		
BG353	HE J	SG309	M0660	T3620	A4126	HE J	
42	43	44	45	(3337) 46	47	48	
Msize	101	Msize		101-103	Input		
NG323	M1729	HG323	U3912	A4332	T2300	CC J	
49	50	51	(3233) 52	53	(1241) 54	55	
	NCC	1029 110			-100		
B3748	Y6340	A4030	Y3748	U3548	M0014	C6313	
56	(3200) 57	58	59	60	61	62	
ALO			ALO	1029	NCC	array -id	
U1352	SG308	T3824	AG308	S4125	C6340	BE J	

63
Y3921



LGP-30 Optimum Coding Sheet

Date _____

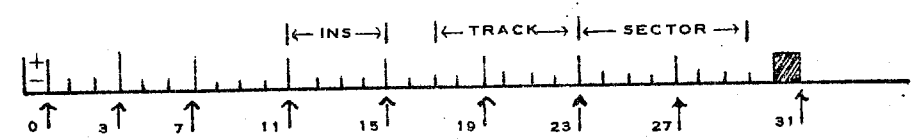
Track 38

Programmer _____

Page _____

00	01	02	03	(4744) (3922) 04	05	06
1019	SSLO	Z[47]		NCC		
B4150	N4151	A2756	U3919	B6340	Y3762	U3757
2621 07		09	10	11	12	13
	Def Type	101+105		1029		101+105
2000 0000	B6358	S6324	T3813	S4147	T3838	B6335
14	15	16	17	18	19	20
Def Type	Read	4520	(3600)		2253	array Def Type
C6358	U2444	333 3333	Y3603	U3603	T2026	B6358
21	22	23	24	25	26	27
105	array 103+105	Def Type	1029	1010	A Flag	Z[47]
S1357	A4408	C6358	B4103	C6323	C6302	B2756
28	29	30	31	32	33	34
2029	SSLO	NCC	1029	ALO		0; Z[47]
S4200	C4151	B6340	A4103	H6308	U3752	B2756
35	36	37	(3812) 38	39	40	41
1029	Z[47+13]	r	SL0	Z[47]	1010	SL0
A4107	C6301	U3808	B6317	S2756	N1711	A6317
42	43	44	(4441) 45	46	array 47	switch 48
	Read	Tracks to	T			101+103-105
CC	U2444	U3011	U3658	U2904	U3822	A0020
49	integer 50	comment 51	title 52	53	54	c. table 55
105						
A6328	U3915	U3150	U3332	U3141	U3141	U3402
ccarr. 56	random 57	58	59	print 60	read 62	(4444) 62
						↑ mark
U3403	U3644	U3917	U3251	S4346	U3729	B[]

63
Local Code
EG357



LGP-30 Optimum Coding Sheet

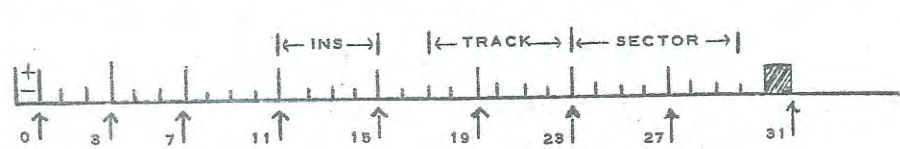
Date _____

Track 39

Programmer _____

Page _____

00	01	02	(3502) 03	04	05	06
Word Code		HTP	SCC	REP	SCC	Read
H6357	U2809	E J	B6332	A4254	C6332	U2444
(1502) 07	08	(1052) 09	(110) 10	11	(1574) 12	13
Z3213	U0405	Z1728	Y1146	U0516	B6362	T2300
14	(3850) Dec 1st 15	16	(3000) 17	18	(3803) 19	20
U3804	C6358	U3547	B4355	U2426	S6323	Y2756
21	22	(1452) (1052) 23	24	(3608) 25	26	(1240) 27
HE J	U3804	B4404	U4014	Y3604	U4559	B4362
28	29	2 Word Error	30	31	32	33
Error Temp	"ovflo"			sp.	Error Temp	
H6300	B4202	R0420	U0409	P0304	B6300	Z0006
35	36	37	38	(160) 39	D, 40	41
	d-r				AFlog	
R0454	U0451	Z3216	U0407	C6349	B6362	T3713
42	x 43	+ 44	i 45	while 46	begin 47	- 48
Input	M Complete 8015			Error		
U2300	S4115	U2716	U4032	U4428	U2957	U2900
49	:= 50	then 51	do 52	53	≠ 54	< 55
U2800	U3015	U3311	U3354	U3233	U3233	U3233
56	= 57	> 58	< 59	else 60	execute 61	(3316) 62
						d-id
U3233	U3233	U3233	U3346	U3425	U4304	B6348
63						
'else' id						
S4228						



LGP-30 Optimum Coding Sheet

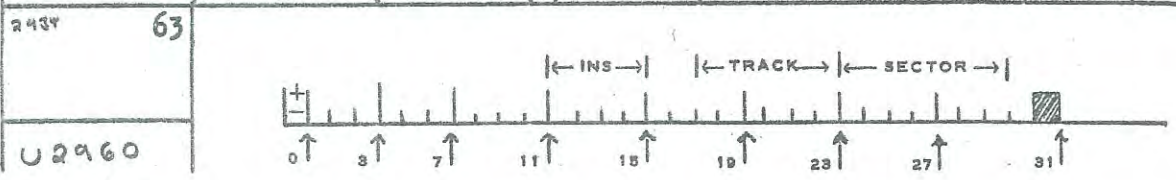
Date _____

Track 40

Programmer _____

Page _____

Error 00	01	02	03	04	Array Error 05	06
	1029	a = 'abc'		k subscript	D:ff	
T4428	S4123	T3317	U4426	U2835	A1358	Y4009
07	Error Type	08	09	Error Temp	Error Type	12
"array"		(camel)			2 word Error	var. Error 13
B6209	H6358	BL 3	H6300	B6358	UJ930	A1358
14	15	16	17	18	19	20
	"var."		For	print	read	if
Y4009	B4412	U4008	U3239	U4428	U4428	U4428
21	22	23	24	25	26	27
sin	cos	log	exp	arctan	sqrt	entier
U4428	U4428	U4428	U4428	U4428	U4428	U4428
28	29	30	31	32	33	34
sign	abs	3751	used in entier	h		Bring Gen
U4428	U4428	8000 0004	4fj k f 686	B0318	R2553	U2515
35	36	37	38	39	40	41
Command	1012	↑ list to -20036 24344			(2209) 25743	26113
H6354	M4115	A4159	Y3862	U3862	B4262	H2756
42	43	44	45	46	47	48
1029	Z56417		Z5804	SCC	T0022	
A4107	C6301	U4509	B2117	C6332	B4152	U4049
49	50	51	52	53	54	55
	J000 JFOR	H7P	NCC	IFlag		
Y0121	B4236	H3902	C6340	C4259	U4500	M6315
56	57	58	59	60	61	62
	+1017 1011-1015		3057 "end" -1030	2530 3417 3610	1925	2026
	A4343	U3455	H F38F	,4000	B4123	T1930
2434	63					



LGP-30 Optimum Coding Sheet

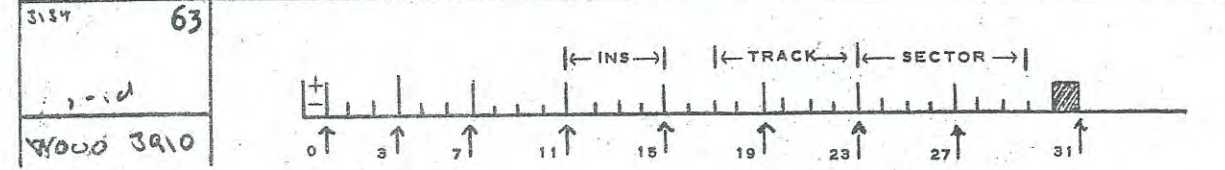
Date _____

Track 41

Programmer _____

Page _____

0128 0149 Modifier	00	2824	01	1230 1430 1431 2023 2837 3837	02	3444	2231 2524 3168 3824 3845 3857	03	3831 4334 3824 2431	04	4518 0953 1232 1825 1825 3046	05	2154 2754 2854 3247 4317	06	0255 0555 0927 0148 1020 1934 3344		
[		WGWV WVVJ		2		4			2		4		2		
0221 3242 3356 3644 3833 4042	07	3444	08	3344	09	3344	10	3725	11	3344	12	3448	13	3448 "old" - "end" -1030			
	4	8008 1438		3008 0490		3008 0890		20229		8008 1838		1124 3210					
0142 0163 1828	14	2843 3448 4036	15	3344	16	4360	17	3344	18	2547	19	3344	20	3344			
				c l.c.		c v.c.		c l.c.		c l.c.							
		8 0000		3008 0390		www J000		8008 1038		400 J000		J008 2090					
3342	21	0800 1230 1500 2336 2743 3050	22	0517 0751 1408 2051 3061 3308	23	2508 3357 4001	24	0102 1038 1502 1504 1951 2902	25	2453 3003 3503 3560 3760 4534	26	1511 1644 2047 3740 1447	27	2762			
		2918		2		4		2		4		2		4			
3156	28	3257	29	2358	30	0457	31	2153	32	2561 2911 3704	33	2819	34				
		WVVW WVVJ		14038220		3000 0000		7000 0000		13		C0000		M0000			
0000 1906 2349 2706 4518	35	0211 0247 2807 2836 3500 3607	36	3458	37	3716	38	3017	39	3111	40	1112	41				
		2		4	04080000		A0000		WVVW WVVJ		W300 3000		4 0000				
2806	42	2457 1327 3300 4500	43	0558 0729 1001 1229 1608 0016	44	023 2641 3716 3723	45	0124 1217 1231 1403 2303	46	1361 1818 3211 3318 3811	47	1326 1905	48				
		3000		Z 5742		2		4		2		4		2			
3013 3027 3363 3927	49	3800	50		51	4047	52		53	1434 3418	54	3112 4405	55				
				3560				"error"									
		4		1000		[J		T0022		4FG9 G19F		1 0000		W40J 0000	
		56	3128	57	2486	58	4037	59	0706	60	2818 2016	61	2747	62			
				"thru" id													
		W000 JHXQ		Y8074		4000 0000		2GJ4		2F8G Q184		JWVQ		44000			
3134	63																



LQP-30 Optimum Coding Sheet

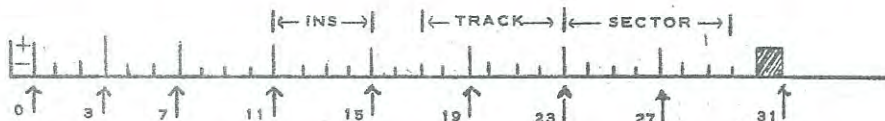
Date _____

Track 42

Programmer _____

Page _____

3835 3411	00	3329 3529 4460	01	5429	02	0045	03	3625	04		05	3320	06
				"ovflo"						"while" id			
	8	W300 JWWQ		46WK 4346		C0003		Z3636		W0003KJ8		W650 3648	
3419	07	3419	08	3419	09	3419	10	3419	11	3419	12	3419	13
sin		cos		log		exp		arctan		sqrt		entire	
Q400WQW8		Q400GQW8		Q40KJWW8		Q40WGW8		Q40Q GW78		Q403GW8		8009 GWQ8	
3419	14	3419 4450	15	3204 0057	16		17	3532 3553 1360 2360	18	3147 3510	19		20
sign		abs		Program to		"intgr"							
8000 7WWJ		JWWJ		Z4603		22JK 671F		1000 0000		1000 0000			35
3025	21	3457	22		23		24	3403	25	3401	26	3455	27
				"order"						"j" id			
40K 4000		JWW J000		B4415		U0405		T4000		W0003Q03		J00 0000	
3463	28	3450	29	3444 3511 4318	30		31	2060	32	3204	33	0912	34
"chr" id		"j" 11030		1011 P.F.F		"load"				"=" id			
W000 3Q00		G		40000274		J4 7JFF		A6360		J0003KJ8		18000 0200	
3106	35	4050	36	0022	37	3412	38	2453	39	2418	40	3205	41
"j" id				"done"									
W000 3Q03		J000 3FOR		FJ 6JFF		4000		JWWWJSW2		S0000		10 0004	
3413	42	2208 0500	43	2422	44	4509	45	3200	46	2011 3032	47	1419	48
				"store"									
U2444		B6029		7663 663F		Z6147		U0000		400 0000			102
3627	49		50	3724	51	1223	52	2703	53	3411 3404	54	3137	55
				"while to									101 - 1448
Z3644		Z5918		Z4059		30K40		P8000		4001 8		4001 Q668	
3534	56	2207	57	2453	58		59	3419	60	3611	61		62
				"symb"		"board"							
800 0000		H6234		109 208F		G1K 2JFF		T0000		8 0000		Z5743	
2327	63												



www www

LGP-30 Optimum Coding Sheet

Date _____

Track 43

Programmer _____

Page _____

(4342) 00	01	02	03	04	05	06
sclo		sc		W Excl Ex2 Temp		Stave
B4420	Y4350	C6332	U4347	B4333	R2441	U2416
07	08	09	4527 10	11	12	13
Extemp	NHM			Patch Dat Type		Input
B6316	C6303	U4359	109F 6988	C6358	R2427	U2300
14	15	16	17	18	19	20
1014 Δ	Error		loc to patch		1029	EP
S4230	T4344	Y4317	BE]	Y4325	A4105	H0039
21	22	23	24	25	26	27
NHM	U0001		NHM	store Patch	α-id	P3000
B6303	A4418	Y2416	Y6303	WE]	B6348	A4356
28	29	30	4516 31	3746 32	4304 33	34
	Star			tel-1e3	Ex2Temp	Execute
R2441	U2414	Q3807	20R887W6	3000000	U81]	B0200
35	36	37	38	39	40	41
Ex2 Temp	NHM	Extemp	1029	NHM		
Y4333	B6303	H6316	A4103	Y6303	Y2416	Y0200
42	43	44	45	46	47	48
	4053	(4310) "Patch"	Error	3800	(4303) T0059	
U4300	W4000	B4416	U0405	Z0602	B4515	Y0121
49	50	51	52	53	54	55
"execute"-id	cccc	Var. Flag	Initialiser	-id	random intr	"=1"-id
B4410	CE]	C6330	U4050	17WWWJ220	84033W48	Q5003KQF
4327 56	2507 57	0716 58	(0037) 59	60	61	3427 62
	many "-id"	"switch"	load code	-b17		"exp"
P3000	Q800 3W0	7GWS EFA	B6357	04117	U2210	4633 2GFA
4520 63						
05 6F16	<div style="display: flex; justify-content: space-around;"> ←INS→ ←TRACK→ ←SECTOR→ </div>					

LGP-30 Optimum Coding Sheet

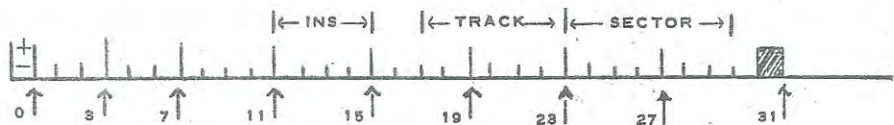
Date _____

Track 44

Programmer _____

Page _____

0728) 00	2736 01	(un) 02	03	04	(2000) 05	06
		1029			105	BGT
110000	000 0000	B0209	A4125	U0214	B4155	G356
07	3022 08	09	10	11	12	13
			"emul" id	"delj"	"var."	"label"
U2539	1400 0000	Z4411	3000 3004	13F 692Q	WW 26FQ	K38 6283
14	15	4344 16	2202 17	4312 18	4504 19	4341 20
"declr"	"order"	"patch"				sclo
262Q F31F	466F 629F	43JK 6F02	UFJ44	U0004	4400 0000	Z5803
↑ list to 21	22	2012 23	24	3020 25	4400 26	27
EO	E4	"input"	EJ		2029	end
9 1WW8	9 6JW8	2233 34HF	9 1WW8	Z4259	S0512	T3425
28	29	30	31	32	2 word 33	label error 34
SCA, d Error			Error Temp		Error	diff
SCA				<sccl>		
B6314	Y4432	B6320	H6300	BE J	U3930	A1358
35	36	37	38	39	40	41
	"label"		dec error d-id		"declr"	
Y4009	B4413	U4008	B6348	Y4009	B4414	U4008
42	43	44	45	46	47	48
(3533) (3504)	1030	HTP	3455 or 4057	scc	1029	scc
	A4122	H3902	UL J	B6332	A4125	C6332
49	50	51	52	53	54	55
	neg word	HTP				
U3452	B4201	C3902	U2953	H6329	B6305	U2053
4506 56	57	58	59	60	61	62
	3wwJ		PO3--			
3wwJ	E4215	U3359	b1133	h1650	x06313	U1528
0018 63						
7kw 76Q6						



LGP-30 Optimum Coding Sheet

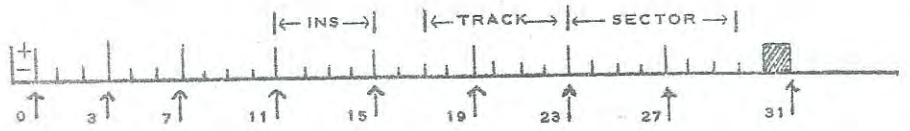
Date _____

Track 45

Programmer _____

Page _____

(4054) 00	01	02	03	04	05	06
Z5742	T6C	T#CC	#CC	1e1+1e5	Ref Type	3wwJ
B4143	C6337	B6345	C1146	B4419	C6358	B4456
07	08	(4044) 09	10	11	12	(4033) 13
Load Code	Read	Z6147	avail	Read		Error
C6357	U2444	B4245	A6350	U3320		T4223
14	15	16	17	18	19	20
1e30	Continue	"bootstrap" - "continue" - 1e30	Error	1e30	Bootstrap	"start"-1e30 - "bootstrap"
S1700	T0059	S4331	T4223	S4104	T0042	S4363
21	22	23	24	(2455) 25	26	(2425) 27
Error	1e30	Start	Error	loc. ???		
T4223	S4144	T0057	U4223	B4527	U4014	Z4310
28	29	30	31	32	33	34
3506						
3wwwJ50Q	C0200	U0407	B0354	QKH WHWQ	7ww0 0000	1G3 F QJ2
35	36	37	38	39	40	41
	Load		G bit depressed	"H bit"		Error
8636 6666	Z1600	I0000	T0117	B0236	R0420	U0409
42	43	(1500) 44	45	46	(4543) 47	48
		IFlag	Convert needed			
Z1600	U0117	B1259	T4547	U2140	B0851	Y4555
49	50	51	52	53	54	55
			Z4555			
Y4557	B0200	Y4558	B0025	Y0200	U2140	B4E J
56	57	58	(3400) 59	60	61	62
			3wwJ	NHM	Error with start.	
C4000	H4E J	UC J	E0624	S6303	T2422	U3548
(2309) 63						
avail						
S6351						



LGP-30 Optimum Coding Sheet

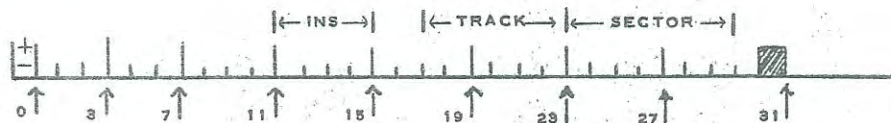
Date _____

Track 46

Programmer _____

Page _____

Error out sym	00	01	02	03	04	05	06
		is a bit					
T2323	A6351	U2313					
07	08	09	10	11	12	13	
14	15	16	17	18	19	20	
21	22	23	24	25	26	27	
28	29	30	31	32	33	34	
35	36	37	38	39	40	41	
42	43	44	45	46	47	48	
49	50	51	52	53	54	55	
56	57	58	59	60	61	62	
63							



LGP-30 Optimum Coding Sheet

Date _____

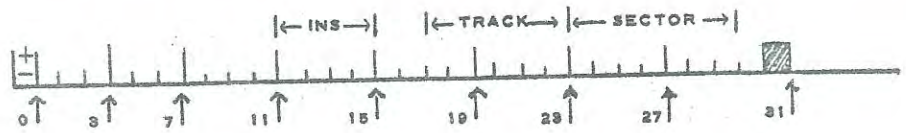
Track 59

Programmer _____

table

Page _____

00	01	02	03	04	05	06
07	08	09	10	11	12	13
14	15	16	17	<u>table</u> 18 (blank)	19	20
21	22	23	24	no	25	26
27	while	goto				
28	no	no				
29	print	30	31	32	33	34
			cos		comment	
35	no		60		no	
36	37	38	39	40	41	
		switch	then			
42	43	44	45	46	47	48
	read	end	ccarr.		sin	For
49	no	no	no		60	no
50	51	52	53	54	55	
	real		integer	title		go to over
56	57	58	59	60	61	62
		lte		exp	==	abs
30		as		60	as	60
63						
(	enter					



LGP-30 Optimum Coding Sheet

Date _____

Track 60

Programmer _____

Page _____

00	01	02	03	04	05	06
sign	do	ii	c. lab.	:=	[	elwo
GO	wo	ko	ko	so	ko	wo
07	08	09	10	11	12	13
]	/	Δ	;		+	*
wo	q4	q0	wo		q8	q4
14	15	16	17	18	19	20
-	"	begin	)	ov/lo	g+	g+
random	sort			=v		
q8	wo	so	wo	q3	q3	q3
21	22	23	24	25	26	27
+	random	r/i=lo	array	ln	arctan	sqrt
						ln
q3	ko	ko	ko	GO	GO	GO
28	29	30	31	32	33	34
entier						
GO						
35	36	37	38	39	40	41
42	43	44	45	46	47	48
49	50	51	52	53	54	55
56	57	58	59	60	61	62
		Exablo				
		(if no holes)				
63						

← INS → ← TRACK → ← SECTOR →

01 ↑ 03 ↑ 07 ↑ 11 ↑ 15 ↑ 19 ↑ 23 ↑ 27 ↑ 31 ↑

LGP-30 Optimum Coding Sheet

Date _____

Track 61

Programmer _____

Page _____

00	01	02	03	04	05	06
07	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	32	33	34
35	36	37	38	39	40	41
42	43	44	45	46	<u>AELo</u> 47	48
					*	+
49	50	51	52	53	54	55
↑	while	begin	-	/	:=	show
56	57	58	59	60	61	62
do	≤	=/	<	≠	=	>

3335 63

←INS→ | ←TRACK→ | ←SECTOR→



IQP-30 Optimum Coding Sheet

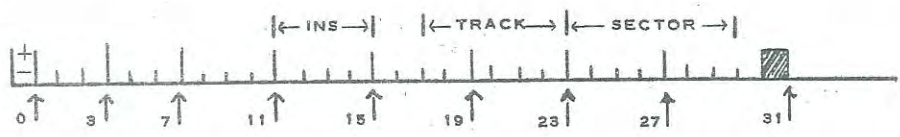
Date _____

Track 62

Programmer _____

Page _____

00	01	02	03	04	05	06
else	end	;)	,]	:
07	08	09	10	11	12	13
(blank)	[	array	switch	real	integer	comment
14	15	16	17	18	19	20
title	goto	go to	c tab.	ccarr.	random	!=
21	22	23	24	25	26	27
for	print	read	if	sin	cos	ln
28	29	30	31	32	33	34
exp	arctan	sqrt	entier	sign	abs	<u>#clo</u>
35	36	37	38	39	40	41
42	43	44	45	46	47	48
49	50	51	52	53	54	55
56	57	58	59	60	61	62
<u>#cls</u>	63					



LGP-30 Optimum Coding Sheet

Date _____

Track 63

Programmer _____

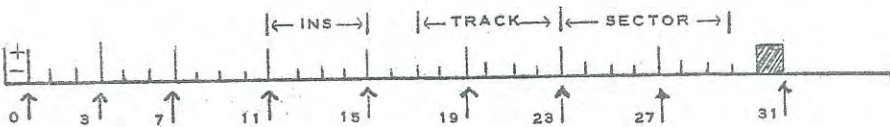
Page _____

COMPOSITE LISTING

00	01	02	03	04	05	06
NC	[LFI]	N	[NHM]	I	NI	PC
[]	[]	[]	[]	[]	[]	[]
07	08	09	10	11	12	13
P	PC	PC	NIC	I	PI	TNI
[]	[]	[]	[]	[]	[]	[]
14	15	16	17	18	19	20
N IIC	TPNI	IC	PN IC	PN	NI	PIC
[]	[]	[]	[]	[]	[]	[]
21	22	23	24	25	26	27
C		C		N	N	
[]	1WWW WWWG	[]	4400 0000	[]	[]	3WWW 5000
28	29	30	31	32	33	34
	N	C	NC	C		
400 0000	[]	[]	[]	[]	Z5744	400 0000
35	36	37	38	39	40	41
		C		C	C	
4400 0000	Z1738	[]	Z4204	[]	[]	800 0000
42	43	44	45	46	47	48
	TNC	NC	[T#CC]	[avail 2]	C	C
Z5743	[]	[]	[]	[]	[]	[]
49	50	51	52	53	54	55
TN	[avail]	[avail]		TPC		
[]	[]	[]	400 0000	[]	1000 0000	3WWW
56	57	58	59	60	61	62
C	IC	IC	PNIC	N	P	C
[]	[]	[]	[]	[]	[]	[]

63

N
[]



LGP-30 Optimum Coding Sheet

Date _____

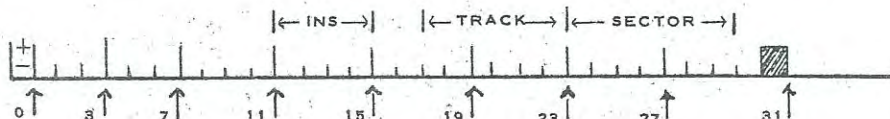
Track 63

Programmer _____

TRANSFER STORAGE

Page _____

00	01	02	03	04	05	06
	load code		NHM			
	[]		[]			
07	08	09	10	11	12	13
						available
						[]
14	15	16	17	18	19	20
	load temp					
	[]					
21	22	23	24	25	26	27
28	29	30	31	32	33	34
35	36	37	38	39	40	41
42	43	44	45	46	47	48
	dump					
	[]					
49	50	51	52	53	54	55
entr-1 @11				code		
[]				[]		
56	57	58	59	60	61	62
63						



LGP-30 Optimum Coding Sheet

Date _____

Track 63

Programmer _____

PRINT STORAGE

Page _____

00	01	02	03	04	05	dump 0620	06
						print flag	
						[]	
07	08	09	10	11	12		13
exp. inc	print. entr.	const 1			± 1 @ 30		
[]	[]	[]			[]		
14	15	16	dump 0638	17	18	19	20
	dump 0650		const 1'	print temp			const 2'
	[]		[]	[]			[]
21	22	23	24	25	26		27
28	29	30	31	32	33		34
35	36	37	38	39	40		41
42	43	44	45	46	47		48
49	50	51	52	53	54		55
				|exp|			
				[]			
56	57	58	59	60	61		62
			-2 or 0		const 2		
			[]		[]		

63

←INS→ | ←TRACK→ | ←SECTOR→



LGP-30 Optimum Coding Sheet

Date _____

Track 63

Programmer _____

Page _____

INPUT STORAGE

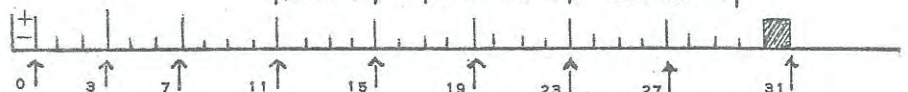
00 overflow and fraction []	01	02 dump []	03	04	05 integer []	06
07	08	09	10 type []	11	12	* 13 normalize []
* 14 normalize []	* 15 routine temp 1 []	16	* 17 H8 order []	18 bin exp []	* 19 normalize []	20
21	22	23	24	25 digit []	26 dump and exp []	27
28	29 signed exp and digit flag []	30	31 |exp| and digit cnt. []	32	33	34
35	36	37	38	39	40	41
42	43 dump []	* 44 temp # []	45	46	47	48
49	50	51	52	53	54	55
fr. sign []						
56	57	58	59 word and input word []	60 routine temp 2 and sign of exp []	61	62

* 63

NHM

[]

|← INS →| |← TRACK →| |← SECTOR →|



LGP-30 Optimum Coding Sheet

Date _____

Track 63

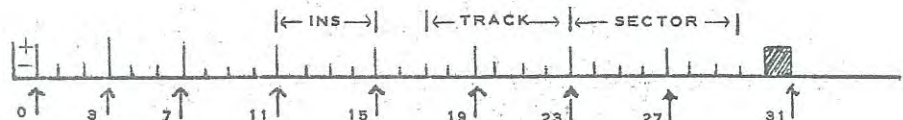
Programmer _____

INTERPRETER STORAGE

Page _____

00	01	02	03	04	05	06
				exp acc.	0847 0919	
				[]	[]	
07	08	09	10	11	12	13
			0731	fr acc.	0526 0533 0726 0926 0940	temporary fr. acc.
			[]	[]	[]	[]
14	15	16	17	18	19	20
1035 1056 1235 1435	1029 1036 1050 1057	0551 0858 1130	0452 1135 0462 1145 0852 1459 0859	2239	temporary exp. acc.	0705 0755
[]	[]	[]	[]	[]	[]	[]
21	22	23	24	25	26	27
28	29	30	31	32	33	34
35	36	37	38	39	40	41
42	43	44	45	46	47	48
49	50	51	52	53	54	55
56	57	58	59	60	61	62
0707 0714 0921 1021 1042	1022 1043	0409 0416				
[]	[]	[]				

63



LGP-30 Optimum Coding Sheet

Date _____

Track G3

Programmer _____

Compiler Storage

Page _____

Error Temp	00	01	02	03	04	05	06
[]	[]		NHM				Fct Temp
	07	08	09	10	11	12	13
	CT RTP ALO	usb Tsub	Type				
	[]	[]	[]				
SCA	14	15	16	17	18	19	20
		Extamp	sto Prov				α
[]	[]	[]	[]				[]
B&L Temp	21	22	23	24	25	26	27
[]		op loc Msize					
	28	29	30	31	32	33	34
		Variable Flag	Reset	SCC			
		[]	[]	[]			
	35	36	37	38	39	40	41
		TSC		Array Flag	NCC		
		[]		[]	[]		
	42	43	44	45	46	47	48
	:=Temp	Input Switch Flag			eavail 2	Patch ccarr. PITL 01	α -id
	[]	[]			[]	[]	[]
	49	50	51	52	53	54	55
	eavail	iavail			LB		
	[]	[]			[]		
BGT	56	57	58	59	60	61	62
	Load Code	Error Type Def Type	Reset Temp Command Temp op loc Prov Type				Store AFlag
[]	[]	[]	[]				[]

63

