

Remington Rand Univac
DIVISION OF SPERRY RAND CORPORATION
PHILADELPHIA, PA.

1019.2

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0049
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8872	888	0	26	8873	8873
8873	888	0	60	8874	8875
8876	888	0	30	8875	8877
8877	888	0	50	8878	802A
802A	888	0	25	8880	803A
803A	888	0	75	8874	8881
8881	888	0	31	8882	8882
8882	888	0	50	8874	804A
804A	888	0	37	0400	805A
805A	888	0	30	8883	806A
806A	888	0	87	8884	8885
8884	888	0	70	8886	807A
807A	888	0	20	8887	8885
8887	888	0	00	0040	0000
8888	888	0	70	8888	000A
8888	888	0	16	0000	8878
8879	888	0	67	3333	000A
8875	888	0	08	0000	8889
8889	888	0	25	8890	8867
8890	888	0	FF	5000	8891
8892	888	0	67	4444	000A
8891	888	0	29	5199	808A

BEGIN
START
PAGE#
2
1
8SK
3
1
8E1
-E1

CLA		
STA	LC	3F
LDL	3F	PAGE#
STL	-SK	
LDA#	00000	00066
SUB	LC	2F
CLL		
STL	LC	
SHL	0400	
LDL#	00004	90000
TGR		1F
ADD#	00001	00000
BUF		1F
CON	00004	00000
ADD		RA
PFD	0000	-SK
HLT	3333	RA
LIR1	0000	1F
LDA		TROM
TBU1	W9800	-E1
HLT	4444	RA
LDA1	W9999	

X ARE FOLLOWED BY THE NAME OF THE CONDITION
X WHICH LABELS THE BRANCH. M IS THE NUMBER OF
X THE BOX TO BRANCH TO AND C IS A SERIAL NUMBER
X USED FOR DETERMINING WHEN THE LAST BRANCH
X TO M OCCURS. OP 07 IS FOR A BRANCH ON THE
X FIRST LINE OF THE BOX; OP 06 IS FOR
X ALL BRANCHES EXCEPT FIRST AND LAST OF A
X MANY-WAY BRANCH; OP 05 IS THE LAST BRANCH OF
X MANY WAY BRANCH.
X OP 08 MEANS LABEL THE BRANCH TO THE NEXT BOX.
X OP 09 MEANS UNCONDITIONAL BRANCH TO M.
X IF M IS ZERO ON OPS 05,06,07, OR 09 ANOTHER
X WORD GIVING THE NAME OF THE PLACE TO JUMP
X TO IS SUPPLIED.
X THE PRINTER WHEELS ARE ALLOCATED AS FOLLOWS:
X 1-30 FLOWCHART BOXES (MAX OF 99 PER CHART)
X 7-10 REFERENCES TO ASSEMBLY LISTING
X 12-15 LABELS TO NEXT BOX
X 18 LINE BETWEEN BOXES
X 32-35 CONDITION NAMES
X 41-70 BRANCH LINES (MAX OF 15 AT A TIME)
X 71-75 OUT OF CHART BRANCHES
X 78 DIVIDER LINE BETWEEN LISTINGS
X 81-130 COMMENTS
X COMMENTS FROM THE COMMENTS TAPE ARE PROCESSED
X ASYNCHRONOUSLY WITH THE NUM CODE.
X THEY ARE COPIED DIRECTLY AS THEY APPEAR
X ON THAT TAPE.
G. MAIN FLOW

ENTRY IS MADE TO G1 AT THE BEGINNING OF EACH
FLOWCHART SECTION.

G1. SKIP PAGE
SKIP THE PRINTER TO THE NEXT PAGE.

G2. READ TAPE
READ IN ALL OF THE NUM CODE FROM THE
CONTROL TAPE AND SET THE COMMENTS TAPE
AREA EMPTY.

0099	808A	888	0	70	8893	8894	ADD		-E2
0100	8893	888	0	00	0000	0001	CON	00000	00001
0101	8894	888	0	0G	0200	8889	IIR1	0200	1B
0102	8895	888	5	02	0190	809A	LIR6	0190	
0103	809A	888	6	02	0000	810A	LIR7	0000	
0104	810A	888	0	25	8896	8897	LDA		8F
0105	8896	888	0	00	8199	8001	JMP	10199	10001
0106	8897	888	0	80	5001	811A	TDC	W9801	
0107	811A	888	0	08	0000	8898	LIR1	0000	-E5
0108	8898	888	0	31	8900	8900	CLL		
0109	8900	888	0	54	8201	812A	STL1	A0001	
0110	812A	888	0	54	8200	813A	STL1	U0001	
0111	813A	888	0	29	8001	814A	LDA1	10001	
0112	814A	888	0	82	8901	815A	TEQ	1F	
0113	815A	888	0	77	815A	816A	ATL		
0114									
0115	816A	888	0	0G	0000	817A	IIR1	0000	
0116	817A	888	0	87	8902	8901	TGR		1F
0117	8902	888	0	64	8001	8901	STA1	10001	1F
0118	8901	888	0	0G	0002	818A	IIR1	0002	
0119	818A	888	0	70	8903	8898	ADD		-E5
0120	8903	888	0	99	9800	0000	CON	99980	00000
0121	8899	888	0	08	0001	819A	LIR1	0001	
0122	819A	888	0	30	8904	820A	LDL	R1	
0123	820A	888	0	50	8905	821A	STL	RSW	
0124	821A	888	0	05	8906	8907	LDX	OFF	-E6
0125	8907	888	0	69	8846	822A	STX1	V0000	
0126	822A	888	0	0G	0001	823A	IIR1	0001	
0127	823A	888	0	70	8909	8907	ADD		-E6
0128	8909	888	0	99	9984	0000	CON	99998	40000
0129	8908	888	0	25	5201	824A	LDA	W0001	
0130	824A	888	0	30	8910	825A	LDLN	03112	83123
0131	825A	888	0	82	8911	8912	TEQ		1F
0132	8911	888	2	02	0003	8913	LIR4	0003	NOP
0133	8912	888	0	25	8914	826A	LDAN	00000	00100
0134	826A	888	0	60	80A8	827A	STA	CONN	
0135	827A	888	2	02	0001	828A	LIR4	0001	
0136	828A	888	3	02	0006	829A	LIR5	0006	5AAAC
0137	829A	888	0	25	8915	830A	LDAN	FAAA9	
0138	830A	888	0	60	8528	831A	STA	N0081	
0139	831A	888	0	25	8916	832A	LDAN	00001	20000
0140	832A	888	0	60	8533	8917	STA	Z0081	RUNO
0141	8913	888	0	25	80A8	833A	LDA	CONN	
0142	833A	888	0	60	8533	834A	STA	Z0081	
0143	834A	888	0	25	8918	835A	LDAN	88888	88888
0144	835A	888	0	60	8528	8917	STA	N0081	RUNO
0145									
0146									
0147	8917	888	1	02	0000	8919	LIR2	0000	1F
0148									

- G3. ADJUST STOP TABLE
THE STOP TABLE IS PUT INTO CORE. THE ENTRIES ARE AS FOLLOWS:
I(M) IS 0 IF BRANCH TO M HAS NOT OCCURRED.
I(M) IS N S IF THE LAST BRANCH TO M OCCURRED FROM SUBSECTION N WITH SERIAL NUMBER S. IF N IS LESS THAN M, CHANGE I(M) TO M 0.
THIS MEANS THAT THE BRANCH LINE FOR THAT COLUMN WILL STOP ONLY AFTER IT ENTERS NODE M.
X
- G4. INITIALIZE
SET THE COMMENT SWITCH TO PRINT AND SET ALL 15 COLUMNS FOR VERTICAL BRANCH LINES TO OFF.
-E6
- G5. TABLE OF CONTENTS
YES: IF THIS IS MERELY A TABLE OF CONTENTS, SET UP OP 03 AND GO TO G7.
NO: 00100
- G6. (---IN---)
PLACE THE WORD (---IN---) AT THE TOP OF THE LISTING AND SET UP OP 01, STEP 7 FOR NEXT LINE. TONG8.
- G7. NOP
THIS IS ENTRY MADE BY OPERATORS WHICH LEAVE THE LINE OF THE FLOWCHART ESSENTIALLY INTACT AND MOSTLY BLANK. THE ONLY VERTICAL LINES ARE A POSSIBLE CONNECTOR LINE AND POSSIBLE BRANCH LINES WHICH ARE ON.
X
X
G8. RUN SPACES
X SET R32 TO ZERO TO INDICATE THAT NO HORI-

0149										
0150	B920	888	1	02	0001	8919	RUN1	LIR2	0001	1F
0151										
0152										
0153										
0154	B919	888	0	08	0001	8847	1	LIR1	0001	V0001
0155	B921	888	0	00	0000	8801	ONT	CON	00000	08801
0156	B922	888	0	00	0000	A811	1	CON	00000	0A811
0157	B923	888	0	00	0000	8800	OFT	CON	00000	08800
0158	B924	888	0	00	0000	AA11	1	CON	00000	0AA11
0159	B925	888	1	25	B921	B926	ON	LDA2	ONT	1F
0160	B906	888	1	25	B923	B926	OFF	LDA2	OFT	1F
0161	B927	888	0	25	B928	B929	S1	LDA		2F
0162	B928	888	0	00	0000	C602		CON	00000	0C602
0163	B930	888	0	25	B931	B929	S2	LDA		2F
0164	B931	888	0	00	0000	F602		CON	00000	0F602
0165	B932	888	0	25	B933	B929	S3	LDA		2F
0166	B933	888	0	00	0000	A513		CON	00000	0A513
0167	B934	888	0	25	B935	B929	S4	LDA		2F
0168	B935	888	0	00	0000	A111		CON	00000	0A111
0169	B929	888	1	02	0000	B36A	2	LIR2	0000	
0170	B36A	888	0	05	B936	B37A		LDX	NEXT	
0171	B37A	888	0	69	B846	B926		STX1	V0000	1F
0172	B926	888	0	06	B937	B937	1	CLX		
0173	B937	888	0	32	0200	B38A		SHR	0200	
0174	B38A	888	0	37	0800	B39A		SHL	0800	
0175	B39A	888	0	04	B831	B831		JMP1	S0000	
0176	B832	888	0	32	0F00	B938	S0001	SHR	0F00	1F
0177	B833	888	0	32	0200	B939	S0002	SHR	0200	3F
0178	B939	888	0	20	B940	B40A	3	BUF	TEMPN	
0179	B40A	888	0	32	0F00	B41A		SHR	0F00	
0180	B41A	888	0	20	B941	B938		BUF	TEMPZ	1F
0181	B938	888	0	60	B941	B42A	1	STA	TEMPZ	
0182	B42A	888	0	65	B940	B43A		STX	TEMPN	
0183	B43A	888	0	06	0001	B44A		IIR1	0001	
0184	B44A	888	0	04	B846	B846		JMP1	V0000	
0185	B834	888	0	32	0400	B939	S0003	SHR	0400	3B
0186	B835	888	0	32	0600	B939	S0004	SHR	0600	3B
0187	B836	888	0	32	0800	B939	S0005	SHR	0800	3B
0188	B837	888	0	30	B940	B45A	S0006	LDL	TEMPN	
0189	B45A	888	0	50	B581	B46A		STL	N0134	
0190	B46A	888	0	30	B941	B47A		LDL	TEMPZ	
0191	B47A	888	0	50	B586	B932		STL	Z0134	S0001
0192	B838	888	0	32	0200	B939	S0007	SHR	0200	3B
0193	B839	888	0	32	0400	B939	S0008	SHR	0400	3B
0194	B840	888	0	32	0600	B939	S0009	SHR	0600	3B
0195	B841	888	0	32	0800	B939	S0010	SHR	0800	3B
0196	B842	888	0	30	B940	B48A	S0011	LDL	TEMPN	
0197	B48A	888	0	50	B465	B49A		STL	N0018	
0198	B49A	888	0	30	B941	B50A		LDL	TEMPZ	

X ZONTAL LINE IS DESIRED ON THIS LINE. TONGIO.
 G9. RUN DOTS
 X SET RB2 TO ONE TO INDICATE A HORIZONTAL LINE
 X IS TO LEAD FROM THE LEFT UP TO A SPECIAL
 X COLUMN.
 G10. PROCESS 15.
 THE 15 POSSIBLE COLUMNS FOR VERTICAL BRANCH
 LINES ARE EXAMINED FROM LEFT TO RIGHT.
 THEY CAN BE SET TO TWO NORMAL STATES:
 OFF: IF RB2 IS ZERO, PRINT SPACES, ELSE ..
 ON: IF RB2 IS ZERO PRINT ; ELSE PRINT .;
 THERE ARE ALSO FOUR SPECIAL STATES,
 (O IO .V AND .A WHICH IF PRESENT
 SET RB2 TO ZERO AND CHANGE THEMSELVES TO BE
 OFF OR ON ACCORDING TO THE SETTING OF 'NEXT'.

0199	850A	888	0	50	8470	8832		STL	Z0018	50001
0200	8843	888	0	32	0200	8939	50012	SHR	0200	38
0201	8844	888	0	32	0400	8939	50013	SHR	0400	38
0202	8845	888	0	32	0600	8939	50014	SHR	0600	38
0203	8846	888	0	32	0800	8939	50015	SHR	0800	38
0204	8862	888	0	30	8940	851A	V0016	LDL	TEMPN	
0205	851A	888	0	50	8550	852A		STL	N0103	
0206	852A	888	0	30	8941	853A		LDL	TEMPZ	
0207	853A	888	0	50	8555	8905		STL	Z0103	RSW
0208	8904	888	5	07	0010	854A	R1	IIR6	0010	
0209	854A	888	0	70	8942	8943		ADD		-R1
0210	8942	888	0	99	9800	0000		CON	99980	00000
0211	8944	888	0	25	8945	8863	&R1	LDA		TROC
0212	8945	888	0	F6	8632	8946		TBU	C0001	-R2
0213	8947	888	0	67	4444	000A	&R2	HLT	4444	RA
0214	8946	888	0	25	8831	855A	-R2	LDA	C0200	
0215	855A	888	0	60	8631	856A		STA	C0000	
0216	856A	888	5	02	0000	8943		LIR6	0000	-R1
0217	8943	888	5	25	8632	857A	-R1	LDA6	C0001	
0218	857A	888	0	70	8948	8949		ADD		-R3
0219	8948	888	0	00	0000	0001		CON	00000	00001
0220	8949	888	5	25	8631	858A	-R3	LDA6	C0000	
0221	858A	888	0	60	8577	859A		STA	Z0125	
0222	859A	888	5	25	8632	860A		LDA6	C0001	
0223	860A	888	0	60	8572	861A		STA	N0125	
0224	861A	888	5	25	8633	862A		LDA6	C0002	
0225	862A	888	0	60	8461	863A		STA	Z0009	
0226	863A	888	5	25	8634	864A		LDA6	C0003	
0227	864A	888	0	60	8456	865A		STA	N0009	
0228	865A	888	5	25	8635	866A		LDA6	C0004	
0229	866A	888	0	60	8946	867A		STA	Z0094	
0230	867A	888	5	25	8636	868A		LDA6	C0005	
0231	868A	888	0	60	8541	869A		STA	N0094	
0232	869A	888	5	25	8637	870A		LDA6	C0006	
0233	870A	888	0	60	8630	871A		STA	Z0178	
0234	871A	888	5	25	8638	872A		LDA6	C0007	
0235	872A	888	0	60	8625	873A		STA	N0178	
0236	873A	888	5	25	8639	874A		LDA6	C0008	
0237	874A	888	0	60	8514	875A		STA	Z0062	
0238	875A	888	5	25	8640	876A		LDA6	C0009	
0239	876A	888	0	60	8509	8951		STA	N0062	R2
0240	8951	888	0	25	8952	8953	R2	LDA		8F
0241	8952	888	0	00	8646	8447		JMP	N0199	N0000
0242	8953	888	0	88	0000	877A	8	TCD	0000	
0243	877A	888	0	25	8874	878A		LDA	LC	
0244	878A	888	0	70	8954	879A		ADD#	00000	00001
0245	879A	888	0	60	8874	880A		STA	LC	
0246	880A	888	0	11	0001	8955		PRN	0001	-PR1
0247	8956	888	0	67	3333	000A	&PR1	HLT	3333	RA
0248	8955	888	0	06	8957	8957	-PR1	CLX		

G11.COMMENTS

IF THE SWITCH INDICATES NO COMMENTS ARE TO BE MADE, SKIP THIS STEP. IF A SENTINEL IS SENSED ON THE COMMENTS TAPE, BLANK OUT THE RIGHT HAND PART OF THE PAGE AND TURN OFF THE SWITCH SO THAT IT INDICATES END OF COMMENTS. IF COMMENTS ARE PRESENT, SIMPLY COPY THEM AS THEY APPEAR ON THE COMMENTS TAPE.

G12.PRINT

PRINT THIS LINE. THEN RESET SOME WORDS TO A STANDARD POSITION; PRINT WHEELS 1-10 21-40 AND 71-80 TO BLANKS. THEN TRANSFER CONTROL TO THE CURRENT#OP.

0249	B957	BBB	0	63	B957	B81A	ZAP			
0250	B81A	BBB	0	65	B452	B82A	STX	Z0000		
0251	B82A	BBB	0	65	B502	B83A	STX	Z0050		
0252	B83A	BBB	0	65	B617	B84A	STX	Z0165		
0253	B84A	BBB	0	05	B958	B85A	LDX#	00000	00200	
0254	B85A	BBB	0	65	B493	B86A	STX	Z0041		
0255	B86A	BBB	0	60	B497	B87A	STA	N0050		
0256	B87A	BBB	0	60	B612	B88A	STA	N0165		
0257	B88A	BBB	0	60	B488	B89A	STA	N0041		
0258	B89A	BBB	0	60	B447	B90A	STA	N0000		
0259	B90A	BBB	3	07	0001	B959	IIR5	0001	JUMP	
0260	B959	BBB	2	00	B428	B428	JMP4	T0000		
0261	B960	BBB	0	30	B904	B961	LDL	R1	1F	
0262	B950	BBB	0	30	B951	B961	LDL	R2	1F	
0263	B961	BBB	0	50	B905	B91A	STL	RSW		
0264	B91A	BBB	0	06	B962	B962	CLX			
0265	B962	BBB	0	63	B962	B92A	ZAP			
0266	B92A	BBB	0	60	B572	B93A	STA	N0125		
0267	B93A	BBB	0	65	B577	B94A	STX	Z0125		
0268	B94A	BBB	0	60	B456	B95A	STA	N0009		
0269	B95A	BBB	0	65	B461	B96A	STX	Z0009		
0270	B96A	BBB	0	60	B541	B97A	STA	N0094		
0271	B97A	BBB	0	65	B546	B98A	STX	Z0094		
0272	B98A	BBB	0	60	B625	B99A	STA	N0178		
0273	B99A	BBB	0	65	B630	B00F	STX	Z0178		
0274	B00F	BBB	0	60	B509	B01F	STA	N0062		
0275	B01F	BBB	0	65	B514	B951	STX	Z0062	R2	
0276	B429	BBB	3	00	B433	B433	JMP5	Q0000		
0277	B430	BBB	3	00	B441	B441	JMP5	R0000		
0278	B434	BBB	7	25	B001	B963	LDA8	I0001	1F	
0279	B442	BBB	7	25	B001	B963	LDA8	I0001	1F	
0280	B963	BBB	0	31	B964	B964	CLL			
0281	B964	BBB	0	82	B913	B02F	TEQ	NOP		
0282	B02F	BBB	0	25	B965	B03F	LDAN	00000	00100	
0283	B03F	BBB	0	60	B0A8	B04F	STA	CONN		
0284	B04F	BBB	0	25	B966	B967	LDA		8F	
0285	B966	BBB	0	88	BB88	B6FA	NUM		0(.	
0286	B967	BBB	0	60	B528	B05F	STA	N0081		
0287	B05F	BBB	0	25	B968	B969	LDA		8F	
0288	B968	BBB	0	00	0000	0201	ZON		0(.	
0289	B969	BBB	0	60	B533	B06F	STA	Z0081		
0290	B06F	BBB	0	25	B970	B07F	LDAN	AAAAA	AAAAA	
0291	B07F	BBB	0	60	B612	B08F	STA	N0165		
0292	B08F	BBB	0	60	B497	B09F	STA	N0050		
0293	B09F	BBB	0	25	B971	B10F	LDAN	11111	11111	
0294	B10F	BBB	0	60	B617	B11F	STA	Z0165		
0295	B11F	BBB	0	60	B502	B12F	STA	Z0050		
0296	B12F	BBB	0	25	B7A8	B13F	LDA	N		
0297	B13F	BBB	0	30	B972	B973	LDL		ASIGN	
0298	B972	BBB	0	25	B930	B14F	LDA	S2		

H. 01 AND 02 OPS
 THE ACTIONS ARE BROKEN INTO A SERIES OF EIGHT STEPS, USUALLY ONE STEP PER LINE. THE 01 AND 02 OPS PROCESS INTERNALLY THE 05-09 OPS. IN THIS ROUTINE H1 MEANS STEP 1, H2 STEP 2, AND SO ON.

H1. INPUT NODE
 NO: IF NO INPUTS TO THE NEXT BOX ARE INDICATED IN THE STOP TABLE, GO TOW#7.

YES: OTHERWISE TURN ON THE VERTICAL BOX CONNECTOR CONN AND SET UP A 0(..... SEQUENCE. ASSIGN A COLUMN (ROUTINE K); SET UP SPECIAL 0 IN THIS COLUMN AND GO TOW#9.

0299	B14F	888	1	64	8846	8920
0300	B435	888	6	25	5201	8974
0301	B443	888	6	25	5201	8974
0302	B974	888	0	20	8975	815F
0303	B15F	888	0	60	8447	8913
0304	B436	888	0	25	8976	816F
0305	B16F	888	0	60	8452	817F
0306	B17F	888	0	25	8977	818F
0307	B18F	888	0	30	000A	819F
0308	B19F	888	0	05	8978	820F
0309	B20F	888	0	65	80AB	821F
0310	B21F	888	0	05	8979	8980
0311	B979	888	0	00	0000	0001
0312	B444	888	0	25	8981	8982
0313	B981	888	0	8F	AAAA	AAAA
0314	B982	888	0	30	8983	8984
0315	B983	888	0	AA	AAAA	AACB
0316	B984	888	0	06	8985	8985
0317	B985	888	0	65	80AB	8980
0318	B980	888	0	65	B617	822F
0319	B22F	888	0	60	8447	823F
0320	B23F	888	0	50	B612	824F
0321	B24F	888	0	25	8986	825F
0322	B25F	888	0	60	8528	826F
0323	B26F	888	0	26	8987	8987
0324	B987	888	0	60	8533	827F
0325	B27F	888	6	25	5203	828F
0326	B28F	888	6	05	5205	829F
0327	B29F	888	0	32	0400	830F
0328	B30F	888	0	60	8988	831F
0329	B31F	888	0	65	8989	832F
0330	B32F	888	6	25	5205	833F
0331	B33F	888	6	05	5207	834F
0332	B34F	888	0	32	0400	835F
0333	B35F	888	0	65	8990	836F
0334	B36F	888	6	25	5202	837F
0335	B37F	888	6	05	5204	838F
0336	B38F	888	0	32	0400	839F
0337	B39F	888	0	60	8991	840F
0338	B40F	888	0	65	8992	841F
0339	B41F	888	6	25	5204	842F
0340	B42F	888	6	05	5206	843F
0341	B43F	888	0	32	0400	844F
0342	B44F	888	0	65	8993	845F
0343	B45F	888	6	07	0008	846F
0344	B46F	888	6	25	5201	847F
0345	B47F	888	0	35	8994	848F
0346	B48F	888	0	30	8995	849F
0347	B49F	888	0	82	8996	8917
0348						

00002	STA3	V0000	RUN1
R0002	LDA7	W0001	1F
1	LDA7	W0001	1F
	BUFN	BBBBB	80000
	STA	N0000	NOP
00003	LDA#	10000	00000
	STA	Z0000	
	LDA#	AAAAA	AAAAA
	LDL	RA	
	LDX#	00000	00100
	STX	CONN	
	LDX		1F
	CON	00000	00001
R0003	LDA		8F
	NUM	(---	-----
8	LDL		8F
	NUM	-----	----
8	CLX		
	STX	CONN	1F
1	STX	Z0165	
	STA	N0000	
	STL	N0165	
	LDA#	AAAAA	AAAAA
	STA	N0081	
	CLA		
	STA	Z0081	
	LDA7	W0003	
	LDX7	W0005	
	SHR	0400	
	STA	W1N	
	STX	W2N	
	LDA7	W0005	
	LDX7	W0007	
	SHR	0400	
	STX	W3N	
	LDA7	W0002	
	LDX7	W0004	
	SHR	0400	
	STA	W1Z	
	STX	W2Z	
	LDA7	W0004	
	LDX7	W0006	
	SHR	0400	
	STX	W3Z	
	IIR7	0008	
	LDA7	W0001	
	ERS#	HH000	00000
	LDL#	07000	00000
	TEQ	BRNCH	RUN0
	HHH		H

H2. LINE NUMBER
 PUT THE LINE NUMBER INTO PRINT POSITIONS
 7-10. GO TO#G7.

H3. TOP LINE OF BOX
 SET EITHER ,-----, OR (-----) AS THE
 TOP LINE OF A BOX. IF A BRANCH BOX, TURN
 CONN OFF. TAKE THE NEXT THREE WORDS OUT OF
 THE NUM CODE AND EDIT OFF THE FOUR RIGHTHAND
 CHARACTERS. THESE WILL FORM THE SUBSECTION
 TITLE FOR THE NEXT LINE.
 07: CHECK FOR AN 07 OP. IF IT IS FOUND, GO TO#J2.
 OTHRELSE GO TO#G8.

0349	8437	888	0	05	4039	850F	00004	LDX#	88888	00000	
0350	850F	888	0	25	4043	851F		LDA#	00000	00001	
0351	851F	888	0	30	4047	4049		LDL		1F	
0352	4047	888	0	00	0000	0008		CON	00000	00008	
0353	8445	888	0	05	4247	852F	R0004	LDX#	F8888	00000	
0354	852F	888	0	30	4001	853F		LDL#	00000	0000C	
0355	853F	888	0	26	4049	4049		CLA	1F		
0356	4049	888	0	60	8617	854F	1	STA	Z0165		
0357	854F	888	0	37	0900	855F		SHL	0900		
0358	855F	888	0	60	4017	856F		STA	TEMP		
0359	856F	888	0	25	8988	857F		LDA	WIN		
0360	857F	888	0	35	4025	858F		ERS#	00000	HHHHH	
0361	858F	888	0	20	000C	859F		BUF	RX		
0362	859F	888	0	60	8447	860F		STA	N0000		
0363	860F	888	0	25	8991	861F		LDA	W1Z		
0364	861F	888	0	35	4041	862F		ERS#	00000	HHHHH	
0365	862F	888	0	20	4017	863F		BUF	TEMP		
0366	863F	888	0	60	8452	864F		STA	Z0000		
0367	864F	888	0	25	8990	865F		LDA	W3N		
0368	865F	888	0	35	4029	866F		ERS#	HHHHH	HHHHO	
0369	866F	888	0	20	0008	867F		BUF	RL		
0370	867F	888	0	60	8612	868F		STA	N0165		
0371	868F	888	0	25	8993	869F		LDA	W3Z		
0372	869F	888	0	35	4045	870F		ERS#	HHHHH	HHHHO	
0373	870F	888	0	20	8617	871F		BUF	Z0165		
0374	871F	888	0	60	8617	872F		STA	Z0165		
0375	872F	888	0	25	8989	873F		LDA	W2N		
0376	873F	888	0	60	8528	874F		STA	N0081		
0377	874F	888	0	25	8992	875F		LDA	W2Z		
0378	875F	888	0	60	8533	876F		STA	Z0081		
0379	876F	888	6	25	5201	877F		LDA7	W0001		
0380	877F	888	0	35	4005	878F		ERS#	HH000	00000	
0381	878F	888	0	30	4009	879F		LDL#	06000	00000	
0382	879F	888	0	82	8996	880F		TEQ	BRNCH		
0383	880F	888	0	30	4016	881F		LDL#	09000	00000	
0384	881F	888	0	82	4021	8917		TEQ		RUNO	
0385	4021	888	0	26	4024	4024		CLA			
0386	4024	888	0	60	80AB	4028		STA	CONN	BRCH1	
0387	8438	888	0	25	4040	882F	00005	LDA#	10000	00000	
0388	882F	888	0	60	8452	883F		STA	Z0000		
0389	883F	888	0	25	4048	884F		LDA#	AAAAA	AAAAA	
0390	884F	888	0	30	000A	885F		LDL	RA		
0391	885F	888	0	05	4006	4008		LDX		1F	
0392	4006	888	0	00	0000	0001		CON	00000	00001	
0393	8446	888	2	02	0001	886F	R0005	LIR#	0001		
0394	886F	888	0	25	4201	4003		LDA		8F	
0395	4201	888	0	8F	AAAA	AAAA		NUM	(---	-----	
0396	4003	888	0	30	4205	4007	8	LDL		8F	
0397	4205	888	0	AA	AAAA	AACB		NUM	-----	---)	
0398	4007	888	0	06	4008	4008	8	CLX	1F		

H4. SUBSECTION NAME
 EDIT THE SUBSECTION NAME INTO A BOX WITH A BORDER.
 06: IF AN 06 OP IS NEXT: PREPARE A BRANCH BY GOING TO#J2.
 09: IF AN 09 OP IS NEXT IT IS AN UNCONDITIONAL BRANCH AND WE TURN CONN OFF AND GO TO#J1. OTHROtherwise TO#G8.

H5. BOTTOM OF BOX
 SET UP THE BOTTOM LINE OF THIS BOX.
 06: IF AN 06 OP IS NEXT THERE ARE FOUR OR MORE BRANCHES SO WE WILL ENTER CYCLE H6 NEXT TIME. OTHERWISE WE SET UP TO SKIP CYCLE H6. BRANCH TO#J2 FOR AN 06 OP.
 05: AN 05 OP ALSO CAUSES A BRANCH AT#J2. OTHRAnything ELSE MEANS GO TO#G8 AND DO NOTHING SPECIAL.

0399	4008	888	0	65	8617	887F	1	STX	Z0165	
0400	887F	888	0	60	8447	888F		STA	N0000	
0401	888F	888	0	50	8612	889F		STL	N0165	
0402	889F	888	0	31	4023	4023		CLL		
0403	4023	888	0	25	4225	4027		LDA		2F
0404	4225	888	0	AA	AAAA	AAAA		NUM	-----	-----
0405	4027	888	0	50	8533	890F	2	STL	Z0081	
0406	890F	888	0	60	8528	891F		STA	N0081	
0407	891F	888	6	25	5201	892F		LDA7	W0001	
0408	892F	888	0	35	4405	893F		ERS#	HH000	00000
0409	893F	888	0	30	4209	894F		LDL#	06000	00000
0410	894F	888	0	82	8996	895F		TEQ	BRNCH	
0411	895F	888	0	77	895F	896F		ATL		
0412	896F	888	3	07	0001	897F		IIR5	0001	
0413	897F	888	0	25	4223	898F		LDA#	05000	00000
0414	898F	888	0	82	8996	8917		TEQ	BRNCH	RUN0
0415	8439	888	0	06	4042	4042	00006	CLX		
0416	4042	888	0	63	4042	899F		ZAP		
0417	899F	888	0	60	8528	4249		STA	N0081	
0418	4249	888	0	65	8533	4203		STX	Z0081	
0419	4203	888	6	25	5201	4403		LDA7	W0001	
0420	4403	888	0	35	4605	4207		ERS#	HH000	00000
0421	4207	888	0	30	4409	4011		LDL#	05000	00000
0422	4011	888	0	82	8996	4014		TEQ	BRNCH	
0423	4014	888	3	07	9999	8996		IIR5	9999	BRNCH
0424	8440	888	6	25	5201	4603	00007	LDA7	W0001	
0425	4603	888	0	35	4805	4407		ERS#	HH000	00000
0426	4407	888	0	30	4609	4211		LDL#	08000	00000
0427	4211	888	0	82	4214	8913		TEQ		NOP
0428	4214	888	0	30	4216	4018		LDL#	00000	00100
0429	4018	888	0	50	80AB	4022		STL	CONN	
0430	4022	888	6	25	5203	4055		LDA7	W0003	
0431	4055	888	0	35	4607	4809		ERS#	HHHHH	00000
0432	4809	888	0	70	0008	4414		ADD	RL	
0433	4414	888	0	60	8533	4218		STA	Z0081	
0434	4218	888	6	25	5203	4255		LDA7	W0003	
0435	4255	888	0	37	0500	4013		SHL	0500	
0436	4013	888	0	70	4015	4418		ADD#	00000	88888
0437	4418	888	0	60	8528	4222		STA	N0081	
0438	4222	888	6	07	0004	8917		IIR7	0004	RUN0
0439	8441	888	0	30	4243	4245	00008	LDL#	00000	00066
0440	4245	888	0	25	8874	4449		LDA	LC	2F
0441	4449	888	0	87	4002	4202	2	TGR		1F
0442	4002	888	0	75	0008	4449		SUB	RL	2B
0443	4202	888	0	30	4004	4206	1	LDL#	00000	00054
0444	4206	888	0	60	8874	4010		STA	LC	
0445	4010	888	0	87	4213	4413		TGR		1F
0446	4213	888	3	07	9999	4217		IIR5	9999	
0447	4217	888	0	30	8951	4221		LDL	R2	
0448	4221	888	0	25	8905	4425		LDA	RSW	

H6. EXTRA CYCLE
H6 WILL BE ENTERED UNTIL WE RUN OUT OF 06 OPS
AND REACH AN 05 OP. GO TOMJ2.

H7. SPACE BETWEEN
CHECK FOR AN 08 OP. IF SO, LABEL THE LINE
BETWEEN BOXES AND TURN CONN ON. GO TOMG7.

H8. END OF PAGE
IF THE LINE COUNT ON THE PAGE IS GREATER THAN
54, THERE WON'T BE ROOM FOR ANOTHER BOX ON
THIS PAGE SO WE WAIT AT STEP H3 UNTIL THE
YES: COUNT GETS BACK TO 0, GOING TOMG7.
NO: OTHERWISE CHECK THE NEXT LINE FOR A VALID
01 02 03 OR 04 OP WITH C ADDRESS OF ZERO.
(IF NOT, HALT AND TRY THE NEXT.)
THEN GO IMMEDIATELY TO THE NEXTOP AT STEP 1.

0449	4425	888	0	82	8913	4228	TEQ	NOP	
0450	4228	888	0	25	8960	4032	LDA	R3	
0451	4032	888	0	60	8905	8913	STA	RSW	NOP
0452	4413	888	6	25	5201	4803	LDA7	W0001	
0453	4803	888	0	30	4455	4807	LDL#	04000	00000
0454	4807	888	0	87	4210	4410	TGR	2F	1F
0455	4210	888	0	67	5555	4655	HLT	5555	
0456	4655	888	6	07	0002	4413	IIR7	0002	1B
0457	4410	888	0	35	4012	4614	ERS#	00HHH	HHHHH
0458	4614	888	0	60	87AB	4618	STA	N	
0459	4618	888	0	35	4020	4422	ERS#	00000	0HHHH
0460	4422	888	0	31	4625	4625	CLL		
0461	4625	888	0	82	4428	4210	TEQ		2B
0462	4428	888	6	25	5201	4053	LDA7	W0001	
0463	4053	888	0	06	4406	4406	CLX		
0464	4406	888	0	32	0400	4613	SHR	0400	
0465	4613	888	0	35	4215	4417	ERS#	00HHH	H0000
0466	4417	888	0	60	82AB	4421	STA	RB4	
0467	4421	888	6	07	0002	4825	IIR7	0002	
0468	4825	888	3	02	0001	8959	LIR5	0001	JUMP
0469	8431	888	0	25	8876	4035	LDA	START	1F
0470	8432	888	0	25	4034	4035	LDA		1F
0471	4034	888	0	30	4036	8877	LDL		PAGE*
0472	4036	888	0	30	4240	8877	LDL		PAGE*
0473	4240	888	0	67	HHHH	4242	HLT	HHHH	2F
0474	4035	888	0	60	4037	4239	STA	OUT	
0475	4239	888	0	31	4442	4442	CLL		
0476	4442	888	0	50	80AB	4046	STL	CONN	
0477	4046	888	2	02	0005	8433	LIR4	0005	T0005
0478	4242	888	0	G2	0500	4059	TRD	OTAP1	
0479	4059	888	0	C7	4242	4212	TBT	2B	
0480	4212	888	0	F2	0600	4000	TRW	OTAP2	
0481	4000	888	0	F2	0700	4200	TRW	OTAP3	
0482	4200	888	0	F6	7800	7801	TBU	7800	7801
0483	8433	888	0	30	8905	4237	LDL	RSW	T0005
0484	4237	888	0	25	8951	4241	LDA	R2	
0485	4241	888	0	82	4037	4044	TEQ	OUT	
0486	4044	888	0	25	8874	4248	LDA	LC	1F
0487	4248	888	0	30	4400	4402	LDL#	00000	00054
0488	4402	888	0	87	4855	8913	TGR		NOP
0489	4855	888	0	30	4057	4259	LDL#	00000	00066
0490	4259	888	0	87	4412	8441	TGR		00008
0491	4412	888	0	75	0008	4617	SUB	RL	
0492	4617	888	0	60	8874	4248	STA	LC	1B
0493	4028	888	0	25	4030	4232	LDA#	AAAAA	AAAAA
0494	4232	888	0	60	8497	4236	STA	N0050	
0495	4236	888	0	25	4038	4440	LDA#	11111	11111
0496	4440	888	0	60	8502	4244	STA	Z0050	
0497	4244	888	6	07	9998	4448	IIR7	9998	
0498	4448	888	6	25	5203	4105	LDA7	W0003	2F

- I. 03 AND 04 OPS
 THESE OPS TERMINATE A FLOW CHART.
 THEY ENTER ONCE AT STEP I1 AND ALL SUCCEEDING
 TIMES AT STEP I2.
- I1. INITIALIZE.
 TURN CONN OFF. SET SWITCH FOR FUTURE ACTION.
- I2. WAIT TILL DONE
 DONE IF THE COMMENT SWITCH IS OFF, WE ARE DONE
 WITH THIS FLOWCHART, SO GO TO#G1,
 END UNLESS WE ARE COMPLETELY DONE WHEN WE GO
 TO A#HALT INSTRUCTION.

- NO: IF THE COMMENT SWITCH INDICATES THE
 RIGHTHAND LISTING IS LONGER THAN THE
 FLOWCHARTS, ADJUST THE PAGE IF NECESSARY
 FOR SPACE BETWEEN PAGES AND THEN GO TO#G7.

- J. BRANCHING
- J1. UNCONDITIONAL
 SET THE 'CONDITION' TO BE
- J2. PRINT CONDITION
 PUT THE CONDITION NAME ON THE RIGHT SIDE OF
 THE BOX.

0499	8996	888	6	25	5203	4305	BRNCH	LDA7	W0003	
0500	4305	888	0	37	0500	4813		SHL	0500	
0501	4813	888	0	20	4415	4817		BUF#	00000	AAAAA
0502	4817	888	0	60	8497	4621		STA	N0050	
0503	4621	888	6	25	5203	4505		LDA7	W0003	
0504	4505	888	0	35	4257	4459		ERS#	HHHHH	00000
0505	4459	888	0	20	4411	4763		BUF#	00000	11111
0506	4063	888	0	60	8502	4067		STA	Z0050	
0507	4067	888	6	25	5201	4105		LDA7	W0001	2F
0508	4105	888	0	35	4457	4659	2	ERS#	00HHH	HHHHH
0509	4659	888	0	31	4612	4612		CLL		
0510	4612	888	0	82	4615	4815		TEQ		1F
0511	4615	888	6	25	5205	4657		LDA7	W0005	
0512	4657	888	0	37	0500	4065		SHL	0500	
0513	4065	888	0	20	4267	4019		BUF#	00000	BBBBB
0514	4019	888	0	60	8488	4423		STA	N0041	
0515	4423	888	6	25	5205	4857		LDA7	W0005	
0516	4857	888	0	35	4859	4611		ERS#	HHHHH	00000
0517	4611	888	0	20	8493	4265		BUF	Z0041	
0518	4265	888	0	60	8493	4219		STA	Z0041	
0519	4219	888	6	07	0006	8920		IIR7	0006	RUN1
0520	4815	888	0	30	4467	8973	1	LDL		ASIGN
0521	4467	888	1	64	8846	4224		STA3	V0000	
0522	4224	888	6	07	0004	8920		IIR7	0004	RUN1
0523										
0524										
0525	8973	888	0	50	4075	4227	ASIGN	STL	EXIT	
0526	4227	888	0	77	4227	4230		ATL		
0527	4230	888	0	35	4432	4234		ERS#	00000	0HHHH
0528	4234	888	0	20	87A8	4238		BUF	N	
0529	4238	888	0	60	4640	4642		STA	STOP	
0530	4642	888	0	07	HMH	4445		IIR	HMH	
0531	4445	888	0	35	0008	4649		ERS	RL	
0532	4649	888	0	60	88A8	4253		STA	RB9	
0533	4253	888	8	25	8201	4208		LDA9	A0001	
0534	4208	888	0	31	4811	4811		CLL		
0535	4811	888	0	82	4814	4064		TEQ		1F
0536	4814	888	0	08	0000	4667		LIR1	0000	2F
0537	4667	888	0	29	8200	4622	2	LDA1	U0001	
0538	4622	888	0	82	4275	4475		TEQ	2F	
0539	4475	888	0	06	0002	4667		IIR1	0002	2B
0540	4275	888	0	29	8400	4430	2	LDA1	P0001	
0541	4430	888	0	64	8200	4235		STA1	U0001	
0542	4235	888	8	60	8201	4840		STA9	A0001	
0543	4840	888	0	25	4842	4444		LDA	2F	
0544	4444	888	8	75	8201	000A		SUB9	A0001	RA
0545	4842	888	1	08	0000	4645	2	LIR3	0000	
0546	4645	888	0	05	8925	4849		LDX	ON	4F
0547	4849	888	0	25	8927	4453	4	LDA	S1	5F
0548	4453	888	0	65	8936	4075	5	STX	NEXT	EXIT

J3. WITHIN CHART
YES: IF THE BRANCH IS INTERNAL TO THIS CHART, AS INDICATED BY M AND C BEING ZERO, GO TO#J5.
NO:

J4. BRANCH OUT
THIS BRANCH IS OUT OF THE CHART, SO PUT ITS NAME AT THE RIGHT HAND SIDE, AND GO TO#G9 TO RUN A HORIZONTAL LINE ALL THE WAY ACROSS TO IT.

J5. ASSIGN COLUMN
A BRANCH WITHIN THE CHART IS HANDLED BY THE ASSIGN SUBROUTINE (ROUTINE K). THEN WE INSERT X THE SPECIAL COLUMN IN AND GO TO#G9 TO RUN X A HORIZONTAL LINE UP TO IT.
K. THE ASSIGN SUBROUTINE
THIS IS THE HEART OF THE BRANCHING CONTROL. WE ARE BRANCHING FROM OR TO BOX M. THE PROBLEM IS TO TURN OFF OR TURN ON AN APPROPRIATE COLUMN AND TO RUN AN APPROPRIATE LINE OVER TO THAT COLUMN.

K1. A(M):ZERO
IF A(M) IS ZERO IT MEANS THIS IS THE FIRST EQ: REFERENCE TO M SO WE MUST CHOOSE A COLUMN NUMBER, AT STEP#K2.
NEQ: OTHERWISE A(M) IS THE NUMBER OF THE COLUMN WHICH IS ALREADY IN USE. GO TO#K3.

K2. CHOOSE COLUMN
THE COLUMNS ARE ASSIGNED ACCORDING TO A FIXED PRIORITY 1,5,9,13,3, ETC IN AN ATTEMPT TO MINIMIZE INTERPLAY. THE BEST UNUSED ONE IS CHOSEN AND WE SET 'NEXT' TO ON SO A VERTICAL LINE WILL BEGIN IN THIS COLUMN.
THE SPECIAL BRANCH 10 IS SELECTED.#EXIT.

0549	4064	888	0 25	4416	4818	1	LDA	2F		
0550	4818	888	8 75	8201	000A		SUB9	A0001	RA	
0551	4416	888	1 08	0000	4419	2	LIR3	0000		
0552	4419	888	8 25	8001	4424		LDA9	I0001		
0553	4424	888	0 30	4640	4092		LDL	STOP		
0554	4092	888	0 82	4845	4095		TEQ		1F	
0555	4845	888	8 30	8201	4600		LDL9	A0001		
0556	4600	888	0 08	0000	4653		LIR1	0000	2F	
0557	4653	888	0 29	8400	4408	2	LDA1	P0001		
0558	4408	888	0 82	4061	4261		TEQ	2F		
0559	4261	888	0 06	0002	4653		IIR1	0002	2B	
0560	4061	888	0 31	4264	4264	2	CLL			
0561	4264	888	0 54	8200	4619		STL1	U0001		
0562	4619	888	0 05	8906	4849		LDX	OFF	4B	
0563	4095	888	0 30	87AB	4099	1	LDL	N		
0564	4099	888	0 05	8925	4853		LDX	ON		
0565	4853	888	8 07	0000	4107		IIR9	0000		
0566	4107	888	0 87	4610	4810		TGR	1F		
0567	4810	888	0 25	8934	4453		LDA	S4	5B	
0568	4610	888	0 25	8932	4453	1	LDA	S3	5B	
0569	8400	888	0 00	0001	0000	P0001	CON	00000	10000	
0570	8402	888	0 00	0005	0000	P0003	CON	00000	50000	
0571	8404	888	0 00	0009	0000	P0005	CON	00000	90000	
0572	8406	888	0 00	0013	0000	P0007	CON	00001	30000	
0573	8408	888	0 00	0003	0000	P0009	CON	00000	30000	
0574	8410	888	0 00	0007	0000	P0011	CON	00000	70000	
0575	8412	888	0 00	0011	0000	P0013	CON	00001	10000	
0576	8414	888	0 00	0015	0000	P0015	CON	00001	50000	
0577	8416	888	0 00	0008	0000	P0017	CON	00000	80000	
0578	8418	888	0 00	0014	0000	P0019	CON	00001	40000	
0579	8420	888	0 00	0002	0000	P0021	CON	00000	20000	
0580	8422	888	0 00	0012	0000	P0023	CON	00001	20000	
0581	8424	888	0 00	0004	0000	P0025	CON	00000	40000	
0582	8426	888	0 00	0010	0000	P0027	CON	00001	00000	
0583	8428	888	0 00	0006	0000	P0029	CON	00000	60000	
0584							END	BEGIN		

K3. STOP HERE

NO: IF THE STOP TABLE INDICATES THAT THIS IS NOT THE LAST REFERENCE TO M: GO TOAK5.
 YES:

K4. RELEASE COLUMN

WE FREE UP THE COLUMN WE ARE USING. SET 'NEXT' TO OFF AND SELECT THE SPECIAL BRANCH 10. #EXIT.

K5. .A OR .V

WE MUST NEITHER START NOR STOP THE COLUMN LINE HERE SO WE SELECT .A OR .V TO INDICATE THE DIRECTION OF FLOW IN THE COLUMN. SET 'NEXT' TO ON AND#EXIT.

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Remington Rand Univac
DIVISION OF SPERRY RAND CORPORATION
PHILADELPHIA, PA.

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0019					
0020	8447	888	0 88	8888	8888
0021	8612	888	0 88	8888	8888
0022	8497	888	0 88	8888	8888
0023	8488	888	0 88	8888	8888
0024	8452	888	0 00	0000	0000
0025	8617	888	0 00	0000	0000
0026	8502	888	0 00	0000	0000
0027	8493	888	0 00	0000	0200
0028	80A8	888	0 00	0000	0000
0029					
0030	8863	888	0 05	8864	8865
0031	8864	888	0 G2	0700	8866
0032	8867	888	0 05	8868	8865
0033	8868	888	0 G2	0600	8866
0034	8865	888	0 60	8869	000C
0035	8866	888	0 C7	000C	800A
0036	800A	888	0 C7	8870	800A
0037	8870	888	0 26	8871	8871
0038	8871	888	0 82	8869	801A
0039	801A	888	0 67	1111	000C

OTAP1	FLO		
OTAP2	EQU	0500	
OTAP3	EQU	0600	
I0001	EQU	0700	
A0000	COR	0199	
U0001	COR	0200	
P0001	EQU	A0000	
T0001	COR	0029	
Q0001	COR	0005	
R0001	COR	0008	
N0000	COR	0005	
Z0000	COR	0184	
W0000	EQU	N0005	
C0000	EQU	5200	
S0001	COR	0201	
V0001	COR	0015	
CONN	COR	0016	
BSAH	EQU	80A8	
N	NEW1	00001	00000
N0000	EQU	R88	
N0165	CON	88888	88888
N0050	CON	88888	88888
N0041	CON	88888	88888
Z0000	CON	00000	00000
Z0165	CON	00000	00000
Z0050	CON	00000	00000
Z0041	CON	00000	00200
CONN	CON	00000	00000
	HHH		
TRDC	LDX		1F
	TRD	OTAP3	2F
TRDM	LDX		1F
	TRD	OTAP2	2F
1	STA	BU	RX
2	TBT	RX	
	TBT		*
	CLA		
	TEQ	BU	
	HLT	1111	RX

3. QADAAD ASSEMBLER PASS3
 OUTPUT TAPE WHICH IS NOW REWINDING
 MUM TAPE
 COMMENTS TAPE
 STOP TABLE
 COLUMN ASSIGNMENTS
 USE OF COLUMNS
 COLUMN PRIORITY
 OP CODE BRANCH
 STEPS IN OP 01
 STEPS IN OP 02
 NUMERICS IN PRINTER INTERLACE
 ZONES IN PRINTER INTERLACE
 MUM CODE
 COMMENTS TAPE IMAGE
 SHIFT TABLE
 COLUMNS ON - OFF

THE NORMAL STATE OF THE PRINTER AREA

TAPE READ COMMENTS TAPE
 TAPE READ MUM TAPE
 RA CONTAINS BUFFER UNLOAD INSTRUCTION.

0077	8872	888	0	26	8873	8873	BEGIN	CLA				G. MAIN FLOW
0078	8873	888	0	60	8874	8875		STA	LC	3F		
0079	8876	888	0	30	8875	8877	START	LDL	3F	PAGE*		
0080	8877	888	0	50	8878	802A	PAGE*	STL	-SK			
0081	802A	888	0	25	8880	803A		LDAN	00000	00066		
0082	803A	888	0	75	8874	8881		SUB	LC	2F		G1. SKIP PAGE
0083	8881	888	0	31	8882	8882	2	CLL				
0084	8882	888	0	50	8874	804A		STL	LC			
0085	804A	888	0	37	0400	805A		SHL	0400			
0086	805A	888	0	30	8883	806A		LDL#	00004	90000		
0087	806A	888	0	87	8884	8885		TGR		1F		
0088	8884	888	0	70	8886	807A		ADD#	00001	00000		
0089	807A	888	0	20	8887	8885		BUF		1F		
0090	8887	888	0	00	0040	0000		CON	00004	00000		
0091	8885	888	0	70	8888	000A	1	ADD		RA		
0092	8888	888	0	16	0000	8878		PFD	0000	-SK		
0093	8879	888	0	67	3333	000A	&SK	HLT	3333	RA		
0094	8875	888	0	08	0000	8889	3	LIR1	0000	1F		G2. READ TAPE
0095	8889	888	0	25	8890	8867	1	LDA		TRDM		
0096	8890	888	0	FF	5000	8891		TBU1	W9800	-E1		
0097	8892	888	0	67	4444	000A	&E1	HLT	4444	RA		
0098	8891	888	0	29	5199	808A	-E1	LDA1	W9999			
0099	808A	888	0	70	8893	8894		ADD		-E2		
0100	8893	888	0	00	0000	0001		CON	00000	00001		
0101	8894	888	0	0G	0200	8889	-E2	IIR1	0200	1B		
0102	8895	888	5	02	0190	809A	&E2	LIR6	0190			
0103	809A	888	6	02	0000	810A		LIR7	0000			
0104	810A	888	0	25	8896	8897		LDA		8F		
0105	8896	888	0	00	8199	8001		JMP	10199	10001		
0106	8897	888	0	80	5001	811A	8	TDC	W9801			G3. ADJUST STOP TABLE
0107	811A	888	0	08	0000	8898		LIR1	0000	-E5		
0108	8898	888	0	31	8900	8900	-E5	CLL				
0109	8900	888	0	54	8201	812A		STL1	A0001			
0110	812A	888	0	54	8200	813A		STL1	U0001			
0111	813A	888	0	29	8001	814A		LDA1	10001			
0112	814A	888	0	82	8901	815A		TEQ	1F			
0113	815A	888	0	77	815A	816A		ATL				
0115	816A	888	0	0G	0000	817A		IIR1	0000			
0116	817A	888	0	87	8902	8901		TGR		1F		
0117	8902	888	0	64	8001	8901		STA1	10001	1F		
0118	8901	888	0	0G	0002	818A	1	IIR1	0002			
0119	818A	888	0	70	8903	8898		ADD		-E5		
0120	8903	888	0	99	9800	0000		CON	99980	00000		
0121	8899	888	0	08	0001	819A	&E5	LIR1	0001			G4. INITIALIZE
0122	819A	888	0	30	8904	820A		LDL	R1			
0123	820A	888	0	50	8905	821A		STL	RSW			
0124	821A	888	0	05	8906	8907		LUX	OFF	-E6		
0125	8907	888	0	69	8846	822A	-E6	STX1	V0000			
0126	822A	888	0	0G	0001	823A		IIR1	0001			

0127	B23A	888	0	70	B909	B907
0128	B909	888	0	99	9984	0000
0129	B908	888	0	25	5201	B24A
0130	B24A	888	0	30	B910	B25A
0131	B25A	888	0	82	B911	B912
0132	B911	888	2	02	0003	B913
0133	B912	888	0	25	B914	B26A
0134	B26A	888	0	60	B0AB	B27A
0135	B27A	888	2	02	0001	B28A
0136	B28A	888	3	02	0006	B29A
0137	B29A	888	0	25	B915	B30A
0138	B30A	888	0	60	B928	B31A
0139	B31A	888	0	25	B916	B32A
0140	B32A	888	0	60	B533	B917
0141	B913	888	0	25	B0AB	B33A
0142	B33A	888	0	60	B533	B34A
0143	B34A	888	0	25	B918	B35A
0144	B35A	888	0	60	B528	B917
0147	B917	888	1	02	0000	B919
0150	B920	888	1	02	0001	B919
0154	B919	888	0	08	0001	B847
0155	B921	888	0	00	0000	B801
0156	B922	888	0	00	0000	A811
0157	B923	888	0	00	0000	B800
0158	B924	888	0	00	0000	AA11
0159	B925	888	1	25	B921	B926
0160	B906	888	1	25	B923	B926
0161	B927	888	0	25	B928	B929
0162	B928	888	0	00	0000	C602
0163	B930	888	0	25	B931	B929
0164	B931	888	0	00	0000	F602
0165	B932	888	0	25	B933	B929
0166	B933	888	0	00	0000	A513
0167	B934	888	0	25	B935	B929
0168	B935	888	0	00	0000	A111
0169	B929	888	1	02	0000	B36A
0170	B36A	888	0	05	B936	B37A
0171	B37A	888	0	69	B846	B926
0172	B926	888	0	06	B937	B937
0173	B937	888	0	32	0200	B38A
0174	B38A	888	0	37	0800	B39A
0175	B39A	888	0	04	B831	B831
0176	B832	888	0	32	0F00	B938
0177	B833	888	0	32	0200	B939
0178	B939	888	0	20	B940	B40A
0179	B40A	888	0	32	0F00	B41A
0180	B41A	888	0	20	B941	B938
0181	B938	888	0	60	B941	B42A
0182	B42A	888	0	65	B940	B43A
0183	B43A	888	0	06	0001	B44A

	ADD	-E6
	CON 99998	40000
8E6	LDA W0001	
	LDL# 03112	B3123
	TEQ	1F
	LIR4 0003	NOP
1	LDAN 00000	00100
	STA CONN	
	LIR4 0001	
	LIR5 0006	
	LDAN FAAA9	5AAAC
	STA N0081	
	LDAN 00001	20000
	STA Z0081	RUNO
NOP	LDA CONN	
	STA Z0081	
	LDAN 88888	88888
	STA N0081	RUNO
RUNO	LIR2 0000	1F
RUN1	LIR2 0001	1F
1	LIR1 0001	V0001
ONT	CON 00000	08801
1	CON 00000	0AB11
OFT	CON 00000	08800
1	CON 00000	0AA11
ON	LDA2 ONT	1F
OFF	LDA2 OFT	1F
S1	LDA	2F
	CON 00000	0C602
S2	LDA	2F
	CON 00000	0F602
S3	LDA	2F
	CON 00000	0A513
S4	LDA	2F
	CON 00000	0A111
2	LIR2 0000	
	LDX NEXT	
	STX1 V0000	1F
1	CLX	
	SHR 0200	
	SHL 0800	
	JMP1 50000	
S0001	SHR 0F00	1F
S0002	SHR 0200	3F
3	BUF TEMPN	
	SHR 0F00	
	BUF TEMPZ	1F
1	STA TEMPZ	
	STX TEMPN	
	IIR1 0001	

65. TABLE OF CONTENTS

66. (---IN---)

67. NOP

68. RUN SPACES

69. RUN DOTS

70. PROCESS 15.

0184	B44A	888	0	04	8846	8846		JMP1	V0000		
0185	8834	888	0	32	0400	8939	S0003	SHR	0400		JB
0186	8835	888	0	32	0600	8939	S0004	SHR	0600		JB
0187	8836	888	0	32	0800	8939	S0005	SHR	0800		JB
0188	8837	888	0	30	8940	845A	S0006	LDL	TEMPN		
0189	845A	888	0	50	8581	846A		STL	N0134		
0190	846A	888	0	30	8941	847A		LDL	TEMPZ		
0191	847A	888	0	50	8586	8832		STL	Z0134	S0001	
0192	8838	888	0	32	0200	8939	S0007	SHR	0200		JB
0193	8839	888	0	32	0400	8939	S0008	SHR	0400		JB
0194	8840	888	0	32	0600	8939	S0009	SHR	0600		JB
0195	8841	888	0	32	0800	8939	S0010	SHR	0800		JB
0196	8842	888	0	30	8940	848A	S0011	LDL	TEMPN		
0197	848A	888	0	50	8465	849A		STL	N0018		
0198	849A	888	0	30	8941	850A		LDL	TEMPZ		
0199	850A	888	0	50	8470	8832		STL	Z0018	S0001	
0200	8843	888	0	32	0200	8939	S0012	SHR	0200		JB
0201	8844	888	0	32	0400	8939	S0013	SHR	0400		JB
0202	8845	888	0	32	0600	8939	S0014	SHR	0600		JB
0203	8846	888	0	32	0800	8939	S0015	SHR	0800		JB
0204	8862	888	0	30	8940	851A	V0016	LDL	TEMPN		
0205	851A	888	0	50	8550	852A		STL	N0103		
0206	852A	888	0	30	8941	853A		LDL	TEMPZ		
0207	853A	888	0	50	8555	8905		STL	Z0103	RSW	
0208	8904	888	5	07	0010	854A	R1	IIR6	0010		G11.COMMENTS
0209	854A	888	0	70	8942	8943		ADD		-R1	
0210	8942	888	0	99	9800	0000		CON	99980	00000	
0211	8944	888	0	25	8945	8863	&R1	LDA		TROC	
0212	8945	888	0	F6	8632	8946		TBU	C0001	-R2	
0213	8947	888	0	67	4444	000A	&R2	HLT	4444	RA	
0214	8946	888	0	25	8831	855A	-R2	LDA	C0200		
0215	855A	888	0	60	8631	856A		STA	C0000		
0216	856A	888	5	02	0000	8943		LIR6	0000	-R1	
0217	8943	888	5	25	8632	857A	-R1	LDA6	C0001		
0218	857A	888	0	70	8948	8949		ADD		-R3	
0219	8948	888	0	00	0000	0001		CON	00000	00001	
0220	8949	888	5	25	8631	858A	-R3	LDA6	C0000		
0221	858A	888	0	60	8577	859A		STA	Z0125		
0222	859A	888	5	25	8632	860A		LDA6	C0001		
0223	860A	888	0	60	8572	861A		STA	N0125		
0224	861A	888	5	25	8633	862A		LDA6	C0002		
0225	862A	888	0	60	8461	863A		STA	Z0009		
0226	863A	888	5	25	8634	864A		LDA6	C0003		
0227	864A	888	0	60	8456	865A		STA	N0009		
0228	865A	888	5	25	8635	866A		LDA6	C0004		
0229	866A	888	0	60	8546	867A		STA	Z0094		
0230	867A	888	5	25	8636	868A		LDA6	C0005		
0231	868A	888	0	60	8541	869A		STA	N0094		
0232	869A	888	5	25	8637	870A		LDA6	C0006		
0233	870A	888	0	60	8630	871A		STA	Z0178		

0234	871A	888	5	25	8638	872A
0235	872A	888	0	60	8625	873A
0236	873A	888	5	25	8639	874A
0237	874A	888	0	60	8514	875A
0238	875A	888	5	25	8640	876A
0239	876A	888	0	60	8509	8951
0240	8951	888	0	25	8952	8953
0241	8952	888	0	00	8646	8447
0242	8953	888	0	88	0000	877A
0243	877A	888	0	25	8874	878A
0244	878A	888	0	70	8954	879A
0245	879A	888	0	60	8874	880A
0246	880A	888	0	11	0001	8955
0247	8956	888	0	67	3333	000A
0248	8955	888	0	06	8957	8957
0249	8957	888	0	63	8957	881A
0250	881A	888	0	65	8452	882A
0251	882A	888	0	65	8502	883A
0252	883A	888	0	65	8617	884A
0253	884A	888	0	05	8958	885A
0254	885A	888	0	65	8493	886A
0255	886A	888	0	60	8497	887A
0256	887A	888	0	60	8612	888A
0257	888A	888	0	60	8488	889A
0258	889A	888	0	60	8447	890A
0259	890A	888	3	07	0001	8959
0260	8959	888	2	00	8428	8428
0261	8960	888	0	30	8904	8961
0262	8950	888	0	30	8951	8961
0263	8961	888	0	50	8905	891A
0264	891A	888	0	06	8962	8962
0265	8962	888	0	63	8962	892A
0266	892A	888	0	60	8572	893A
0267	893A	888	0	65	8577	894A
0268	894A	888	0	60	8456	895A
0269	895A	888	0	65	8461	896A
0270	896A	888	0	60	8541	897A
0271	897A	888	0	65	8546	898A
0272	898A	888	0	60	8625	899A
0273	899A	888	0	65	8630	800F
0274	800F	888	0	60	8509	801F
0275	801F	888	0	65	8514	8951

R2
 8
 8PR1
 -PR1
 JUMP
 R3
 8R3
 1

LDA6 C0007
 STA N0178
 LDA6 C0008
 STA Z0062
 LDA6 C0009
 STA N0062
 LDA
 JMP N0199
 TCD 0000
 LDA LC
 ADD# 00000
 STA LC
 PRN 0001
 HLT 3333
 CLX
 ZAP
 STX Z0000
 STX Z0050
 STX Z0165
 LDX# 00000
 STX Z0041
 STA N0050
 STA N0165
 STA N0041
 STA N0000
 IIR5 0001
 JMP4 T0000
 LDL R1
 LDL R2
 STL RSW
 CLX
 ZAP
 STA N0125
 STX Z0125
 STA N0009
 STX Z0009
 STA N0094
 STX Z0094
 STA N0178
 STX Z0178
 STA N0062
 STX Z0062

R2
 8F
 N0000
 00001
 -PR1
 RA
 00200
 JUMP
 1F
 1F
 R2

G12.PRINT

0276	B429	888	3	00	B433	B433	T0001	JMP5	Q0000		H. 01 AND 02 OPS
0277	B430	888	3	00	B441	B441	T0002	JMP5	R0000		
0278	B434	888	7	25	B001	B963	Q0001	LDA8	I0001	1F	
0279	B442	888	7	25	B001	B963	R0001	LDA8	I0001	1F	
0280	B963	888	0	31	B964	B964		CLL			
0281	B964	888	0	82	B913	B02F		TEQ	NOP		
0282	B02F	888	0	25	B965	B03F		LDA#	00000	00100	H1. INPUT NODE
0283	B03F	888	0	60	B0AB	B04F		STA	CONN		
0284	B04F	888	0	25	B966	B967		LDA		8F	
0285	B966	888	0	88	B88B	B6FA		NUM		01.	
0286	B967	888	0	60	B528	B05F	8	STA	N0081		
0287	B05F	888	0	25	B968	B969		LDA		8F	
0288	B968	888	0	00	0000	0201		ZON		01.	
0289	B969	888	0	60	B533	B06F	8	STA	Z0081		
0290	B06F	888	0	25	B970	B07F		LDA#	AAAAA	AAAAA	
0291	B07F	888	0	60	B612	B08F		STA	N0165		
0292	B08F	888	0	60	B497	B09F		STA	N0050		
0293	B09F	888	0	25	B971	B10F		LDA#	11111	11111	
0294	B10F	888	0	60	B617	B11F		STA	Z0165		
0295	B11F	888	0	60	B502	B12F		STA	Z0050		
0296	B12F	888	0	25	B7AB	B13F		LDA	N		
0297	B13F	888	0	30	B972	B973		LDL		ASIGN	
0298	B972	888	0	25	B930	B14F		LDA	S2		
0299	B14F	888	1	64	B846	B920		STA3	V0000	RUN1	
0300	B435	888	6	25	B201	B974	Q0002	LDA7	W0001	1F	H2. LINE NUMBER
0301	B443	888	6	25	B201	B974	R0002	LDA7	W0001	1F	
0302	B974	888	0	20	B975	B15F	1	BUF#	B888B	B0000	
0303	B15F	888	0	60	B447	B913		STA	N0000	NOP	
0304	B436	888	0	25	B976	B16F	Q0003	LDA#	10000	00000	H3. TOP LINE OF BOX
0305	B16F	888	0	60	B452	B17F		STA	Z0000		
0306	B17F	888	0	25	B977	B18F		LDA#	AAAAA	AAAAA	
0307	B18F	888	0	30	000A	B19F		LDL	RA		
0308	B19F	888	0	05	B978	B20F		LDX#	00000	00100	
0309	B20F	888	0	65	B0AB	B21F		STX	CONN		
0310	B21F	888	0	05	B979	B980		LDX		1F	
0311	B979	888	0	00	0000	0001		CON	00000	00001	
0312	B444	888	0	25	B981	B982	R0003	LDA		8F	
0313	B981	888	0	8F	AAAA	AAAA		NUM	(---	-----	
0314	B982	888	0	30	B983	B984	8	LDL		8F	
0315	B983	888	0	AA	AAAA	AACB		NUM	-----	----)	
0316	B984	888	0	06	B985	B985	8	CLX			
0317	B985	888	0	65	B0AB	B980		STX	CONN	1F	
0318	B980	888	0	65	B617	B22F	1	STX	Z0165		
0319	B22F	888	0	60	B447	B23F		STA	N0000		
0320	B23F	888	0	50	B612	B24F		STL	N0165		
0321	B24F	888	0	25	B986	B25F		LDA#	AAAAA	AAAAA	
0322	B25F	888	0	60	B528	B26F		STA	N0081		
0323	B26F	888	0	26	B987	B987		CLA			
0324	B987	888	0	60	B533	B27F		STA	Z0081		

0325	827F	888	6	25	5203	828F
0326	828F	888	6	05	5205	829F
0327	829F	888	0	32	0400	830F
0328	830F	888	0	60	8988	831F
0329	831F	888	0	65	8989	832F
0330	832F	888	6	25	5205	833F
0331	833F	888	6	05	5207	834F
0332	834F	888	0	32	0400	835F
0333	835F	888	0	65	8990	836F
0334	836F	888	6	25	5202	837F
0335	837F	888	6	05	5204	838F
0336	838F	888	0	32	0400	839F
0337	839F	888	0	60	8991	840F
0338	840F	888	0	65	8992	841F
0339	841F	888	6	25	5204	842F
0340	842F	888	6	05	5206	843F
0341	843F	888	0	32	0400	844F
0342	844F	888	0	65	8993	845F
0343	845F	888	6	07	0008	846F
0344	846F	888	6	25	5201	847F
0345	847F	888	0	35	8994	848F
0346	848F	888	0	30	8995	849F
0347	849F	888	0	82	8996	8917
0348						
0349	8437	888	0	05	4039	850F
0350	850F	888	0	25	4043	851F
0351	851F	888	0	30	4047	4049
0352	4047	888	0	00	0000	0008
0353	8445	888	0	05	4247	852F
0354	852F	888	0	30	4001	853F
0355	853F	888	0	26	4049	4049
0356	4049	888	0	60	8617	854F
0357	854F	888	0	37	0900	855F
0358	855F	888	0	60	4017	856F
0359	856F	888	0	25	8988	857F
0360	857F	888	0	35	4025	858F
0361	858F	888	0	20	0000	859F
0362	859F	888	0	60	8447	860F
0363	860F	888	0	25	8991	861F
0364	861F	888	0	35	4041	862F
0365	862F	888	0	20	4017	863F
0366	863F	888	0	60	8452	864F
0367	864F	888	0	25	8990	865F
0368	865F	888	0	35	4029	866F
0369	866F	888	0	20	0008	867F
0370	867F	888	0	60	8612	868F
0371	868F	888	0	25	8993	869F
0372	869F	888	0	35	4045	870F
0373	870F	888	0	20	8617	871F
0374	871F	888	0	60	8617	872F

LDA7	W0003
LDX7	W0005
SHR	0400
STA	W1N
STX	W2N
LDA7	W0005
LDX7	W0007
SHR	0400
STX	W3N
LDA7	W0002
LDX7	W0004
SHR	0400
STA	W1Z
STX	W2Z
LDA7	W0004
LDX7	W0006
SHR	0400
STX	W3Z
IIR7	0008
LDA7	W0001
ERS#	HH000
LDL#	07000
TEQ	BRNCH
HHH	
LDX#	88888
LDAN	00000
LDL	
CON	00000
LDX#	F8888
LDL#	00000
CLA	1F
STA	Z0165
SHL	0900
STA	TEMP
LDA	W1N
ERS#	00000
BUF	RX
STA	N0000
LDA	W1Z
ERS#	00000
BUF	TEMP
STA	Z0000
LDA	W3N
ERS#	HHHHH
BUF	RL
STA	N0165
LDA	W3Z
ERS#	HHHHH
BUF	Z0165
STA	Z0165

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R0004

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RUN0

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H4. SUBSECTION NAME

0375	872F	888	0	25	8989	873F		LDA	W2N			
0376	873F	888	0	60	8528	874F		STA	N0081			
0377	874F	888	0	25	8992	875F		LDA	W2Z			
0378	875F	888	0	60	8533	876F		STA	Z0081			
0379	876F	888	6	25	5201	877F		LDA7	W0001			
0380	877F	888	0	35	4005	878F		ERS#	HH000	00000		
0381	878F	888	0	30	4009	879F		LDL#	06000	00000		
0382	879F	888	0	82	8996	880F		TEQ	BRNCH			
0383	880F	888	0	30	4016	881F		LDL#	09000	00000		
0384	881F	888	0	82	4021	8917		TEQ		RUNO		
0385	4021	888	0	26	4024	4024		CLA				
0386	4024	888	0	60	80AB	4028		STA	CONN	BRCH1		
0387	8438	888	0	25	4040	882F	00005	LDA#	10000	00000		H5. BOTTOM OF BOX
0388	882F	888	0	60	8452	883F		STA	Z0000			
0389	883F	888	0	25	4048	884F		LDA#	AAAAA	AAAAA		
0390	884F	888	0	30	000A	885F		LDL	RA			
0391	885F	888	0	05	4006	4008		LDX		1F		
0392	4006	888	0	00	0000	0001		CON	00000	00001		
0393	8446	888	2	02	0001	886F	R0005	LIR4	0001			
0394	886F	888	0	25	4201	4003		LDA		8F		
0395	4201	888	0	8F	AAAA	AAAA		NUM	(---	-----		
0396	4003	888	0	30	4205	4007	8	LDL		8F		
0397	4205	888	0	AA	AAAA	AACB		NUM	-----	---		
0398	4007	888	0	06	4008	4008	8	CLX	1F			
0399	4008	888	0	65	8617	887F	1	STX	Z0165			
0400	887F	888	0	60	8447	888F		STA	N0000			
0401	888F	888	0	50	8612	889F		STL	N0165			
0402	889F	888	0	31	4023	4023		CLL				
0403	4023	888	0	25	4225	4027		LDA		2F		
0404	4225	888	0	AA	AAAA	AAAA		NUM	-----	-----		
0405	4027	888	0	50	8533	890F	2	STL	Z0081			
0406	890F	888	0	60	8528	891F		STA	N0081			
0407	891F	888	6	25	5201	892F		LDA7	W0001			
0408	892F	888	0	35	4405	893F		ERS#	HH000	00000		
0409	893F	888	0	30	4209	894F		LDL#	06000	00000		
0410	894F	888	0	82	8996	895F		TEQ	BRNCH			
0411	895F	888	0	77	895F	896F		ATL				
0412	896F	888	3	07	0001	897F		IIR5	0001			
0413	897F	888	0	25	4223	898F		LDA#	05000	00000		
0414	898F	888	0	82	8996	8917		TEQ	BRNCH	RUNO		
0415	8439	888	0	06	4042	4042	00006	CLX				H6. EXTRA CYCLE
0416	4042	888	0	63	4042	899F		ZAP				
0417	899F	888	0	60	8528	4249		STA	N0081			
0418	4249	888	0	65	8533	4203		STX	Z0081			
0419	4203	888	6	25	5201	4403		LDA7	W0001			
0420	4403	888	0	35	4605	4207		ERS#	HH000	00000		
0421	4207	888	0	30	4409	4011		LDL#	05000	00000		
0422	4011	888	0	82	8996	4014		TEQ	BRNCH			
0423	4014	888	3	07	9999	8996		IIR5	9999	BRNCH		
0424	8440	888	6	25	5201	4603	00007	LDA7	W0001			H7. SPACE BETWEEN

0425	4603	888	0	35	4805	4407
0426	4407	888	0	30	4609	4211
0427	4211	888	0	82	4214	8913
0428	4214	888	0	30	4216	4018
0429	4018	888	0	50	80AB	4022
0430	4022	888	6	25	5203	4055
0431	4055	888	0	35	4607	4809
0432	4809	888	0	70	0008	4414
0433	4414	888	0	60	8533	4218
0434	4218	888	6	25	5203	4255
0435	4255	888	0	37	0500	4013
0436	4013	888	0	70	4015	4418
0437	4418	888	0	60	8528	4222
0438	4222	888	6	07	0004	8917
0439	8441	888	0	30	4243	4245
0440	4245	888	0	25	8874	4449
0441	4449	888	0	87	4002	4202
0442	4002	888	0	75	0008	4449
0443	4202	888	0	30	4004	4206
0444	4206	888	0	60	8874	4010
0445	4010	888	0	87	4213	4413
0446	4213	888	3	07	9999	4217
0447	4217	888	0	30	8951	4221
0448	4221	888	0	25	8905	4425
0449	4425	888	0	82	8913	4228
0450	4228	888	0	25	8960	4032
0451	4032	888	0	60	8905	8913
0452	4413	888	6	25	5201	4803
0453	4803	888	0	30	4455	4807
0454	4807	888	0	87	4210	4410
0455	4210	888	0	67	5555	4655
0456	4655	888	6	07	0002	4413
0457	4410	888	0	35	4012	4614
0458	4614	888	0	60	87AB	4618
0459	4618	888	0	35	4020	4422
0460	4422	888	0	31	4625	4625
0461	4625	888	0	82	4428	4210
0462	4428	888	6	25	5201	4053
0463	4053	888	0	06	4406	4406
0464	4406	888	0	32	0400	4613
0465	4613	888	0	35	4215	4417
0466	4417	888	0	60	82AB	4421
0467	4421	888	6	07	0002	4825
0468	4825	888	3	02	0001	8959

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ERS#	HH000	00000
LDL#	08000	00000
TEQ		NOP
LDL#	00000	00100
STL	CONN	
LDA7	W0003	
ERS#	HHHHH	00000
ADD	RL	
STA	Z0081	
LDA7	W0003	
SHL	0500	
ADD#	00000	88888
STA	N0081	
IIR7	0004	RUN0
LDL#	00000	00066
LDA	LC	2F
TGR		1F
SUB	RL	2B
LDL#	00000	00054
STA	LC	
TGR		1F
IIR5	9999	
LDL	R2	
LDA	RSW	
TEQ	NOP	
LDA	R3	
STA	RSW	NOP
LDA7	W0001	
LDL#	04000	00000
TGR	2F	1F
HLT	5555	
IIR7	0002	1B
ERS#	00HHH	HHHHH
STA	N	
ERS#	00000	0HHHH
CLL		
TEQ		2B
LDA7	W0001	
CLX		
SHR	0400	
ERS#	00HHH	H0000
STA	RB4	
IIR7	0002	
LIR5	0001	JUMP

MS. END OF PAGE

-	0469	8431	888	0	25	8876	4035
	0470	8432	888	0	25	4034	4035
	0471	4034	888	0	30	4036	8877
	0472	4036	888	0	30	4240	8877
	0473	4240	888	0	67	HHHH	4242
	0474	4035	888	0	60	4037	4239
	0475	4239	888	0	31	4442	4442
	0476	4442	888	0	50	80AB	4046
	0477	4046	888	2	02	0005	8433
	0478	4242	888	0	G2	0500	4059
	0479	4059	888	0	C7	4242	4212
	0480	4212	888	0	F2	0600	4000
	0481	4000	888	0	F2	0700	4200
-	0482	4200	888	0	F6	7800	7801
	0483	8433	888	0	30	8905	4237
	0484	4237	888	0	25	8951	4241
	0485	4241	888	0	82	4037	4044
	0486	4044	888	0	25	8874	4248
	0487	4248	888	0	30	4400	4402
	0488	4402	888	0	87	4855	8913
	0489	4855	888	0	30	4057	4259
	0490	4259	888	0	87	4412	8441
	0491	4412	888	0	75	0008	4617
	0492	4617	888	0	60	8874	4248

T0003	LDA	START	1F
T0004	LDA		1F
	LDL		PAGE*
	LDL		PAGE*
	HLL	HHHH	2F
1	STA	OUT	
	CLL		
	STL	CONN	
	LIR4	0005	T0005
2	TRD	OTAP1	
	TBT	2B	
	TRW	OTAP2	
	TRW	OTAP3	
	TBU	7800	7801
T0005	LDL	RSW	
	LDA	R2	
	TEQ	OUT	
	LDA	LC	1F
1	LDL#	00000	00054
	TGR		NOP
	LDL#	00000	00066
	TGR		00008
	SUB	RL	
	STA	LC	18

I. 03 AND 04 OPS
 II. INITIALIZE.
 12. WAIT TILL DONE

0493	4028	888	0	25	4030	4232
0494	4232	888	0	60	8497	4236
0495	4236	888	0	25	4038	4440
0496	4440	888	0	60	8502	4244
0497	4244	888	6	07	9998	4448
0498	4448	888	6	25	5203	4105
0499	8996	888	6	25	5203	4305
0500	4305	888	0	37	0500	4813
0501	4813	888	0	20	4415	4817
0502	4817	888	0	60	8497	4621
0503	4621	888	6	25	5203	4505
0504	4505	888	0	35	4257	4459
0505	4459	888	0	20	4411	4063
0506	4063	888	0	60	8502	4067
0507	4067	888	6	25	5201	4105
0508	4105	888	0	35	4457	4659
0509	4659	888	0	31	4612	4612
0510	4612	888	0	82	4615	4815
0511	4615	888	6	25	5205	4657
0512	4657	888	0	37	0500	4065
0513	4065	888	0	20	4267	4019
0514	4019	888	0	60	8488	4423
0515	4423	888	6	25	5205	4857
0516	4857	888	0	35	4859	4611
0517	4611	888	0	20	8493	4265
0518	4265	888	0	60	8493	4219
0519	4219	888	6	07	0006	8920
0520	4815	888	0	30	4467	8973
0521	4467	888	1	64	8846	4224
0522	4224	888	6	07	0004	8920

BRCH1

LDA# AAAAA AAAAA

STA N0050

LDA# 11111 11111

STA Z0050

IIR7 9998

LDA7 W0003 2F

BRNCH

LDA7 W0003

SHL 0500

BUF# 00000 AAAAA

STA N0050

LDA7 W0003

ERS# HHHHH 00000

BUF# 00000 11111

STA Z0050

LDA7 W0001 2F

2

ERS# 00HHH HHHHH

CLL

J3. WITHIN CHART

TEQ 1F

LDA7 W0005

SHL 0500

BUF# 00000 88888

STA N0041

J4. BRANCH OUT

LDA7 W0005

ERS# HHHHH 00000

BUF Z0041

STA Z0041

IIR7 0006

RUN1

1

LDL ASIGN

J5. ASSIGN COLUMN

STA3 V0000

IIR7 0004 RUN1

0525	8973	888	0	50	4075	4227	ASIGN	STL	EXIT		
0526	4227	888	0	77	4227	4230		ATL			
0527	4230	888	0	35	4432	4234		ERS#	00000	0HMH	
0528	4234	888	0	20	87A8	4238		BUF	N		
0529	4238	888	0	60	4640	4642		STA	STOP		
0530	4642	888	0	07	HMH	4445		IIR	HMH		
0531	4445	888	0	35	0008	4649		ERS	RL		
0532	4649	888	0	60	88A8	4253		STA	RB9		
0533	4253	888	8	25	B201	4208		LDA9	A0001		
0534	4208	888	0	31	4811	4811		CLL			
0535	4811	888	0	82	4814	4064		TEQ		1F	
0536	4814	888	0	08	0000	4667		LIR1	0000	2F	
0537	4667	888	0	29	B200	4622	2	LDA1	U0001		
0538	4622	888	0	82	4275	4475		TEQ	2F		
0539	4475	888	0	06	0002	4667		IIR1	0002	2B	
0540	4275	888	0	29	B400	4430	2	LDA1	P0001		
0541	4430	888	0	64	B200	4235		STA1	U0001		
0542	4235	888	8	60	B201	4840		STA9	A0001		
0543	4840	888	0	25	4842	4444		LDA	2F		
0544	4444	888	8	75	B201	000A		SUB9	A0001	RA	
0545	4842	888	1	08	0000	4645	2	LIR3	0000		
0546	4645	888	0	05	B925	4849		LDX	ON	4F	
0547	4849	888	0	25	B927	4453	4	LDA	S1	5F	
0548	4453	888	0	65	B936	4075	5	STX	NEXT	EXIT	
0549	4064	888	0	25	4416	4818	1	LDA	2F		
0550	4818	888	8	75	B201	000A		SUB9	A0001	RA	
0551	4416	888	1	08	0000	4419	2	LIR3	0000		
0552	4419	888	8	25	B001	4424		LDA9	I0001		
0553	4424	888	0	30	4640	4092		LDL	STOP		
0554	4092	888	0	82	4845	4095		TEQ		1F	
0555	4845	888	8	30	B201	4600		LDL9	A0001		
0556	4600	888	0	08	0000	4653		LIR1	0000	2F	
0557	4653	888	0	29	B400	4408	2	LDA1	P0001		
0558	4408	888	0	82	4061	4261		TEQ	2F		
0559	4261	888	0	06	0002	4653		IIR1	0002	2B	
0560	4061	888	0	31	4264	4264	2	CLL			
0561	4264	888	0	54	B200	4619		STL1	U0001		
0562	4619	888	0	05	B906	4849		LDX	OFF	4B	
0563	4095	888	0	30	B7A8	4099	1	LDL	N		
0564	4099	888	0	05	B925	4853		LDX	ON		
0565	4853	888	8	07	0000	4107		IIR9	0000		
0566	4107	888	0	87	4610	4810		TGR	1F		
0567	4810	888	0	25	B934	4453		LDA	S4	5B	
0568	4610	888	0	25	B932	4453	1	LDA	S3	5B	
0569	B400	888	0	00	0001	0000	P0001	CON	00000	10000	
0570	B402	888	0	00	0005	0000	P0003	CON	00000	50000	
0571	B404	888	0	00	0009	0000	P0005	CON	00000	90000	
0572	B406	888	0	00	0013	0000	P0007	CON	00001	30000	
0573	B408	888	0	00	0003	0000	P0009	CON	00000	30000	

K. THE ASSIGN SUBROUTINE

K1. A(M):ZERO

K2. CHOOSE COLUMN

K3. STOP HERE

K4. RELEASE COLUMN

K5. .A OR .V

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0574	8410	888	0	00	0007	0000	P0011	CON	00000	70000
0575	8412	888	0	00	0011	0000	P0013	CON	00001	10000
0576	8414	888	0	00	0015	0000	P0015	CON	00001	50000
0577	8416	888	0	00	0008	0000	P0017	CON	00000	80000
0578	8418	888	0	00	0014	0000	P0019	CON	00001	40000
0579	8420	888	0	00	0002	0000	P0021	CON	00000	20000
0580	8422	888	0	00	0012	0000	P0023	CON	00001	20000
0581	8424	888	0	00	0004	0000	P0025	CON	00000	40000
0582	8426	888	0	00	0010	0000	P0027	CON	00001	00000
0583	8428	888	0	00	0006	0000	P0029	CON	00000	60000
0584							END	BEGIN		

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```

      (---IN---)
      |
      |
0473 |
-----|-----
: 11. INITIALIZE. :
-----|-----
      |
      |
0475 |
(-----)
( 12. WAIT TILL DONE )
(-----)
  
```

```

DONE..... G1
END ..... HALT
NO! ..... G7
  
```

```

* H. 01 AND 02 OPS
* THE ACTIONS ARE BROKEN INTO A SERIES OF EIGHT
* STEPS, USUALLY ONE STEP PER LINE. THE 01 AND
* 02 OPS PROCESS INTERNALLY THE 05-09 OPS.
* IN THIS ROUTINE H1 MEANS STEP 1, H2 STEP 2,
* AND SO ON.
* H1. INPUT NODE
* IF NO INPUTS TO THE NEXT BOX ARE INDICATED IN
* THE STOP TABLE, GO TO G7.
* OTHERWISE TURN ON THE VERTICAL BOX CONNECTOR
* CONN AND SET UP A O(..... SEQUENCE.
* ASSIGN A COLUMN (ROUTINE K), SET UP SPECIAL
* (O IN THIS COLUMN AND GO TO G9.
* H2. LINE NUMBER
* PUT THE LINE NUMBER INTO PRINT POSITIONS
* 7-10. GO TO G7.
* H3. TOP LINE OF BOX
* SET EITHER .-----, OR (-----) AS THE
* TOP LINE OF A BOX. IF A BRANCH BOX, TURN
* CONN OFF. TAKE THE NEXT THREE WORDS OUT OF
* THE NUM CODE AND EDIT OFF THE FOUR Righthand
* CHARACTERS. THESE WILL FORM THE SUBSECTION
* TITLE FOR THE NEXT LINE.
* CHECK FOR AN 07 OP. IF IT IS FOUND, GO TO J2,
* TO CREATE A BRANCH,
* ELSE GO TO G8.
* H4. SUBSECTION NAME
* EDIT THE SUBSECTION NAME INTO A BOX WITH A
* BORDER.
* IF AN 06 OP IS NEXT, PREPARE A BRANCH
* BY GOING TO J2.
* IF AN 09 OP IS NEXT IT IS AN UNCONDITIONAL
* BRANCH AND WE TURN CONN OFF AND GO TO J1.
* OTHERWISE TO G8.
* H5. BOTTOM OF BOX
* SET UP THE BOTTOM LINE OF THIS BOX.
* IF AN 06 OP IS NEXT THERE ARE FOUR OR MORE
* BRNCHES SO WE WILL ENTER CYCLE H6 NEXT TIME.
* OTHERWISE WE SET UP TO SKIP CYCLE H6.
* BRANCH TO J2 FOR AN 06 OP.
* AN 05 OP ALSO CAUSES A BRANCH AT J2.
* ANYTHING ELSE MEANS GO TO G8 AND DO
* NOTHING SPECIAL.
* H6. EXTRA CYCLE
* H6 WILL BE ENTERED UNTIL WE RUN OUT OF 06 OPS
* AND REACH AN 05 OP. GO TO J2.
* H7. SPACE BETWEEN
* CHECK FOR AN 08 OP. IF SO, LABEL THE LINE
* BETWEEN BOXES AND TURN CONN ON. GO TO G7.
* H8. END OF PAGE
* IF THE LINE COUNT ON THE PAGE IS GREATER THAN
* 54, THERE WON'T BE ROOM FOR ANOTHER BOX ON
* THIS PAGE SO WE WAIT AT STEP H8 UNTIL THE
* COUNT GETS BACK TO 0, GOING TO G7.
* OTHERWISE CHECK THE NEXT LINE FOR A VALID
  
```


