

Exercise Tapes (Ron 2.0, NewTapes3)							2019-05-31 09:00 JG						
OBJECT							SOURCE						
Loc	End	length	op	a	b	d	Label:	op	A	B	D	Comments	
* Card #01 (RW)													
1	7	7	,	008	015		BOOT1	SW	BOOT2	BOOT3		* Set WMs in Card1	
8	14	7	,	022	029		BOOT2	SW	BOOT4	BOOT5			
15	21	7	,	036	040		BOOT3	SW	BOOT6	CDDATA			
22	28	7	L	079	200		BOOT4	MLCWA	79	200		* Move Card #0 Instr to Memory 161-200	
29	35	7	,	168	175		BOOT5	SW	BOOT6	BOOT7			
36	39	4	B	161			BOOT6	B	CLR01				
40	39						* Instructions in Card #01						
40	46	7	,	179	183		CLR01	SW	CLR04	CLR05			
47	53	7	,	187	195		CLR02	SW	CLR06	CLR07			
54	57	4	,	199			CLR03	SW	CLR08				
58	61	4	/	I99			CLR04	CS	3999			* Clear Storage (200-3999)	
62	65	4	H	182			CLR05	SBR	CLR04+3			* Adjust CS Instruction	
66	73	8	B	179	200	R	CLR06	BCE	CLR05	200	R	* Q: Loop if CS not finished	
74	77	4	1	001			CLR07	R	1			* Read next Card, Branch to 1	
78	79	2		"bR"			CLR08	DCW	"bR"			* Data (Space, R)	
80	80	1		"W"			CLR09	DC	W				
* Card #02													* Use WMs from First Card
1	7	7	L	066	359			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	340	341			SW	MEM2	MEM3			
15	21	7	,	345	352			SW	MEM4	MEM5			
22	28	7	,	353	357			SW	MEM6	MEM7			
29	35	7	,	358	359			SW	MEM8	MEM9			
36	39	4	1	001				R	1			* Read next Card, Branch to 1	
40	39												
40	46	7	L	902	N00		START	MLCWA	GRPMK	BUFGM		* Groupmark/WM marks buffer end (2500)	
47	47	1	M					MLC				* Chain Last Data Character (2499)	
48	51	4	M	M99				MLC	BUFEND			* Propagate to Fill Tape Buffer (1500-2498)	
52	58	7	N	111	111		HALT	NOP	111	111			
59	59	1	.					HALT				* Period is 0-3-8 Punch	
60	63	4	S	964			GO	S	TP4ERRS			* Zero Counters	
64	64	1	S					S				* Zero Counters	
65	65	1	S					S				* Zero Counters	
66	66	1	S					S				* Zero Counters	
* Card #03													
1	7	7	L	068	388			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	361	362			SW	MEM2	MEM3			
15	21	7	,	363	364			SW	MEM4	MEM5			
22	28	7	,	369	374			SW	MEM6	MEM7			
29	35	7	,	379	384			SW	MEM8	MEM9			
36	39	4	1	001				R	1			* Read next Card, Branch to 1	
40	39												
40	40	1	S					S				* Zero Counters	
41	41	1	S					S				* Zero Counters	
42	42	1	S					S				* Zero Counters	
43	43	1	S					S				* Zero Counters	
44	48	5	B	393		B	DOTAPES	BSS	TAPE1	B		* Go Write Tape 1 if SS B	
49	53	5	B	476		C	DOTP2	BSS	TAPE2	C		* Go Write Tape 2 if SS C	
54	58	5	B	559		D	DOTP3	BSS	TAPE3	D		* Go Write Tape 3 if SS D	
59	63	5	B	642		E	DOTP4	BSS	TAPE4	E		* Go Write Tape 4 if SS E	
64	68	5	B	721		G	DOTP5	BSS	ENDREEL	G		* REWIND and HALT IF SS=G	
* Card #04													
1	7	7	L	077	426			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	393	397			SW	MEM2	MEM3			
15	21	7	,	402	410			SW	MEM4	MEM5			
22	28	7	,	415	420			SW	MEM6	MEM7			
29	35	7	,	001	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1			* Read next Card, Branch to 1	
40	39												
40	43	4	B	364				B	DOTAPES			* Loop	
44	47	4	S	904			TAPE1	S	CTR			* Zero Counter	
48	52	5	B	721		G	WT1	BSS	ENDREEL	G			
53	60	8	M	%U1	V00	W		WT	%U1	BUFFER		* Write Tape 1000 chars. % = 0-4-8 Punch	

61	65	5	B	467		K		B	ENDREEL1	K			* BRANCH IF END OF REEL
66	70	5	B	446		L		B	WT1ERR	L			* BRANCH IF TAPE WRITE ERROR
71	77	7	A	906	915			ADD	ONE	TP1RECS			* Count Records Written
* Card #05													
1	7	7	L	075	462			MLCAW	CARD	MEMORY			* Move Card Instr to Memory
8	14	7	,	434	442			SW	MEM2	MEM3			
15	21	7	,	446	453			SW	MEM4	MEM5			
22	28	7	,	458	001			SW	MEM6	MEM7			
29	35	7	,	001	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1				* Read next Card, Branch to 1
40	39												
40	46	7	A	906	904			A	ONE	CTR			
47	54	8	B	397	903	0		BCE	WT1	CTRHI	0		* Loop until 10X
55	58	4	B	369				B	DOTP2				* Next Tape
59	65	7	A	906	922			WT1ERR	A	ONE	TP1ERRS		* Count Write Errors
66	70	5	U	%U1		B		BSP	1				* Backspace Tape
71	75	5	U	%U1		E		SKP	1				* Skip and Erase Tape (3 inches)
* Card #06													
1	7	7	L	074	497			MLCAW	CARD	MEMORY			* Move Card Instr to Memory
8	14	7	,	467	472			SW	MEM2	MEM3			
15	21	7	,	476	480			SW	MEM4	MEM5			
22	28	7	,	485	493			SW	MEM6	MEM7			
29	35	7	,	001	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1				* Read next Card, Branch to 1
40	39												
40	43	4	B	397				B	WT1				* Retry Write
44	48	5	U	%U1		B	ENDREEL1	BSP	1				* Backspace Tape
49	52	4	B	721				B	ENDREEL				
53	56	4	S	904			TAPE2	S	CTR				* Zero Counter
57	61	5	B	721		G	WT2	BSS	ENDREEL	G			
62	69	8	M	%U2	V00	W		WT	%U2	BUFFER			* Write Tape 1000 chars. % = 0-4-8 Punch
70	74	5	B	550		K		B	ENDREEL2	K			* BRANCH IF END OF REEL
* Card #07													
1	7	7	L	077	535			MLCAW	CARD	MEMORY			* Move Card Instr to Memory
8	14	7	,	503	510			SW	MEM2	MEM3			
15	21	7	,	517	525			SW	MEM4	MEM5			
22	28	7	,	529	001			SW	MEM6	MEM7			
29	35	7	,	001	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1				* Read next Card, Branch to 1
40	39												
40	44	5	B	529		L		B	WT2ERR	L			* BRANCH IF TAPE WRITE ERROR
45	51	7	A	906	929			ADD	ONE	TP2RECS			* Count Records Written
52	58	7	A	906	904			A	ONE	CTR			
59	66	8	B	480	903	0		BCE	WT2	CTRHI	0		* Loop until 10X
67	70	4	B	374				B	DOTP3				* Next Tape
71	77	7	A	906	936			WT2ERR	A	ONE	TP2ERRS		* Count Write Errors
* Card #08													
1	7	7	L	071	567			MLCAW	CARD	MEMORY			* Move Card Instr to Memory
8	14	7	,	541	546			SW	MEM2	MEM3			
15	21	7	,	550	555			SW	MEM4	MEM5			
22	28	7	,	559	563			SW	MEM6	MEM7			
29	35	7	,	001	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1				* Read next Card, Branch to 1
40	39												
40	44	5	U	%U2		B		BSP	2				* Backspace Tape
45	49	5	U	%U2		E		SKP	2				* Skip and Erase Tape (3 inches)
50	53	4	B	480				B	WT2				* Retry Write
54	58	5	U	%U2		B	ENDREEL2	BSP	2				* Backspace Tape
59	62	4	B	721				B	ENDREEL				
63	66	4	S	904			TAPE3	S	CTR				* Zero Counter
67	71	5	B	721		G	WT3	BSS	ENDREEL	G			
* Card #09													
1	7	7	L	071	599			MLCAW	CARD	MEMORY			* Move Card Instr to Memory
8	14	7	,	576	581			SW	MEM2	MEM3			
15	21	7	,	586	593			SW	MEM4	MEM5			
22	28	7	,	001	001			SW	MEM6	MEM7			

69	73	5	B	†01		F	ENDR05	BSS	PRINT	F		* SS=F MEANS PRINT TOTALS	
* Card #14													
1	7	7	L	076	782			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	751	755			SW	MEM2	MEM3			
15	21	7	,	760	765			SW	MEM4	MEM5			
22	28	7	,	769	774			SW	MEM6	MEM7			
29	35	7	,	779	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1			* Read next Card, Branch to 1	
40	39												
40	44	5	B	345		G	GOHALT	BSS	HALT	G		* SS=G MEANS HALT	
45	48	4	B	353				B	GO			* ELSE KEEP GOING	
49	53	5	U	%U1		M	RWD1	WTM	1			* Write Tape Mark	
54	58	5	U	%U1		R		RWD	%U1			* Rewind The Tape	
59	62	4	B	726				B	ENDR02				
63	67	5	U	%U2		M	RWD2	WTM	2			* Write Tape Mark	
68	72	5	U	%U2		R		RWD	%U2			* Rewind The Tape	
73	76	4	B	731				B	ENDR03				
* Card #15 (Modif)													
1	7	7	L	068	811			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	788	793			SW	MEM2	MEM3			
15	21	7	,	797	802			SW	MEM4	MEM5			
22	28	7	,	807	811			SW	MEM6	MEM7			
29	35	7	,	001	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1			* Read next Card, Branch to 1	
40	39												
40	44	5	U	%U3		M	RWD3	WTM	3			* Write Tape Mark	
45	49	5	U	%U3		R		RWD	%U3			* Rewind The Tape	
50	53	4	B	736				B	ENDR04				
54	58	5	U	%U4		M	RWD4	WTM	4			* Write Tape Mark	
59	63	5	U	%U4		R		RWD	%U4			* Rewind The Tape	
64	67	4	B	741				B	ENDR05				
68	68	1		"0"				DCW	"0"			* WM After last instruction	
* Card #16 (was #19)													
1	7	7	L	061	922			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	902	903			SW	MEM2	MEM3			
15	21	7	,	906	907			SW	MEM4	MEM5			
22	28	7	,	908	909			SW	MEM6	MEM7			
29	35	7	,	916	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1			* Read next Card, Branch to 1	
40	39												
40	40	1		"9"			BUFDATA	DCW	"9"			* DATA TO FILL BUFFER	
41	41	1		"¥"			GRPMK	DCW	"¥"			* Group Mark = 12-7-8 Punch	
42	41						CTRHI	EQU	*			* High Byte of Counter	
42	43	2		"00"			CTR	DCW	"00"			* Counter	
44	44	1		"0"			ZERO	DC	"0"			* Value 0 (No WM)	
45	45	1		"1"			ONE	DCW	"1"			* Value 1	
46	46	1		"2"			TWO	DCW	"2"			* Value 2	
47	47	1		"3"			THREE	DCW	"3"			* Value 3	
48	54	7		"0000000"			TP1RECS	DCW	"0000000"			* Count of Records Written	
55	61	7		"0000000"			TP1ERRS	DCW	"0000000"			* Count of Write Errors	
* Card #17 (was #20)													
1	7	7	L	074	957			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	930	937			SW	MEM2	MEM3			
15	21	7	,	944	951			SW	MEM4	MEM5			
22	28	7	,	001	001			SW	MEM6	MEM7			
29	35	7	,	001	001			SW	MEM8	MEM9			
36	39	4	1	001				R	1			* Read next Card, Branch to 1	
40	39												
40	46	7		"0000000"			TP2RECS	DCW	"0000000"			* Count of Records Written	
47	53	7		"0000000"			TP2ERRS	DCW	"0000000"			* Count of Write Errors	
54	60	7		"0000000"			TP3RECS	DCW	"0000000"			* Count of Records Written	
61	67	7		"0000000"			TP3ERRS	DCW	"0000000"			* Count of Write Errors	
68	74	7		"0000000"			TP4RECS	DCW	"0000000"			* Count of Records Written	
* Card #18 (was #21)													
1	7	7	L	075	993			MLCAW	CARD	MEMORY		* Move Card Instr to Memory	
8	14	7	,	965	979			SW	MEM2	MEM3			

498	502	5	B	529		L		B	WT2ERR	L			* BRANCH IF TAPE WRITE ERROR	
503	509	7	A	906	929			ADD	ONE	TP2RECS			* Count Records Written	
510	516	7	A	906	904			A	ONE	CTR				
517	524	8	B	480	903	0		BCE	WT2	CTRHI	0		* Loop until 10X	
525	528	4	B	374				B	DOTP3				* Next Tape	
529	535	7	A	906	936			WT2ERR	A	ONE	TP2ERRS		* Count Write Errors	
536	535							* From Card #08						
536	540	5	U	%U2		B		BSP	2				* Backspace Tape	
541	545	5	U	%U2		E		SKP	2				* Skip and Erase Tape (3 inches)	
546	549	4	B	480				B	WT2				* Retry Write	
550	554	5	U	%U2		B		ENDREEL2	BSP	2			* Backspace Tape	
555	558	4	B	721				B	ENDREEL					
559	562	4	S	904				TAPE3	S	CTR			* Zero Counter	
563	567	5	B	721		G		WT3	BSS	ENDREEL	G			
568	567							* From Card #09						
568	575	8	M	%U3	V00	W		WT	%U3	BUFFER			* Write Tape 1000 chars. % = 0-4-8 Punch	
576	580	5	B	633		K		B	ENDREEL3	K			* BRANCH IF END OF REEL	
581	585	5	B	612		L		B	WT3ERR	L			* BRANCH IF TAPE WRITE ERROR	
586	592	7	A	906	943			ADD	ONE	TP3RECS			* Count Records Written	
593	599	7	A	906	904			A	ONE	CTR				
600	599							* From Card #10						
600	607	8	B	563	903	0		BCE	WT3	CTRHI	0		* Loop until 10X	
608	611	4	B	379				B	DOTP4				* Next Tape	
612	618	7	A	906	950			WT3ERR	A	ONE	TP3ERRS		* Count Write Errors	
619	623	5	U	%U3		B		BSP	3				* Backspace Tape	
624	628	5	U	%U3		E		SKP	3				* Skip and Erase Tape (3 inches)	
629	632	4	B	563				B	WT3				* Retry Write	
633	637	5	U	%U3		B		ENDREEL3	BSP	3			* Backspace Tape	
638	637							* From Card #11						
638	641	4	B	721				B	ENDREEL					
642	645	4	S	904				TAPE4	S	CTR			* Zero Counter	
646	650	5	B	721		G		WT4	BSS	ENDREEL	G			
651	658	8	M	%U4	V00	W		WT	%U4	BUFFER			* Write Tape 1000 chars. % = 0-4-8 Punch	
659	663	5	B	716		K		B	ENDREEL4	K			* BRANCH IF END OF REEL	
664	668	5	B	695		L		B	WT4ERR	L			* BRANCH IF TAPE WRITE ERROR	
669	675	7	A	906	957			ADD	ONE	TP4RECS			* Count Records Written	
676	675							* From Card #12						
676	682	7	A	906	904			A	ONE	CTR				
683	690	8	B	646	903	0		BCE	WT4	CTRHI	0		* Loop until 10X	
691	694	4	B	384				B	DOTP5				* Next Tape	
695	701	7	A	906	964			WT4ERR	A	ONE	TP4ERRS		* Count Write Errors	
702	706	5	U	%U4		B		BSP	4				* Backspace Tape	
707	711	5	U	%U4		E		SKP	4				* Skip and Erase Tape (3 inches)	
712	711							* From Card #13						
712	715	4	B	646				B	WT4				* Retry Write	
716	720	5	U	%U4		B		ENDREEL4	BSP	4			* Backspace Tape	
721	725	5	B	755		B		ENDREEL	BSS	RWD1	B		* Rewind Tape 1	
726	730	5	B	769		C		ENDR02	BSS	RWD2	C		* Rewind Tape 2	
731	735	5	B	783		D		ENDR03	BSS	RWD3	D		* Rewind Tape 3	
736	740	5	B	797		E		ENDR04	BSS	RWD4	E		* Rewind Tape 4	
741	745	5	B	†01		F		ENDR05	BSS	PRINT	F		* SS=F MEANS PRINT († = RM = 0-2-8 Punch)	
746	745							* From Card #14						
746	750	5	B	345		G		GOHALT	BSS	HALT	G		* SS=G MEANS HALT	
751	754	4	B	353				B	GO				* ELSE KEEP GOING	
755	759	5	U	%U1		M		RWD1	WTM	1			* Write Tape Mark	
760	764	5	U	%U1		R			RWD	%U1			* Rewind The Tape	
765	768	4	B	726				B	ENDR02					
769	773	5	U	%U2		M		RWD2	WTM	2			* Write Tape Mark	
774	778	5	U	%U2		R			RWD	%U2			* Rewind The Tape	
779	782	4	B	731				B	ENDR03					
783	782							* From Card #15 (Modif)						
783	787	5	U	%U3		M		RWD3	WTM	3			* Write Tape Mark	
788	792	5	U	%U3		R			RWD	%U3			* Rewind The Tape	
793	796	4	B	736				B	ENDR04					
797	801	5	U	%U4		M		RWD4	WTM	4			* Write Tape Mark	
802	806	5	U	%U4		R			RWD	%U4			* Rewind The Tape	

201	201	1				HD2	DS	1		* Header Line 2
202	215	14					DS	"WRITESbERRORSb"		
216	229	14					DS	"WRITESbERRORSb"		
230	243	14					DS	"WRITESbERRORSb"		
244	257	14					DS	"WRITESbERRORSb"		
201	207	7				PTP1RECS	DS	7		* Statistics
208	214	7				PTP1ERRS	DS	7		
215	221	7				PTP2RECS	DS	7		
222	228	7				PTP2ERRS	DS	7		
229	235	7				PTP3RECS	DS	7		
236	242	7				PTP3ERRS	DS	7		
243	249	7				PTP4RECS	DS	7		
250	256	7				PTP4ERRS	DS	7		
						* TAPE BUFFER FORMAT				
1500	1499		V00			BUFBEG	EQU	1500		* TAPE WRITE BUFFER
1500	2498	999	V00			BUFFER	DS	999		
2499	2499	1	M99			BUFEND	DS	1		* LAST DATA BYTE
2500	2500	1	N00			BUFGM	DS	1		* GROUPMARK/WM