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PROGRAM DESCRIPTION

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Catalog No. 310005A

IDENTIFICATION: 810A Relocatable Object Tape Copy

AUTHOR: W. A. Speer

ACCEPTED: July 28, 1967

PURPOSE: To copy relocatable object paper tapes onto paper tape or magnetic tape.

COMPUTER
CONFIGURATION: 810A with ASR-33 High Speed Reader/Punch or Magnetic Tape Optional

SUBROUTINES
REQUIRED: H\$WR 330006A
B\$WRM7 330004A

STORAGE: 507₈ locations

TIMING: N/A

LOADING
PROCEDURE: Load program (relocatable) with the 810A Standard Paper Tape Load/Dump (Catalog No. 300001B).

USE: This relocatable program may be used to combine separately assembled object tapes each of which has an end-of-job code into one continuous tape. The input tape must be in the relocatable object tape format.

Switch Settings:

SW 0 set - High Speed Paper Tape
reset- ASR-33 Paper Tape input

SW 2 set - Magnetic Tape output
reset- Paper Tape input

SW 3 To be set or left in neutral position when required by the program. In the set position, the end-of-job code just read will be recognized and written on the output device. The job is then terminated.

1

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0001 00000 00000000 .....
0002 00000 00000000 *
0003 00000 00000000 * 810A  RELOCATEABLE OBJECT TAPE COPY          CATALOG NO. 310005A
0004 00000 00000000 *
0005 00000 00000000 * PROGRAMMER W A SPEER
0006 00000 00000000 *
0007 00000 00000000 * JULY 28, 1967
0008 00000 00000000 *
0009 00000 00000000 * PURPOSE  TO COPY OBJECT PAPER TAPE ONTO PAPER
0010 00000 00000000 * TAPE OR MAGNETIC TAPE.  THE PROGRAM CONTAINS
0011 00000 00000000 * AN OPTION TO SUPPRESS END OF JOB CODES FOUND
0012 00000 00000000 * ON PAPER TAPES WHICH ALLOWS COMBINING SEVERAL
0013 00000 00000000 * SEPERATELY ASSEMBLED PROGRAMS.
0014 00000 00000000 *
0015 00000 00000000 * SWITCH SETTINGS
0016 00000 00000000 * SW 0 SET - HIGH SPEED PAPER TAPE I/P
0017 00000 00000000 * SW 2 SET - MAGNETIC TAPE O/P (TRANSPORT 1)
0018 00000 00000000 * SW 3 - TO BE SET OR LEFT NEUTRAL WHEN
0019 00000 00000000 * REQUESTED BY THE PROGRAM.  IN THE
0020 00000 00000000 * SET POSITION THE END OF JOB
0021 00000 00000000 * CODE JUST READ WILL BE
0022 00000 00000000 * RECOGNIZED, WRITTEN ON THE
0023 00000 00000000 * OUTPUT DEVICE, AND THE JOB
0024 00000 00000000 * TERMINATED.
0025 00000 00000000 *
0026 00000 00000000 .....
0027 00000 00000000 REL
0028 00000 00000000 * BINARY PAPER TAPE TO BINARY PAPER TAPE OR MAG TAPE:
0029 00000 00000000 *
0030 00000 00130402 STRT SNS 2 IS O/P PAPER TP. OR MAG TP.
0031 00001 11000330 BRU MAGT ON - MAGNETIC TAPE
0032 00002 02077552 LBA --150 OFF - PAPER TAPE
0033 00003 12000123 SPB PLDR PUNCH LEADER
0034 00004 00130400 L00P SNS 0 WHICH PAPER TAPE UNIT
0035 00005 11000012 BRU A2 ON - H.S.P.T.
0036 00006 12000252 SPB ASRR OFF - ASR-33 P.T. I/P
0037 00007 25400400 DAC BIN
0038 00010 00000067 DATA 55
0039 00011 11000015 BRU CK GO TO CHECK SUM ROUTINE
    
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0040	00012	12000143	A2	SPB	HSTI	HIGH SPEED TAPE I/P
0041	00013	25400400		DAC	BIN	
0042	00014	00000067		DATA	55	
0043	00015	12000104	CK	SPB	CKSM	CHECK SUM
0044	00016	12000033		SPB	CK\$	CHECK FOR A \$
0045	00017	11100021		BRU	*+2	NO \$ FOUND
0046	00020	11000004		BRU	L00P	\$ FOUND BUT IGNORED
0047	00021	00130400		SNS	0	WHICH PAPER TAPE UNIT
0048	00022	11000027		BRU	B2	BN - H.S.P.T.
0049	00023	12000222		SPB	ASRP	OFF - ASR-33 0/P
0050	00024	25400400		DAC	BIN	
0051	00025	00000067		DATA	55	
0052	00026	11000004		BRU	L00P	GO BACK FOR MORE I/P
0053	00027	12000172	B2	SPB	HST0	HIGH SPEED PUNCH
0054	00030	25400400		DAC	BIN	
0055	00031	00000067		DATA	55	
0056	00032	11000004		BRU	L00P	GO BACK FOR MORE I/P
0057	00033	00000000	*			
0058	00033	00000000	* CHECK FOR A \$			
0059	00033	00000000	*			
0060	00033	00000000	CK\$	***	**	
0061	00034	01000400		LAA	BIN	PICK UP FIRST WD OF BINARY
0062	00035	15050000		CMA	=*150000	IS IT A \$
0063	00036	11200033		BRU*	CK\$	NO - RETURN
0064	00037	11100041		BRU	*+2	YES
0065	00040	11200033		BRU*	CK\$	NO - RETURN
0066	00041	12000301		SPB	ASR0	ASK OPERATOR ABOUT ACTION
0067	00042	25400501		DAC	INQR	TO BE TAKEN
0068	00043	00000006		DATA	6	
0069	00044	00000000		HLT		STOP AND WAIT FOR REPLY
0070	00045	00130403		SNS	3	IS IT TO BE IGNORED
0071	00046	11100051		BRU	*+3	NO - WRITE IT OUT
0072	00047	14000033		IMS	CK\$	YES - SET UP RETURN
0073	00050	11200033		BRU*	CK\$	RETURN
0074	00051	00130400		SNS	0	WHICH PAPER TAPE UNIT
0075	00052	11000057		BRU	AA2	H.S.P.T.
0076	00053	12000222		SPB	ASRP	ASR-33 PUNCH
0077	00054	25400400		DAC	BIN	
0078	00055	00000067		DATA	55	
0079	00056	11000062		BRU	LDR	GO TO LEADER ROUTINE

0060	00057	12000172	AA2	SPB	HST0	HIGH SPEED PUNCH
0061	00060	25400400		DAC	BIN	
0062	00061	00000067		DATA	55	
0063	00062	00130400	LDR	SNS	0	WHICH UNIT
0064	00063	11000071		BRU	L2	H.S.P.T.
0065	00064	01000472		LAA	CRLF	ASR-33 - PICK UP CR,LF
0066	00065	00170101		ABP	1,W	Ø/P CARRIAGE RETURN
0067	00066	00001016		LSL	8	SHIFT
0068	00067	00170101		ABP	1,W	Ø/P LINE FEED
0069	00070	11000075		BRU	FIN	GØ ARØUND
0090	00071	01000472	L2	LAA	CRLF	PICK UP CR,LF
0091	00072	00170102		ABP	2,W	Ø/P CARRIAGE RETURN
0092	00073	00001016		LSL	8	SHIFT
0093	00074	00170102		ABP	2,W	Ø/P LINE FEED
0094	00075	02077521	FIN	LBA	=-175	
0095	00076	12000123		SPB	PLDR	Ø/P LEADER
0096	00077	12000301		SPB	ASRØ	TYPE "ØØJ" ØN ASR-33
0097	00100	25400477		DAC	ØØJ	
0098	00101	00000002		DATA	2	
0099	00102	00000000		HLT		STØP
0100	00103	11100102		BRU	*-1	
0101	00104	00000000	*			
0102	00104	00000000	*	CHECK	SUM	RØUTINE
0103	00104	00000000	*			
0104	00104	00000000	CKSM	***	**	
0105	00105	02000474		LBA	D54	LOAD B WITH NEG WD CT
0106	00106	00000003		CLA		ZERØ A ACCUMULATØR
0107	00107	05400466		AMA	BIN+54,1	ADD BINARY DATA TØ A
0108	00110	00000026		IBS		ARE WE FINISHED
0109	00111	11100107		BRU	*-2	NØ - GØ BACK
0110	00112	05000466		AMA	BIN+54	ADD CKSM TØ A
0111	00113	00000022		SAZ		IS THE SUM ZERØ
0112	00114	11000116		BRU	ERR	NØ - ERRØR
0113	00115	11200104		BRU*	CKSM	YES - RETURN TØ PRØG
0114	00116	12000301	ERR	SPB	ASRØ	TYPE ØUT ERRØR MESSAGE
0115	00117	25400475		DAC	MSG	
0116	00120	00000002		DATA	2	
0117	00121	00000000		HLT		
0118	00122	11200104		BRU*	CKSM	
0119	00123	00000000	*			

0120	00123	00000000	* PUNCH LEADER ROUTINE	
0121	00123	00000000	*	
0122	00123	00000000	PLDR *** **	
0123	00124	00000003	CLA	PUT ZERO'S IN A
0124	00125	00130400	SNS 0	WHICH PAPER TAPE UNIT
0125	00126	11000135	BRU ARND	ON - H.S.P.T.
0126	00127	00130101	CEU 1,W	OFF - INITIALIZE ASR-33
0127	00130	00002000	DATA '2000	
0128	00131	00170101	AOP 1,W	O/P A BLANK
0129	00132	00000026	IBS	FINISHED
0130	00133	11100131	BRU *-2	NO
0131	00134	11200123	BRU* PLDR	YES - RETURN
0132	00135	00130102	ARND CEU 2,W	INITIALIZE H.S.P.T.
0133	00136	00004000	DATA '4000	PUNCH POWER ON
0134	00137	00170102	AOP 2,W	O/P A BLANK
0135	00140	00000026	IBS	FINISHED
0136	00141	11100137	BRU *-2	NO
0137	00142	11200123	BRU* PLDR	YES - RETURN
0138	00143	00000000	*	
0139	00143	00000000	* HIGH SPEED PAPER TAPE READ ROUTINE	
0140	00143	00000000	*	
0141	00143	00000000	HSTI *** **	
0142	00144	01200143	LAA* HSTI	PICK UP ADDRESS OF BUF
0143	00145	03000470	STA ADDR	STORE IT
0144	00146	14000143	IMS HSTI	INCREMENT TO WD CT
0145	00147	01200143	LAA* HSTI	PICK UP WD CT
0146	00150	14000143	IMS HSTI	SET UP RETURN
0147	00151	00000002	NEG	NEGATE WD CT
0148	00152	00000005	TAB	PUT IT IN B FOR INDEX
0149	00153	00130102	CEU 2,W	INITIALIZE H.S.P.T.
0150	00154	00001000	DATA '1000	READER ENABLE
0151	00155	00170302	AIP 2,W	READ FIRST CHAR
0152	00156	15000377	CMA ='000377	IS IT A DELETE CODE
0153	00157	11100155	BRU *-2	NO - READ AGAIN
0154	00160	11100162	BRU *+2	YES - START READING BINARY
0155	00161	11100155	BRU *-4	NO - READ AGAIN
0156	00162	00170302	PTIP AIP 2,W	READ FIRST CHAR OF WD
0157	00163	00001016	LSL 8	SHIFT
0158	00164	00174302	AIP 2,W,R	READ SECOND CHAR OF WD
0159	00165	03200470	STA* ADDR	STORE WD

0160	00166	14000470	IMS	ADDR	INCREMENT TO NEXT WD
0161	00167	00000026	IBS		FINISHED
0162	00170	11000162	BRU	PTIP	NO - READ AGAIN
0163	00171	11200143	BRU*	HSTI	RETURN
0164	00172	00000000	*		
0165	00172	00000000	*	B/P	BINARY DATA ON HIGH SPEED PUNCH
0166	00172	00000000	*		
0167	00172	00000000	HST0	*** **	
0168	00173	01200172	LAA*	HST0	PICK UP ADDRESS OF BUF
0169	00174	03000470	STA	ADDR	STORE IT
0170	00175	14000172	IMS	HST0	INCREMENT TO WORD COUNT
0171	00176	01200172	LAA*	HST0	PICK UP WORD COUNT
0172	00177	14000172	IMS	HST0	SET UP RETURN ADDRESS
0173	00200	00000002	NEG		NEGATE WORD COUNT
0174	00201	00000005	TAB		PUT IT IN B FOR COUNTER
0175	00202	00130102	CEU	2,W	INITIALIZE PUNCH
0176	00203	00004000	DATA	14000	PUNCH POWER ON
0177	00204	01000472	LAA	CRLF	PICK UP CARR. RET. LINE FEED
0178	00205	00170102	A0P	2,W	O/P CARRIAGE RETURN CODE
0179	00206	00001016	LSL	8	SHIFT
0180	00207	00170102	A0P	2,W	O/P LINE FEED CODE
0181	00210	01000473	LAA	DELE	PICK UP DELETE CODE
0182	00211	00170102	A0P	2,W	O/P DELETE CODE
0183	00212	01200470	BCK	LAA* ADDR	PICK UP FIRST WD OF BUF
0184	00213	00170102	A0P	2,W	O/P FIRST CHAR OF WORD
0185	00214	00001016	LSL	8	SHIFT
0186	00215	00170102	A0P	2,W	O/P SECOND CHAR OF WORD
0187	00216	14000470	IMS	ADDR	INCREMENT TO NEXT WORD
0188	00217	00000026	IBS		TEST WD COUNT - FINISHED
0189	00220	11000212	BRU	BCK	NO - GO BACK FOR NEXT WD
0190	00221	11200172	BRU*	HST0	YES - RETURN
0191	00222	00000000	*		
0192	00222	00000000	*	B/P	BINARY DATA ON ASR-33 PUNCH
0193	00222	00000000	*		
0194	00222	00000000	ASRP	*** **	
0195	00223	01200222	LAA*	ASRP	PICK UP ADDRESS OF BUF
0196	00224	03000470	STA	ADDR	STORE IT
0197	00225	14000222	IMS	ASRP	INCREMENT TO WORD COUNT
0198	00226	01200222	LAA*	ASRP	PICK UP WORD COUNT
0199	00227	14000222	IMS	ASRP	SET UP RETURN ADDRESS

0200	00230	00000002	NEG	NEGATE WORD COUNT
0201	00231	00000005	TAB	PUT IT IN B FOR COUNTER
0202	00232	00130101	CEU 1,W	INITIALIZE PUNCH
0203	00233	00000000	DATA *5000	
0204	00234	01000472	LAA CRLF	PICK UP CARR RET, LINE FEED
0205	00235	00170101	ABP 1,W	O/P CARRIAGE RETURN CODE
0206	00236	00001016	LSL B	SHIFT
0207	00237	00170101	ABP 1,W	O/P LINE FEED CODE
0208	00240	01000473	LAA DELE	PICK UP DELETE CODE
0209	00241	00170101	ABP 1,W	O/P DELETE CODE
0210	00242	01200470	AGN LAA* ADDR	PICK UP FIRST WD OF BUF
0211	00243	00170101	ABP 1,W	O/P FIRST CHAR OF WORD
0212	00244	00001016	LSL B	SHIFT
0213	00245	00170101	ABP 1,W	O/P SECOND CHAR OF WORD
0214	00246	14000470	IMS ADDR	INCREMENT TO NEXT WORD
0215	00247	00000026	IBS	TEST WD COUNT - FINISHED
0216	00250	11000242	BRU AGN	NO - GO BACK FOR NEXT WD
0217	00251	11200222	BRU* ASRP	YES -RETURN
0218	00252	00000000	*	
0219	00252	00000000	* READ BINARY DATA ON ASR-33	
0220	00252	00000000	*	
0221	00252	00000000	ASRR *** **	
0222	00253	01200252	LAA* ASRR	PICK UP ADDRESS OF BUF
0223	00254	03000470	STA ADDR	STORE IT
0224	00255	14000252	IMS ASRR	INCREMENT TO WORD COUNT
0225	00256	01200252	LAA* ASRR	PICK UP WORD COUNT
0226	00257	14000252	IMS ASRR	SET UP RETURN ADDRESS
0227	00260	00000002	NEG	NEGATE WORD COUNT
0228	00261	00000005	TAB	PUT IT IN B FOR COUNTER
0229	00262	00130101	CEU 1,W	INITIALIZE READER
0230	00263	00004000	DATA *4000	READER MODE SETUP
0231	00264	00170301	AIP 1,W	PICK UP FIRST CHAR
0232	00265	15000377	CMA =*000377	IS IT A DELETE CODE
0233	00266	11100264	BRU *-2	NO - READ AGAIN
0234	00267	11100271	BRU *+2	YES - START READING BINARY
0235	00270	11100264	BRU *-4	NO - READ AGAIN
0236	00271	00170301	MORE AIP 1,W	I/P FIRST CHAR OF WD
0237	00272	00001016	LSL B	SHIFT
0238	00273	00174301	AIP 1,W,R	I/P SECOND CHAR OF WD
0239	00274	03200470	STA* ADDR	STORE WORD IN BUF

0240	00275	14000470	IMS	ADDR	INCREMENT TO NEXT WD
0241	00276	00000026	IBS		TEST WD CT - FINISHED
0242	00277	11000271	BRU	MORE	NO - GO BACK FOR NEXT WD
0243	00300	11200252	BRU*	ASRR	YES - RETURN
0244	00301	00000000	*		
0245	00301	00000000	*	ASR-33	KEYBOARD O/P
0246	00301	00000000	*		
0247	00301	00000000	ASRØ	*** **	
0248	00302	01200301	LAA*	ASRØ	PICK UP BUFF ADDRESS AND -
0249	00303	03000467	STA	HØLD	SAVE IT
0250	00304	14000301	IMS	ASRØ	INCREMENT TO WORD COUNT
0251	00305	01200301	LAA*	ASRØ	PICK UP WORD COUNT
0252	00306	14000301	IMS	ASRØ	INCREMENT TO RETURN ADDRESS
0253	00307	00000002	NEG		NEGATIVE WORD COUNT -
0254	00310	00000005	TAB		SAVE IT
0255	00311	01000472	LAA	CRLF	LOAD CARR RETURN + LINE FEED
0256	00312	12000323	SPB	ØP	Ø/P THEM
0257	00313	01200467	ØPUT	LAA* HØLD	LOAD 1ST WD OF BUFF
0258	00314	12000323	SPB	ØP	Ø/P 1ST WD
0259	00315	14000467	IMS	HØLD	INCREMENT BUFF ADDRESS
0260	00316	00000026	IBS		FINISHED
0261	00317	11000313	BRU	ØPUT	NO
0262	00320	01000471	LAA	CRBL	YES - LOAD CARR RET, BELL
0263	00321	12000323	SPB	ØP	Ø/P
0264	00322	11200301	BRU*	ASRØ	EXIT
0265	00323	00000000	ØP	*** **	
0266	00324	00170101	AØP	1,W	
0267	00325	00001016	LSL	8	
0268	00326	00170101	AØP	1,W	
0269	00327	11200323	BRU*	ØP	
0270	00330	00000000	*		
0271	00330	00000000	*	MAG TAPE	MAIN
0272	00330	00000000	*		
0273	00330	00130400	MAGT	SNS 0	- TEST FOR ASR OR H.S.P.T.
0274	00331	11000336	BRU	A22	- SNS 0 ON - H.S.P.T.
0275	00332	12000252	SPB	ASRR	- SNS 0 OFF - I/P BINARY
0276	00333	25400400	DAC	BIN	DATA ON ASR-33 READER
0277	00334	00000067	DATA	55	
0278	00335	11100341	BRU	**+4	
0279	00336	12000143	A22	SPB	HST1
					- I/P BINARY DATA ON

0280	00337	25400400	DAC	BIN	HIGH SPEED TAPE READER
0281	00340	00000067	DATA	55	
0282	00341	12000104	SPB	CKSM	CHECK SUM ROUTINE
0283	00342	12000344	SPB	CK\$1	- CHECK FOR A \$
0284	00343	11000330	BRU	MAGT	
0285	00344	00000000	*		
0286	00344	00000000	CK\$1	*** **	
0287	00345	00000000	*		
0288	00345	01000400	LAA	BIN	- FIRST WD OF BINARY DATA
0289	00346	15050000	CHA	=*150000	IS IT A \$
0290	00347	11100351	BRU	*+2	- NO - WRITE BINARY
0291	00350	11000356	BRU	ASK	- YES
0292	00351	01077771	LAA	=-7	- NO - WRITE BINARY
0293	00352	55100000	CALL	B\$HR	
0293	00353	20000000			
0293	00353	00422027			
0293	00353	04420040			
0294	00353	25400400	DAC	BIN	
0295	00354	00000067	DATA	55	
0296	00355	11200344	BRU*	CK\$1	- RETURN
0297	00356	12000301	ASK	SPB ASR0	TYPE THE MESSAGE
0298	00357	25400501	DAC	INQR	SNS 3 TO HLT
0299	00360	00000006	DATA	6	
0300	00361	00000000	HLT		WAIT FOR OPERATOR
0301	00362	00130403	SNS	3	- TEST SNS 3
0302	00363	11000365	BRU	E0F	- ON
0303	00364	11200344	BRU*	CK\$1	- OFF - RETURN
0304	00365	01077771	E0F	LAA =-7	
0305	00366	55100000	CALL	B\$HR	WRITE END OF JOB CODE
0305	00367	20000000			
0305	00367	00422027			
0305	00367	04420040			
0306	00367	25400400	DAC	BIN	
0307	00370	00000067	DATA	55	
0308	00371	01077771	LAA	=-7	
0309	00372	55100000	CALL	E\$0F7	WRITE AN END OF FILE
0309	00373	20000000			
0309	00373	01222017			
0309	00373	01433440			
0310	00373	12000301	SPB	ASR0	- TYPE THE MESSAGE:

```
0311 00374 25400477      DAC  E0J          "E0J" ON ASR-33
0312 00375 00000002      DATA 2
0313 00376 00000000      HLT
0314 00377 11100376      BRU   *-1
0315 00400 00000067      BIN   BSS   55
0316 00467 00000000      HOLD *** **
0317 00470 00000000      ADDR *** **
0318 00471 00106607      CRBL  DATA '106607
0319 00472 00106612      CRLF  DATA '106612
0320 00473 00177400      DELE  DATA '177400
0321 00474 00177712      D54   DATA -54
0322 00475 00141713      MSG   DATA 'CKSM''
0322 00476 00151715
0323 00477 00142717      E0J   DATA 'E0J''
0323 00500 00145240
0324 00501 00151727      INQR  DATA 'SW 3 TO HLT ''
0324 00502 00120263
0324 00503 00120324
0324 00504 00147640
0324 00505 00144314
0324 00506 00152240
0325 00507 70400000      END   STRT
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