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PROGRAM DESCRIPTION

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Catalog No. 303010A

IDENTIFICATION: Memory Worst Case Test (MEMTES)

AUTHOR: SEL

ACCEPTED: 13 January 1967

PURPOSE: MEMTES analyzes the program counter bits in conjunction with a Boolean expression to find which locations should be loaded with ones or zeros. After all memory is loaded, each location is unloaded sequentially. While unloading memory, the worst case pattern will cause additive noise in the sense windings possibly causing bits to be dropped or picked up.

All of memory is tested through the use of a ping-pong routine. After the upper portion of memory has been exercised (location 1000g and up), the program is modified to exercise the lower portion of memory (location 0 up to, but not including the highest map) and transferred to the highest map in memory. Once the lower portion is exercised, the program is reset to exercise upper memory and moved back to the lowest map.

SOURCE PROGRAM LANGUAGE: MNEMBLER 810A

COMPUTER CONFIGURATIONS: Standard SEL 810A

STORAGE: 0000 to 0467g, plus every other location - Not relocatable

SUBROUTINES REQUIRED: 810A Mainframe Diagnostic Loading Procedure

TIMING: Dependent on memory size.

USE:

After loading, set the location tagged FIN (420_g) with the four (4) most significant bits of the highest memory address (see note).

Set the sense switches to the desired combination before starting.

Start at location zero. The program will run continuously until halted manually.

NOTE: For a 4K memory, no bits should be set in FIN

8K - set bit 3

12K - set bit 2

16K - set bit 2 and 3

Ampex
Assy. No. 3255389-DID
Ser. No. FF 181

Sense Switches:

Set - No switches for: Ferroxcube, 4K Memory

SSW 0 up for: Ferroxcube, 8K Memory

SSW 0 and 1 up for: Ampex Mod 1, 8K Memory

SSW 1 up for: Ampex Mod 1, 4K Memory

SSW 2 up for: Ampex Mod 2, All Memories

NOTE: Be sure the proper sense switches are set before the program is started, otherwise the wrong worst case will be used.

Type-Out Format:

aaaaa b ccccccccccccccc

Memory Unload Error

a's = octal memory location in error.

b = a one or a zero, what every bit position of the error location should contain.

c's = sixteen binary bits which were unloaded from the error location.

NOTE: A parity error may also be caused when unloading a location. If a parity error occurs, there may not be an error type-out. The A-Register may be displayed and if it does not contain either all ones or all zeros, the parity error may be cleared and the program started where it has stopped, the error type-out will follow. If, however, the A register does contain all ones or all zeros, the B Register may be displayed to find the location that caused the parity error.

0039	J1014	11101020	BRU	**4		UP	00003900
0040	J1015	00130400	SNS	0	ZERØ W/ ØNE DØWN		00004000
0041	01016	11101236	BRU	FR38	FERRØXCUBE 8K	UP	00004100
0042	01017	11101231	BRU	FR34	FERRØXCUBE 4K	DØWN	00004200
0043	J1020	00130400	SNS	0	ZERØ W/ ØNE UP		00004300
0044	J1021	11101252	BRU	MD18	AMPEX MØD 1-8K	UP	00004400
0045	01022	11101261	BRU	MD14	AMPEX MØD 1-4K	DØWN	00004500
0046	01023	00000000	*				00004600
0047	01023	00000000	*		FERRØXCUBE TEST, EARLY MØDEL 810		00004700
0048	01023	00000000	*		MØDIFIED FØR ØTHER CØRE STACKS:		00004800
0049	01023	00000000	*				00004900
0050	01023	12101173	FRCB	SPB	REST	RESET CNTRS. AND INDIRECT ADDR.	00005000
0051	J1024	12101061		SPB	FML1	LØGICAL FØRMULA FØR WØRST CASE	00005100
0052	01025	00000000	*				00005200
0053	01025	12101205		SPB	LØD1	STØRE ØNES AS WØRST CASE	00005300
0054	01026	11101030	BRU	**2			00005400
0055	01027	00000000	*				00005500
0056	01027	12101201		SPB	LØD0	STØRE ZERØS AS WØRST CASE	00005600
0057	01030	00000000	*				00005700
0058	01030	14101422	IMS	STAR		NEXT CØRE LØCATION	00005800
0059	01031	14101421	IMS	INDX			00005900
0060	01032	11101024	BRU	FRCB+1		NEGATIVE CØUNT NØT ZERØ	00006000
0061	01033	12101173	SPB	REST		RESET	00006100
0062	01034	00000000	*				00006200
0063	01034	12101061	ULØD	SPB	FML1	FØRMULA	00006300
0064	01035	00000000	*				00006400
0065	01035	12101221		SPB	UL1	UNLØAD ØNES	00006500
0066	01036	11101040	BRU	**2			00006600
0067	J1037	00000000	*				00006700
0068	01037	12101211		SPB	UL0	UNLØAD ZERØS	00006800
0069	01040	00000000	*				00006900
0070	01040	14101422	IMS	STAR		NEXT LØC.	00007000
0071	01041	14101421	IMS	INDX			00007100
0072	01042	11101034	BRU	ULØD		NEG. CNT. NØT ZERØ	00007200
0073	01043	00000000	*				00007300
0074	01043	01101025	LAA	FRCB+2		INTERCHANGE LØAD AND	00007400
0075	J1044	02101027	L9A	FRCB+4		UNLØAD INSTRUCTIONS	00007500
0076	01045	03101027	STA	FRCB+4			00007600
0077	01046	04101025	STB	FRCB+2			00007700

0078	01047	01101055	LAA	JL40+1		00007800
0079	01050	02101057	LBA	JL40+3		00007900
0080	01051	03101057	STA	JL40+3		00008000
0081	01052	04101057	STB	JL40+1		00008100
0082	01053	14101423	IMS	TW0		00008200
0083	01054	11101023	BRU	FRCB	MEMORY NOT EXERCISED TWICE	00008300
0084	01055	01101424	LAA	NTW0		00008400
0085	01056	03101423	STA	TW0		00008500
0086	01057	12101273	SPB	PIP0	MOVE PROGRAM TO TOP MAP	00008600
0087	01060	11101023	BRU	FRCB	REPEAT TEST	00008700
0088	01061	00000000	*			00008800
0089	01061	00000000	*		LOGICAL FORMULA FOR WORST CASE FERRUCUBE CORE STACKS	00008900
0090	01061	00000000	*		WC = (A+B) AND NOT (A AND B)	00009000
0091	01061	00000000	*			00009300
0092	01061	00000000	FML1	*** **		00009400
0093	01062	02101422	LBA	STAR		00009500
0094	01063	01101461	LAA	A		00009600
0095	01064	00000027	ABA			00009700
0096	01065	00000022	SAZ			00009800
0097	01066	11101074	BRU	AASS		00009900
0098	01067	01101462	LAA	B	NOT A	00010000
0099	01070	00000027	ABA			00010200
0100	01071	00000022	SAZ			00010300
0101	01072	11101103	BRU	ANBA	AND B, STORE ONES	00010400
0102	01073	11101101	BRU	AA3A		00010500
0103	01074	00000000	*			00010600
0104	01074	01101462	AASS	LAA B	A	00010700
0105	01075	00000027	ABA			00010900
0106	01076	00000002	NEG			00011000
0107	01077	00000023	SAN			00011100
0108	01100	11101103	BRU	ANBA	AND NOT B, STORE ONES	00011200
0109	01101	00000000	*			00011300
0110	01101	14101061	AABA	IMS FML1	AND B, STORE ZEROS	00011400
0111	01102	14101061	IMS	FML1		00011500
0112	01103	11001061	ANBA	BRU* FML1		00011600
0113	01104	00000000	*			00011700
0114	01104	00000000	*			00011800
0115	01104	00000000	*			00011900
0116	01104	00000000	*		LOGICAL FORMULA FOR WORST CASE AMPEX CORE STACKS	00012000

0117	01104	00000000	*				NC = A AND NOT B AND NOT C	00012100
0118	01104	00000000	*				OR NOT A AND B AND NOT C	00012200
0119	01104	00000000	*				OR NOT A AND NOT B AND C	00012300
0120	01104	00000000	*				OR A AND B AND C	00012400
0121	01104	00000000	*					00012500
0122	01104	00000000		FORM	***	**		00012600
0123	01105	02101422		LBA		STAR		00012700
0124	01106	01101463		LAA		C		00012800
0125	01107	00000027		ABA				00012900
0126	01110	00000022		SAZ				00013000
0127	01111	11101122		BRU		PRT2		00013100
0128	01112	01101462		LAA		B	NOT C	00013200
0129	01113	00000027		ABA				00013400
0130	01114	00000022		SAZ				00013500
0131	01115	11101122		BRU		PRT2		00013600
0132	01116	01101461		LAA		A	AND NOT B	00013700
0133	01117	00000027		ABA				00013900
0134	01120	00000022		SAZ				00014000
0135	01121	11301104		BRU*		FORM	AND A, STORE ONES	00014100
0136	01122	00000000	*					00014200
0137	01122	01101461		PRT2		LAA	A	OR
0138	01123	00000027		ABA				00014500
0139	01124	00000022		SAZ				00014600
0140	01125	11101136		BRU		PRT3		00014700
0141	01126	01101463		LAA		C	NOT A	00014800
0142	01127	00000027		ABA				00015000
0143	01130	00000022		SAZ				00015100
0144	01131	11101136		BRU		PRT3		00015200
0145	01132	01101462		LAA		B	AND NOT C	00015300
0146	01133	00000027		ABA				00015500
0147	01134	00000022		SAZ				00015600
0148	01135	11301104		BRU*		FORM	AND B, STORE ONES	00015700
0149	01136	00000000	*					00015800
0150	01136	01101461		PRT3		LAA	A	OR
0151	01137	00000027		ABA				00016100
0152	01140	00000022		SAZ				00016200
0153	01141	11101132		BRU		PRT4		00016300
0154	01142	01101462		LAA		B	NOT A	00016400
0155	01143	00000027		ABA				00016600

0156	01144	00000022	SAZ			00016700
0157	01145	11101152	BRU	PRT4		00016800
0158	01146	01101463	LAA	C	AND NOT B	00016900
0159	01147	00000027	ABA			00017100
0160	01150	00000022	SAZ			00017200
0161	01151	11301104	BRU*	FØRM	AND C, STØRE ØNES	00017300
0162	01152	00000000	*			00017400
0163	01152	01101461	PRT4	LAA	A ØR	00017500
0164	01153	00000027	ABA			00017700
0165	01154	00000002	NEG			00017800
0166	01155	00000023	SAN			00017900
0167	01156	11101170	BRU	EXIT		00018000
0168	01157	01101462	LAA	B	A	00018100
0169	01160	00000027	ABA			00018300
0170	01161	00000002	NEG			00018400
0171	01162	00000023	SAN			00018500
0172	01163	11101170	BRU	EXIT		00018600
0173	01164	01101463	LAA	C	AND B	00018700
0174	01165	00000027	ABA			00018900
0175	01166	00000022	SAZ			00019000
0176	01167	11301104	BRU*	FØRM	AND C, STØRE ØNES	00019100
0177	01170	00000000	*			00019200
0178	01170	14101104	EXIT	IMS	FØRM OTHERWISE STØRE ZERØS	00019300
0179	01171	14101104	IMS	FØRM		00019400
0180	01172	11301104	BRU*	FØRM		00019500
0181	01173	00000000	*			00019600
0182	01173	00000000	*			00019700
0183	01173	00000000	*			00019800
0184	01173	00000000	*		RESET INDIRECT ADDRESS AND NEGATIVE COUNT	00019900
0185	01173	00000000	*			00020000
0186	01173	00000000	REST	***	**	00020100
0187	01174	01101427	LAA	BEG		00020200
0188	01175	03101422	STA	STAR		00020300
0189	01176	01101420	LAA	FIN		00020400
0190	01177	03101421	STA	INDX		00020500
0191	01200	11301173	BRU*	REST		00020600
0192	01201	00000000	*			00020700
0193	01201	00000000	*		LOAD ZERØS INDIRECTLY THRU STAR	00020800
0194	01201	00000000	*			00020900

0195	01201	00000000	L0D0	***	**		00021000
0196	01202	00000003	CLA				00021100
0197	01203	03301422	STA*	STAR			00021200
0198	01204	11301201	BRU*	L000			00021300
0199	01205	00000000	*				00021400
0200	01205	00000000	*		LOAD ONES INDIRECTLY THRU STAR		00021500
0201	01205	00000000	*				00021600
0202	01205	00000000	L0D1	***	**		00021700
0203	01206	01101425	LAA	ONES			00021800
0204	01207	03301422	STA*	STAR			00021900
0205	01210	11301205	BRU*	L0D1			00022000
0206	01211	00000000	*				00022100
0207	01211	00000000	*		UNLOAD ZEROS INDIRECTLY THRU STAR		00022200
0208	01211	00000000	*				00022300
0209	01211	00000000	ULO	***	**		00022400
0210	01212	00000003	CLA				00022500
0211	01213	01301422	LAA*	STAR			00022600
0212	01214	15101426	CMA	ZER0			00022700
0213	01215	12101334	SPB	ER00			00022800
0214	01216	11301211	BRU*	ULO			00022900
0215	01217	12101334	SPB	ER00			00023000
0216	01220	11301211	BRU*	ULO			00023100
0217	01221	00000000	*				00023200
0218	01221	00000000	*		UNLOAD ONES INDIRECTLY THRU STAR		00023300
0219	01221	00000000	*				00023400
0220	01221	00000000	UL1	***	**		00023500
0221	01222	00000003	CLA				00023600
0222	01223	01301422	LAA*	STAR			00023700
0223	01224	15101425	CMA	ONES			00023800
0224	01225	12101342	SPB	ER01			00023900
0225	01226	11301221	BRU*	JL1			00024000
0226	01227	12101342	SPB	ER01			00024100
0227	01230	11301221	BRU*	JL1			00024200
0228	01231	00000000	*				00024300
0229	01231	00000000	*				00024400
0230	01231	00000000	*				00024400
0231	01231	00000000	*		FERR0XCUBE 4K CORE STACK TEST		00024450
0232	01231	00000000	*				00024500
0233	01231	01101433	FRB4 LAA	B11	SET CONSTANT FOR WORST		00024550

0273	01255	01101436	LAA	B5		00028200
0274	01256	03101403	STA	C		00028300
0275	01257	00000000	*			00028400
0276	01257	01101426	STA	LAA	BFOR	00028500
0277	01270	03101024	STA	FRCB+1	MODIFY FRCB TO USE AMPEX. WORST CASE FORMULA	00028600
0278	01271	03101034	STA	JLAD		00028700
0279	01272	11101023	BRU	FRCB		00028800
0280	01273	00000000	*			00028900
0281	01273	00000000	*			00029000
0282	01273	00000000	*			00029100
0283	01273	00000000	*		PING-PONG ROUTINE	00029200
0284	01273	00000000	*			00029300
0285	01273	00000000	PIP0	***	**	00029400
0286	01274	01101427	LAA	BEG	SAVE ADDRESSES	00029500
0287	01275	03101440	STA	SAVE		00029600
0288	01276	01101420	LAA	FIN		00029700
0289	01277	00000002	NEG			00029800
0290	01300	03101273	AMA	PIP0		00030000
0291	01301	03101273	STA	PIP0		00030100
0292	01302	00000003	CLA			00030200
0293	01303	03101427	STA	BEG		00030300
0294	01304	01101427	LAA	BRU	SET ENTRANCE TO RESET ABOVE ON RETURN	00030800
0295	01305	03101274	STA	PIP0+1		00030900
0296	01306	00000000	*			00031000
0297	01306	02101417	LBA	IDX		00031100
0298	01307	01301454	LAA*	BOT	M0VE PROGRAM TO TOP MAP	00031200
0299	01310	03301455	STA*	T0P		00031300
0300	01311	00000026	IBS			00031400
0301	01312	11101307	BRU	*-3		00031500
0302	01313	11301273	BRU*	PIP0	EXIT TO UPPER MEMORY	00031600
0303	01314	00000000	*			00031700
0304	01314	00000000	*			00031800
0305	01314	01101440	P0NG	LAA	SAVE	00031900
0306	01315	03101427	STA	BEG	RE-SET ADDRESSES	00032000
0307	01316	01101420	LAA	FIN		00032100
0308	01317	00000002	NEG			00032200
0309	01320	03101441	STA	ST0R		00032400
0310	01321	01101273	LAA	PIP0		00032500
0311	01322	06101441	SMA	ST0R		00032600

0312	01323	03101273	STA	PIP0		00032700
0313	01324	01101450	LAA	LAA	RESET ENTRANCE	00033000
0314	01325	03101274	STA	PIP0+1		00033100
0315	01326	00000000 *				00033200
0316	01326	02101417	LBA	IDX		00033300
0317	01327	01301455	LAA*	TP	MØVE PRØGRAM TØ LØWEST MAP	00033400
0318	01330	03301454	STA*	BT		00033500
0319	01331	00000026	IBS			00033600
0320	01332	11101327	BRU	*-3		00033700
0321	01333	11301273	BRU*	PIP0	EXIT TØ LØWER MEMØRY	00033800
0322	01334	00000000 *				00033900
0323	01334	00000000 *				00034000
0324	01334	00000000 *				00034100
0325	01334	00000000 *			ZERØS UNLØADED ERRØR	00034200
0326	01334	00000000 *				00034300
0327	01334	00000000	ERØ0	*** **		00034400
0328	01335	03101447	STA	NUM2	STØRE MEMØRY CØNTENTS	00034500
0329	01336	01101442	LAA	TWØ6	SET-UP TYPE ØUT	00034600
0330	01337	03101443	STA	NUM1		00034700
0331	01340	12101350	SPB	TPØ		00034800
0332	01341	11301334	BRU*	ERØ0	RETURN	00034900
0333	01342	00000000 *				00035000
0334	01342	00000000 *			ØNES UNLØADED ERRØR	00035100
0335	01342	00000000 *				00035200
0336	01342	00000000	ERØ1	*** **		00035300
0337	01343	03101447	STA	NUM2	STØRE MEMØRY CØNTENTS	00035400
0338	01344	01101444	LAA	TØ1	SET-UP TYPE ØUT	00035500
0339	01345	03101443	STA	NUM1		00035600
0340	01345	12101350	SPB	TPØ		00035700
0341	01347	11301342	BRU*	ERØ1	RETURN	00035800
0342	01350	00000000 *				00035900
0343	01350	00000000 *				00036000
0344	01350	00000000 *				00036100
0345	01350	00000000 *			TYPE-ØUT SUBR	00036200
0346	01350	00000000 *				00036300
0347	01350	00000000	TPØ	*** **		00036400
0348	01351	00000003	CLA			00036500
0349	01352	00000317	FLA	3		00036700
0350	01353	03101442	AMA	TWØ6		00036750

0351	01354	12101410	SPB	TYPE				00036800
0352	01355	14101450	IMS	M5				00036900
0353	01356	11101352	BRU	*-4				00037000
0354	01357	01101451	LAA	M45				00037100
0355	01358	03101450	STA	M5				00037200
0356	01351	01101452	LAA	SPAC				00037300
0357	01362	12101410	SPB	TYPE				00037400
0358	01353	12101410	SPB	TYPE				00037500
0359	01354	12101410	SPB	TYPE				00037600
0360	01355	01101443	LAA	NUM1	OUTPUT WHAT LOCATION SHOULD CONTAIN			00037700
0361	01366	12101410	SPB	TYPE				00037800
0362	01367	01101452	LAA	SPAC				00037900
0363	01370	12101410	SPB	TYPE				00038000
0364	01371	12101410	SPB	TYPE				00038100
0365	01372	02101447	LBA	NUM2	OUTPUT CONTENTS IN BINARY			00038200
0366	01373	00000113	FLL	1				00038300
0367	01374	02101442	AMA	TW06				00038350
0368	01375	12101410	SPB	TYPE				00038400
0369	01376	14101445	IMS	WCNT				00038500
0370	01377	11101373	BRU	*-4				00038600
0371	01400	01101446	LAA	WCNT				00038700
0372	01401	03101445	STA	WCNT				00038800
0373	01402	02101453	LBA	CRLF	CAR. RTN., LN. FD.			00038900
0374	01403	00001013	FLL	8				00038950
0375	01404	12101410	SPB	TYPE				00039000
0376	01405	00001013	FLL	8				00039100
0377	01406	12101410	SPB	TYPE				00039200
0378	01407	11301350	BRU*	TP0	EXIT			00039300
0379	01410	00000000	*					00039400
0380	01410	00000000	*		TYPE A REG. SUBR.			00039500
0381	01410	00000000	*					00039600
0382	01410	00000000	TYPE	*** **				00039700
0383	01411	00130101	DATA	'130101	CEU	1,W		
0384	01412	00001000	DATA	'1000				
0385	01413	00001016	LSL	8				
0386	01414	00170101	DATA	'170101	A0P	1,W		
0387	01415	00000003	CLA					00040300
0388	01416	11301410	BRU*	TYPE				00040700
0389	01417	00000000	*					00040800

0390	0141/	00000000	*					00040900
0391	0141/	00000000	*					00041000
0392	0141/	00000000	*					00041100
0393	01417	00177001	IDX	DATA	-511			00041200
0394	01420	00000000	FIN	DATA	0			00041300
0395	01421	00010000	INDX	DATA	4096			00041400
0396	01422	00001000	STAR	DATA	512			00041500
0397	01423	00177776	TW0	DATA	-2			00041600
0398	01424	00177776	NTW0	DATA	-2			00041700
0399	01425	00177777	ONES	DATA	-1			00041800
0400	01426	00000000	ZER0	DATA	0			00041900
0401	01427	00001000	BEG	DATA	512			00042000
0402	01430	00000001	B15	DATA	1			00042100
0403	01431	00000002	B14	DATA	2			00042200
0404	01432	00000010	B12	DATA	8			00042300
0405	01433	00000020	B11	DATA	16			00042400
0406	01434	00000040	B10	DATA	32			00042500
0407	01435	00000020	B8	DATA	128			00042600
0408	01436	00002000	B5	DATA	1024			00042800
0409	01437	00004000	B4	DATA	2048			00042900
0410	01440	00000000	SAVE	DATA	0			00043000
0411	01441	00000000	STOR	DATA	0			00043100
0412	01442	00000260	TW06	DATA	176			00043200
0413	01443	00000000	NUM1	DATA	0			00043300
0414	01444	00000261	T61	DATA	177			00043400
0415	01445	00177760	WCNT	DATA	-16			00043500
0416	01446	00177760	NCNT	DATA	-16			00043600
0417	01447	00000000	NUM2	DATA	0			00043700
0418	01450	00177773	M5	DATA	-5			00043800
0419	01451	00177773	NM5	DATA	-5			00043900
0420	01452	00000240	SPAC	DATA	160			00044000
0421	01453	00106612	CRLF	DATA	'106612			00044100
0422	01454	25600777	B0T	DAC	511,1			00044200
0423	01452	25607777	T0P	DAC	4095,1			00044300
0424	01456	12101104	BF0R	SPB	FORM			00044400
0425	01457	11101314	BRU	BRU	P0NG			00044500
0426	01460	01101427	LAA	LAA	BEG			00044600
0427	01461	00000000	A	DATA	0			00044649
0428	01462	00000000	B	DATA	0			00044650

0429 01453 00000000 C DATA 0
0430 01464 00000000 *
0431 01464 00000000 *
0432 01464 70400000 END
FRCB 01023
ULAD 01034
FML1 01061
AASS 01074
AABA 01101
ANBA 01103
FORM 01104
PRT2 01122
PRT3 01136
PRT4 01152
EXIT 01170
REST 01173
L0D0 01201
L0D1 01205
JL0 01211
JL1 01221
FRB4 01231
FRB6 01236
M0D2 01243
MD10 01252
MD14 01261
STA 01267
PIP0 01273
P0V0 01314
ER00 01334
ER01 01342
TP0 01350
TYPE 01410
IDX 01417
FIN 01420
INDX 01421
STAR 01422
TWA 01423
NTW0 01424
QVES 01425

00044651
00044700
00044800

ZERO 01426
 BEG 01427
 B15 01430
 B14 01431
 B12 01432
 B11 01433
 B10 01434
 B8 01435
 B7 01436
 B4 01437
 SAVE 01440
 STOR 01441
 TW06 01442
 NUM1 01443
 T61 01444
 WCNT 01445
 NCNT 01446
 NUM2 01447
 M2 01450
 NM5 01451
 SPAC 01452
 CRLE 01453
 BOT 01454
 TOP 01455
 BF0R 01456
 BRU 01457
 LAA 01460
 A 01461
 B 01462
 C 01463

0001 00000 00000000 *

0002 00000 00000000 * SELF-LOADER

0003 14000 60014000 ORG '14000

0004 14000 00130401 LOAD SNS 1

0005 14001 11014006 BRU **5

0006 14002 00130101 CEU 1,W

0007 14003 00004000 DATA '004000

0008 14004 00170301 AIP 1,W

0009 14005 11014011 BRU **4

CKA

CKA