

9M71B
2/1/63
PAGE 828

SECTION FIVE SINGLE PRECISION ROUTINES

INSERT FLOATING POINT TRAP EXIT IN LOCATION 00010

57000	0500 00 0 67145	SECT5	CLA	RIT10	L TTR LITE1
57001	0601 00 0 00010		STO 8		IN LOCATION 00010
57002	-0774 00 4 57003		AXC	++1,4	
57003	0634 00 4 00101		SXA	SVXR4,4	
57004	0020 00 0 57006		TRA	FP	COMMENCE DIAGNOSTIC

TEST FRN WITH ACCUMULATOR AND MQ CLEAR

57005	265145606060		BCD	1FRN	
57006	0074 00 4 66227	FP	TSX	CLEAR,4	
57007	0500 00 0 66477		CLA	ZERO	CLEAR ACCUMULATOR
57010	0560 00 0 66477		LDQ	ZERO	CLEAR MQ
57011	0760 00 0 00011		FRN		NO CHANGE TO ACC AND MQ
57012	0074 00 2 66060		TSX	CHECK,2	CHECK FRN EXECUTED OK
57013	0000 00 0 00000		HTR		CORRECT IND CODE WORD
57014	0000 00 0 00000		HTR		CORRECT ACC 1-35
57015	0000 00 0 00000		HTR		CORRECT MQ S,1-35
57016	0000 00 0 00000		HTR		CORRECT SI 0-35
57017	0000 00 0 00000		HTR		CORRECT ADR IN LOC ZERO
57020	0074 00 4 00105		TSX	ERROR,4	TO ERROR ROUTINE
57021	0074 00 4 00106		TSX	OK,4	
57022	0020 00 0 57006		TRA	FP	

TEST FRN WITH ACCUMULATOR CLEAR AND BIT IN MQ POSITION 1

57023	265145606060		BCD	1FRN	
57024	0074 00 4 66227	FP1	TSX	CLEAR,4	
57025	0500 00 0 66477		CLA	ZERO	CLEAR ACCUMULATOR
57026	0560 00 0 66504		LDQ	CHAR	L +377000000000 IN MQ
57027	0760 00 0 00011		FRN		NO CHANGE TO ACC AND MQ
57030	0074 00 2 66060		TSX	CHECK,2	CHECK FRN EXECUTED OK
57031	0000 00 0 00000		HTR		CORRECT IND CODE WORD
57032	0000 00 0 00000		HTR		CORRECT ACC 1-35
57033	+377000000000		OCT	377000000000	CORRECT MQ S,1-35
57034	0000 00 0 00000		HTR		CORRECT SI 0-35
57035	0000 00 0 00000		HTR		CORRECT ADR IN LOC ZERO
57036	0074 00 4 00105		TSX	ERROR,4	TO ERROR ROUTINE
57037	0074 00 4 00106		TSX	OK,4	
57040	0020 00 0 57024		TRA	FP1	

SECTION FIVE
SINGLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 829

TEST FRN WITH A BIT IN MQ 9

57041	265145606060		BCD 1FRN	
57042	0074 00 4 66227	FP2	TSX CLEAR,4	
57043	0500 00 0 66477		CLA ZERO	CLEAR ACCUMULATOR
57044	0560 00 0 66507		LDQ FRAC	L +000400000000 IN MQ
57045	0760 00 0 00011		FRN	SHOULD PUT BIT IN ACC 35
57046	0074 00 2 66060		TSX CHECK,2	CHECK FRN EXECUTED OK
57047	0000 00 0 00000		HTR	CORRECT IND CODE WORD
57050	+000000000001		OCT 1	CORRECT ACC 1-35
57051	+000400000000		OCT 400000000	CORRECT MQ S,1-35
57052	0000 00 0 00000		HTR	CORRECT SI 0-35
57053	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
57054	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
57055	0074 00 4 00106		TSX OK,4	
57056	0020 00 0 57042		TRA FP2	

TEST FRN WITH ADDER 9 CARRY TURNS ON COL 9 CARRY TGR AND A
ONE IS SET IN ACCUMULATOR COL 9.

57057	265145606060		BCD 1FRN	
57060	0074 00 4 66227	FP4	TSX CLEAR,4	
57061	0500 00 0 66514		CLA ONES+1	L -177777777777 IN ACC
57062	0560 00 0 66513		LDQ ONES	L -377777777777 IN MQ
57063	0760 00 0 00011		FRN	RIPPLE TO ACC COL 1
57064	0771 00 0 00001		ARS 1	SHIFT BIT TO ACC COL 10
57065	0760 00 0 00011		FRN	

9 CARRY TGR RESET 1 TIME ARS INSTR-NO 9 CARRY 2ND FRN

57066	0074 00 2 66060		TSX CHECK,2	CHECK FRN EXECUTED OK
57067	-0 00000 0 00000		MZE	CORRECT IND CODE WORD
57070	+100200000001		OCT 100200000001	CORRECT ACC 1-35
57071	-377777777777		OCT 777777777777	CORRECT MQ S,1-35
57072	0000 00 0 00000		HTR	CORRECT SI 0-35
57073	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
57074	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
57075	0074 00 4 00106		TSX OK,4	
57076	0020 00 0 57060		TRA FP4	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

TEST FRN DOES NOT TRAP WITH BITS IN ACC 1-34 AND MQ 9

57077	265145606060		BCD 1FRN	
57100	0074 00 4 66227	FP5	TSX CLEAR,4	
57101	0502 00 0 66515		CLS ONES+2	L -377777777776 IN ACC
57102	0560 00 0 66530		LDQ FPN+2	L +001400000000 IN MQ
57103	0760 00 0 00011		FRN	ROUND, NO RIPPLE OR FP TRAP

FRN EXECUTION CONTROLS CONDITIONED, ACC Q-35 TO ADDERS AND ONE TO ADDER SHOULD NOT RIPPLE TO P TO CONDITION FP TRAP CONTROLS

57104	0074 00 2 66060		TSX CHECK,2	CHECK FRN EXECUTED OK
57105	-0 00000 0 00000		MZE	CORRECT IND CODE WORD
57106	+377777777777		OCT 377777777777	CORRECT ACC 1-35
57107	+001400000000		OCT 1400000000	CORRECT MQ S,1-35
57110	0000 00 0 00000		HTR	CORRECT SI 0-35
57111	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
57112	0074 00 4 00105		TSX ERROR,4	ERROR
57113	0074 00 4 00106		TSX OK,4	
57114	0020 00 0 57100		TRA FP5	

TEST FLOATING POINT TRAP ON OVERFLOW WITH FRN

57115	265145606060		BCD 1FRN	
57116	0074 00 4 66227	FP6	TSX CLEAR,4	
57117	0500 00 0 66513		CLA ONES	L -377777777777 IN ACC
57120	0560 00 0 66531		LDQ FPN+3	L +145400000000 IN MQ
57121	0760 00 0 00011		FRN	ROUND, RIPPLE, FP TRAP
57122	0074 00 2 66060		TSX CHECK,2	CHECK FRN EXECUTED OK
57123	-1130000000000		OCT 513000000000	CORRECT IND CODE WORD
57124	+0004000000000		OCT 4000000000	CORRECT ACC 1-35
57125	+1454000000000		OCT 145400000000	CORRECT MQ S,1-35
57126	0000 00 0 00000		HTR	CORRECT SI 0-35
57127	0000 00 0 57122		HTR FP6+4	CORRECT ADR LOC ZERO
57130	0074 00 4 00105		TSX ERROR,4	ERROR
57131	0074 00 4 00106		TSX OK,4	
57132	0020 00 0 57116		TRA FP6	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 831

TEST FRN WITH A RIPPLE INTO ACC Q POSITION-NO FLOATING POINT TRAP

57133	265145606060	BCD 1FRN	
57134	0074 00 4 66227	FP7	TSX CLEAR,4
57135	0560 00 0 66516	LDQ ONES+3	L -233777777777 IN MQ
57136	-0500 00 0 66513	CAL ONES	L BITS IN ACC P,1-35
57137	0760 00 0 00011	FRN	ROUND, RIPPLE, NO FP TRAP
57140	0074 00 2 66060	TSX CHECK,2	CHECK FRN EXECUTED OK
57141	+2000000000000	OCT 200000000000	CORRECT IND CODE WORD
57142	+0004000000000	OCT 000400000000	CORRECT ACC 1-35
57143	-2337777777777	OCT 633777777777	CORRECT MQ S,1-35
57144	0000 00 0 00000	HTR	CORRECT SI 0-35
57145	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57146	0074 00 4 00105	TSX ERROR,4	ERROR
57147	0074 00 4 00106	TSX OK,4	
57150	0020 00 0 57134	TRA FP7	

TEST FRN WITH BIT IN Q AND RIPPLE TO ACC P POS-NO FP TRAP

57151	265145606060	BCD 1FRN	
57152	0074 00 4 66227	FP8	TSX CLEAR,4
57153	0560 00 0 66532	LDQ FPN+4	L +201400000000 IN MQ
57154	-0500 00 0 66500	CAL MZE	L ACC P POSITION
57155	-0760 00 0 00003	SSM	ACC SIGN MINUS
57156	0760 00 0 00006	COM	NOW BITS IN ACC S,Q,1-35
57157	0760 00 0 00011	FRN	ROUND, RIPPLE, NO FP TRAP
57160	0074 00 2 66060	TSX CHECK,2	CHECK FRN EXECUTED OK
57161	-3000000000000	OCT 700000000000	CORRECT IND CODE WORD
57162	+0004000000000	OCT 4000000000	CORRECT ACC 1-35
57163	+2014000000000	OCT 201400000000	CORRECT MQ S,1-35
57164	0000 00 0 00000	HTR	CORRECT SI 0-35
57165	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57166	0074 00 4 00105	TSX ERROR,4	ERROR
57167	0074 00 4 00106	TSX OK,4	
57170	0020 00 0 57152	TRA FP8	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

TEST FRN WITH RIPPLE OUT OF Q-NO FP TRAP

57171	265145606060		BCD 1FRN
57172	0074 00 4 66227	FP9	TSX CLEAR,4
57173	0560 00 0 66510		LDQ FRAC+1 L +001700000000 IN MQ

NOTE NEXT GROUP OF INSTRUCTIONS ALL HAVE PRI OP 7,6 AND UNIT ADDRESSES FROM 00 TO 11.

57174	0760 00 0 00000	CLM	CLEAR ACC Q-35
57175	-0760 00 0 00003	SSM	ACC NOW -0
57176	0760 00 0 00006	COM	ACC NOW MINUS ALL ONES
57177	0760 00 0 00003	SSP	ACC NOW PLUS ALL ONES
57200	0760 00 0 00002	CHS	ACC NOW MINUS ALL ONES
57201	0760 00 0 00010	RND	WITH NO BIT IN MQ 1, NO
			CHANGE TO ACC AND MQ
57202	0760 00 0 00011	FRN	ROUND, RIPPLE, NO FP TRAP
57203	0074 00 2 66060	TSX CHECK,2	CHECK FRN EXECUTED OK
57204	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
57205	+000400000000	OCT 400000000	CORRECT ACC 1-35
57206	+001700000000	OCT 1700000000	CORRECT MQ S,1-35
57207	0000 00 0 00000	HTR	CORRECT SI 0-35
57210	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57211	0074 00 4 00105	TSX ERROR,4	ERROR
57212	0074 00 4 00106	TSX OK,4	
57213	0020 00 0 57172	TRA FP9	

TEST FLOATING POINT TRAP WITH MACHINE IN TRAP MODE

57214	635147406060		BCD 1TRP-
57215	0074 00 4 66227	FP10	TSX CLEAR,4
57216	0500 00 0 67151	CLA FROM1	L TTR LITE2
57217	0601 00 0 00001	STO 1	IN LOCATION 00001
57220	0500 00 0 66513	CLA ONES	L -377777777777 IN ACC
57221	0560 00 0 66513	LDQ ONES	L -377777777777 IN MQ
57222	0760 00 0 00007	ETM	ENTER TRAP MODE
57223	0760 00 0 00011	FRN	ROUND, RIPPLE, TRAP TO 10
57224	-0760 00 0 00007	LTM	JUST IN CASE
57225	0074 00 2 66060	TSX CHECK,2	CHECK TRAP EXECUTED OK
57226	-113000000000	OCT 513000000000	CORRECT IND CODE WORD
57227	+000400000000	OCT 400000000	CORRECT ACC 1-35
57230	-377777777777	OCT 777777777777	CORRECT MQ S,1-35
57231	0000 00 0 00000	HTR	CORRECT SI 0-35
57232	0000 00 0 57224	HTR FP10+7	CORRECT ADR LOC ZERO
57233	0074 00 4 00105	TSX ERROR,4	
57234	0074 00 4 00106	TSX OK,4	
57235	0020 00 0 57215	TRA FP10	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 833

CHECK UFM FOR PROPER USE OF 9P AND 9Q USING SIMPLE NUMBERS.

57236	642644606060		BCD 1UFM
57237	0074 00 4 66227	FP11	TSX CLEAR,4
57240	0500 00 0 66513		CLA ONES
57241	0560 00 0 66621		LDQ FPN+59
			LOAD ACC TO CHECK CLEAR L 200000000003
57242	-0260 00 0 66560		UFM FPN+26
			L 200212121212
57243	0074 00 2 66060		TSX CHECK,2
			CHECK RESULT
57244	0000 00 0 00000		HTR
57245	+200000000000		CORR IND CW
57246	+145636363636		OCT 200000000000
57247	0000 00 0 00000		CORR AC 1-35
57250	0000 00 0 00000		OCT 145636363636
			CORR MQ S-35
			HTR
			CORR SI 0-35
			HTR
			CORR ADR LOC ZERO
57251	0074 00 4 00105		TSX ERROR,4
57252	0074 00 4 00106		TSX OK,4
57253	0020 00 0 57237		TRA FP11

CHECK UFM WITH DIFFERENT COMBINATIONS OF MULTIPLIER BITS AGAIN
EXERCISING 9Q AND 9P.

57254	642644606060		BCD 1UFM
57255	0074 00 4 66227	FP11A	TSX CLEAR,4
57256	0560 00 0 66651		LDQ FPN+83
			L+242457133471
57257	-0260 00 0 67000		UFM MP13
			L+240660000007
57260	0074 00 2 66060		TSX CHECK,2
			CHECK RESULT
57261	0000 00 0 00000		HTR
57262	+302377635234		CORR IND CW
57263	+247172201217		OCT 302377635234
57264	0000 00 0 00000		CORRECT AC 1-35
57265	0000 00 0 00000		OCT 247172201217
			CORRECT MQ S-35
			HTR
			CORR SI 0-35
			HTR
			CORR ADR LOC ZERO
57266	0074 00 4 00105		TSX ERROR,4
57267	0074 00 4 00106		TSX OK,4
57270	0020 00 0 57255		TRA FP11A

9M718
2/1/63
PAGE 834

SECTION FIVE
SINGLE PRECISION ROUTINES

CHECK UFM WITH SIGNS ALIKE AND NO BIT IN PRODUCT ACC 9

57271	642644606060	BCD 1UFM	
57272	0074 00 4 66227	FP11B TSX CLEAR,4	
57273	-0500 00 0 66535	CAL FPN+7	L P200333330000
57274	-0765 00 0 00044	LGR 36	MQ CH 200 FR -333330000
57275	-0260 00 0 66534	UFM FPN+6	SR CH 200 FR -777770000

I, E AND L TIME OPERATIONS EXECUTED EXCEPT NO LEFT SHIFTING ACC
AND MQ FRACTIONS WHEN SHIFT CTR EQUAL ZERO IN L TIME

57276	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57277	0000 00 0 00000	HTR	CORRECT IND CODE WORD
57300	+200333324444	OCT 200333324444	CORRECT ACC 1-35
57301	+145500000000	OCT 145500000000	CORRECT MQ S,1-35
57302	0000 00 0 00000	HTR	CORRECT SI 0-35
57303	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57304	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57305	0074 00 4 00106	TSX OK,4	
57306	0020 00 0 57272	TRA FP11B	

CHECK UFM WITH SIGNS UNLIKE

57307	642644606060	BCD 1UFM	
57310	0074 00 4 66227	FP12 TSX CLEAR,4	
57311	0502 00 0 66536	CLS FPN+8	L +234400000000 IN ACC
57312	0765 00 0 00043	LRS 35	MQ CH 234 FR +400000000
57313	-0260 00 0 66536	UFM FPN+8	SR CH 234 FR -400000000

EXECUTE UFM AS IN SECTION FP11 EXCEPT FOR SETTING PRODUCT SIGN

57314	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57315	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
57316	+270200000000	OCT 270200000000	CORRECT ACC 1-35
57317	-235000000000	OCT 635000000000	CORRECT MQ S,1-35
57320	0000 00 0 00000	HTR	CORRECT SI 0-35
57321	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57322	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57323	0074 00 4 00106	TSX OK,4	
57324	0020 00 0 57310	TRA FP12	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 835

CHECK UFM WITH ZERO MULTIPLICAND

57325	642644606060	BCD 1UFM	
57326	0074 00 4 66227	FP13	TSX CLEAR,4
57327	0760 00 0 00006	COM	ALL ONES TO
57330	-0760 00 0 00003	SSM	ACCUMULATOR
57331	0560 00 0 66513	LDQ ONES	L -377777777777 IN MQ
57332	-0260 00 0 66477	UFM ZERO	CLEAR ACC AND MQ

WITH SR ZERO, MQ IS RESET E TIME AND END OP.

57333	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57334	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
57335	0000 00 0 00000	HTR	CORRECT ACC 1-35
57336	-0 00000 0 00000	MZE	CORRECT MQ S,1-35
57337	0000 00 0 00000	HTR	CORRECT SI 0-35
57340	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57341	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57342	0074 00 4 00106	TSX OK,4	
57343	0020 00 0 57326	TRA FP13	

CHECK UFM WITH MULTIPLICAND FRACTION ZERO

57344	642644606060	BCD 1UFM	
57345	0074 00 4 66227	FP13A	TSX CLEAR,4
57346	0560 00 0 66516	LDQ ONES+3	MULTIPLIER -233777777777
57347	-0260 00 0 66537	UFM FPN+9	MULTIPLICAND +200000000000
57350	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57351	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
57352	+233000000000	OCT 233000000000	CORRECT ACC 1-35
57353	-200000000000	OCT 600000000000	CORRECT MQ S,1-35
57354	0000 00 0 00000	HTR	CORRECT SI 0-35
57355	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57356	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57357	0074 00 4 00106	TSX OK,4	
57360	0020 00 0 57345	TRA FP13A	

9M71B
2/1/63
PAGE 836

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK UFM TRAPS WITH ACC CHARACTERISTIC OVERFLOW

57361	642644606060		BCD 1UFM
57362	0074 00 4 66227	FP15	TSX CLEAR,4
57363	0560 00 0 66527		LDQ FPN+1 L +344400000000 IN MQ
57364	-0260 00 0 66536		UFM FPN+8 MPY BY -234400000000
57365	0074 00 2 66060		TSX CHECK,2 CHECK UFM EXECUTED OK
57366	-113000000000		OCT 513000000000 CORRECT IND CODE WORD
57367	+000200000000		OCT 000200000000 CORRECT ACC 1-35
57370	-345000000000		OCT 745000000000 CORRECT MQ S,1-35
57371	0000 00 0 00000		HTR CORRECT SI 0-35
57372	0000 00 0 57365		HTR FP15+3 CORRECT ADR LOC ZERO
57373	0074 00 4 00105		TSX ERROR,4 TO ERROR ROUTINE
57374	0074 00 4 00106		TSX OK,4
57375	0020 00 0 57362		TRA FP15

CHECK UFM TRAPS WITH MQ CHARACTERISTIC UNDERFLOW

57376	642644606060		BCD 1UFM
57377	0074 00 4 66227	FP16	TSX CLEAR,4
57400	0560 00 0 66540		LDQ FPN+10 MQ CH 115 FR +777777777
57401	-0260 00 0 66540		UFM FPN+10 SR CH 115 FR +777777777
57402	0074 00 2 66060		TSX CHECK,2 CHECK UFM EXECUTED OK
57403	+010400000000		OCT 010400000000 CORRECT IND CODE WORD
57404	+032777777776		OCT 032777777776 CORRECT ACC 1-35
57405	+377000000001		OCT +377000000001 CORRECT MQ S,1-35
57406	0000 00 0 00000		HTR CORRECT SI 0-35
57407	0000 00 0 57402		HTR FP16+3 CORRECT ADR LOC ZERO
57410	0074 00 4 00105		TSX ERROR,4 TO ERROR ROUTINE
57411	0074 00 4 00106		TSX OK,4
57412	0020 00 0 57377		TRA FP16

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 837

CHECK UFM TRAPS WITH ACC AND MQ OVERFLOW

57413	642644606060	BCD 1UFM	
57414	0074 00 4 66227	FP17	TSX CLEAR,4
57415	0560 00 0 66541	LDQ FPN+11	L+316000777777 IN MQ
57416	-0260 00 0 66542	UFM FPN+12	MPY BY+315000777777
57417	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57420	+113400000000	OCT 113400000000	CORRECT IND CODE WORD
57421	+033000000777	OCT 033000000777	CORRECT ACC 1-35
57422	+000776000001	OCT 000776000001	CORRECT MQ S,1-35
57423	0000 00 0 00000	HTR	CORRECT SI 0-35
57424	0000 00 0 57417	HTR FP17+3	CORRECT ADR LOC ZERO
57425	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57426	0074 00 4 00106	TSX OK,4	
57427	0020 00 0 57414	TRA FP17	

CHECK UFM TRAPS WITH ACC AND MQ UNDERFLOW

57430	642644606060	BCD 1UFM	
57431	0074 00 4 66227	FP18	TSX CLEAR,4
57432	-0500 00 0 66514	CAL ONES+1	MAKE MULTIPLIER
57433	-0765 00 0 00044	LGR 36	CH 177 FR -7777777777
57434	-0260 00 0 66476	UFM ONE	CH 000 FR +0000000001
57435	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57436	-311400000000	OCT 711400000000	CORRECT IND CODE WORD
57437	+377000000000	OCT 377000000000	CORRECT ACC 1-35
57440	-344777777777	OCT 744777777777	CORRECT MQ S,1-35
57441	0000 00 0 00000	HTR	CORRECT SI 0-35
57442	0000 00 0 57435	HTR FP18+4	CORRECT ADR LOC ZERO
57443	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57444	0074 00 4 00106	TSX OK,4	
57445	0020 00 0 57431	TRA FP18	

9M71B
2/1/63
PAGE 838

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK UFM WITH MULTIPLIER FRACTION ZERO TRAPS

57446	642644606060	BCD 1UFM	
57447	0074 00 4 66227	FP19	TSX CLEAR,4
57450	0560 00 0 66504	LDQ CHAR	CH 377 FR +000000000
57451	0760 00 0 00006	COM	ALL ONES
57452	-0760 00 0 00003	SSM	TO ACC
57453	-0260 00 0 66513	UFM ONES	CH 377 FR -777777777
57454	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57455	-113400000000	OCT 513400000000	CORRECT IND CODE WORD
57456	+176000000000	OCT 176000000000	CORRECT ACC 1-35
57457	-143000000000	OCT 543000000000	CORRECT MQ S,1-35
57460	0000 00 0 00000	HTR	CORRECT SI 0-35
57461	0000 00 0 57454	HTR FP19+5	CORRECT ADR LOC ZER
57462	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57463	0074 00 4 00106	TSX OK,4	
57464	0020 00 0 57447	TRA FP19	

CHECK UFM WITH MULTIPLIER ZERO FRACTION TRAPS

57465	642644606060	BCD 1UFM	
57466	0074 00 4 66227	FP20	TSX CLEAR,4
57467	0502 00 0 66543	CLS FPN+13	
57470	0765 00 0 00043	LRS 35	MQ CH 032 FR -000000000
57471	-0260 00 0 66531	UFM FPN+3	SR CH 145 FR +400000000
57472	0074 00 2 66060	TSX CHECK,2	CHECK UFM EXECUTED OK
57473	-311400000000	OCT 711400000000	CORRECT IND CODE WORD
57474	+377000000000	OCT 377000000000	CORRECT ACC 1-35
57475	-344000000000	OCT 744000000000	CORRECT MQ S,1-35
57476	0000 00 0 00000	HTR	CORRECT SI 0-35
57477	0000 00 0 57472	HTR FP20+4	CORRECT ADR LOC ZERO
57500	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57501	0074 00 4 00106	TSX OK,4	
57502	0020 00 0 57466	TRA FP20	

SECTION FIVE
SINGLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 839

CHECK FMP NORMALIZES PRODUCT

57503	264447606060	BCD 1FMP	
57504	0074 00 4 66227	FP21	TSX CLEAR,4
57505	0560 00 0 66535	LDQ FPN+7	MQ CH 200 FR -333330000
57506	0260 00 0 66534	FMP FPN+6	SR CH 200 FR -777770000
57507	0074 00 2 66060	TSX CHECK,2	CHECK FMP EXECUTED OK
57510	0000 00 0 00000	HTR	CORRECT IND CODE WORD
57511	+177666651111	OCT 177666651111	CORRECT ACC 1-35
57512	+144200000000	OCT 144200000000	CORRECT MQ S,1-35
57513	0000 00 0 00000	HTR	CORRECT SI 0-35
57514	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57515	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57516	0074 00 4 00106	TSX OK,4	
57517	0020 00 0 57504	TRA FP21	

CHECK SUCCESSIVE FMP INSTRUCTIONS

57520	264447626060	BCD 1FMPS	
57521	0074 00 4 66227	FP21S	TSX CLEAR,4 CHECK PROGRAM SEQUENCE AND INITIALIZE REGISTERS
57522	0560 00 0 66464	LDQ	PROG
57523	0260 00 0 66465	FMP	PROG+1

RESULT AFTER 1ST FMP
ACC +211777777776 MQ +156000000001

57524	0260 00 0 66465	FMP	PROG+1
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RESULT AFTER 2ND FMP
ACC -155000000001 MQ -122777777776

57525	0260 00 0 66465	FMP	PROG+1
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RESULT AFTER 3RD FMP
ACC +122777777775 MQ +067000000002

57526	0260 00 0 66465	FMP	PROG+1
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RESULT AFTER 4TH FMP
ACC -066000000003 MQ -033777777774

57527	0260 00 0 66465	FMP	PROG+1
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RESULT AFTER 5TH FMP
ACC +033777777773 MQ +000000000004

9M71B
2/1/63
PAGE 840

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK RESULT AFTER 5 SUCCESSIVE FMP. FOR AN ERROR CONSULT THE
RESULT AFTER EACH FMP FOR CORRECT VALUES IN ACCUMULATOR AND MQ
REGISTERS AFTER EXECUTION OF EACH FMP

57530	0074 00 2 66060	TSX CHECK,2	CHECK 5 FMP-S EXECUTED OK
57531	0000 00 0 00000	HTR	CORRECT IND CODE WORD
57532	+033777777773	OCT 33777777773	CORRECT ACC 1-35
57533	+000000000004	OCT 4	CORRECT MQ S,1-35
57534	0000 00 0 00000	HTR	CORRECT SI 0-35
57535	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57536	0074 00 4 00105	TSX ERROR,4	
57537	0074 00 4 00106	TSX OK,4	
57540	0020 00 0 57521	TRA FP21S	

CHECK FMP TRAPS WITH ACCUMULATOR AND MQ UNDERFLOW

57541	264447606060	BCD 1FMP	
57542	0074 00 4 66227	FP21A TSX	CLEAR,4
57543	0560 00 0 66466	LDQ FPNA	MQ +100333330000
57544	0260 00 0 66467	FMP FPNA+1	SR -100777770000
57545	0074 00 2 66060	TSX CHECK,2	CHECK FMP EXECUTED OK
57546	-311400000000	OCT 711400000000	CORRECT IND CODE WORD
57547	+377666651111	OCT 377666651111	CORRECT ACC 1-35
57550	-344200000000	OCT 744200000000	CORRECT MQ S,1-35
57551	0000 00 0 00000	HTR	CORRECT SI 0-35
57552	0000 00 0 57545	HTR FP21A+3	CORRECT ADR LOC ZERO
57553	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57554	0074 00 4 00106	TSX OK,4	
57555	0020 00 0 57542	TRA FP21A	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 841

CHECK FMP WITH MULTIPLICAND ZERO

57556	264447606060		BCD 1FMP	
57557	0074 00 4 66227	FP22	TSX CLEAR,4	
57560	0560 00 0 66513		LDQ ONES	MQ CH 377 FR -777777777
57561	0260 00 0 66477		FMP ZERO	SR CH 000 FR +000000000
57562	0074 00 2 66060		TSX CHECK,2	CHECK UFM EXECUTED OK
57563	-0 00000 0 00000		MZE	CORRECT IND CODE WORD
57564	0000 00 0 00000		HTR	CORRECT ACC 1-35
57565	-0 00000 0 00000		MZE	CORRECT MQ S,1-35
57566	0000 00 0 00000		HTR	CORRECT SI 0-35
57567	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
57570	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
57571	0074 00 4 00106		TSX OK,4	
57572	0020 00 0 57557		TRA FP22	

CHECK FMP WITH MULTIPLIER FRACTION ZERO AND SIGNS UNLIKE

57573	264447606060		BCD 1FMP	
57574	0074 00 4 66227	FP23	TSX CLEAR,4	
57575	0560 00 0 66444		LDQ ELIM4	MULTIPLIER -377000000000
57576	0260 00 0 66515		FMP ONES+2	MULTIPLICAND +377777777776
57577	0074 00 2 66060		TSX CHECK,2	CHECK FMP EXECUTED OK
57600	-0 00000 0 00000		MZE	CORRECT IND CODE WORD
57601	0000 00 0 00000		HTR	CORRECT ACC 1-35
57602	-0 00000 0 00000		MZE	CORRECT MQ S,1-35
57603	0000 00 0 00000		HTR	CORRECT SI 0-35
57604	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
57605	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
57606	0074 00 4 00106		TSX OK,4	
57607	0020 00 0 57574		TRA FP23	

9M718
2/1/63
PAGE 842

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK FMP WITH MULTIPLICAND FRACTION ZERO

57610	264447606060	BCD 1FMP	
57611	0074 00 4 66227	FP24	TSX CLEAR,4
57612	0560 00 0 66515	LDQ	ONES+2 MULTIPLIER +377777777776
57613	0260 00 0 66444	FMP	ELIM4 MULTIPLICAND -377000000000
57614	0074 00 2 66060	TSX	CHECK,2 CHECK FMP EXECUTED OK
57615	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
57616	0000 00 0 00000	HTR	CORRECT ACC 1-35
57617	-0 00000 0 00000	MZE	CORRECT MQ S,1-35
57620	0000 00 0 00000	HTR	CORRECT SI 0-35
57621	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57622	0074 00 4 00105	TSX	ERROR,4 TO ERROR ROUTINE
57623	0074 00 4 00106	TSX	OK,4
57624	0020 00 0 57611	TRA	FP24

CHECK FMP DOES NOT TRAP WITH CHARACTERISTICS INDICATING UNDERFLOW
BUT ACCUMULATOR FRACTION PRODUCT EQUALS ZERO

57625	264447606060	BCD 1FMP	
57626	0074 00 4 66227	FP25	TSX CLEAR,4
57627	0560 00 0 66544	LDQ	FPN+14 MQ CH 052 FR +000000001
57630	0260 00 0 66545	FMP	FPN+15 SR CH 125 FR -200000001
57631	0074 00 2 66060	TSX	CHECK,2 CHECK FMP EXECUTED OK
57632	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
57633	0000 00 0 00000	HTR	CORRECT ACC 1-35
57634	-000400000002	OCT	400400000002 CORRECT MQ S,1-35
57635	0000 00 0 00000	HTR	CORRECT SI 0-35
57636	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57637	0074 00 4 00105	TSX	ERROR,4 TO ERROR ROUTINE
57640	0074 00 4 00106	TSX	OK,4
57641	0020 00 0 57626	TRA	FP25

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 843

CHECK FDP WITH A ZERO DIVIDEND

57642	262447606060		BCD 1FDP	
57643	0074 00 4 66227	FP26	TSX CLEAR,4	
57644	0560 00 0 66513		LDQ ONES	L -377777777777 TO MQ
57645	0500 00 0 66500		CLA MZE	ACC -0
57646	0241 00 0 66526		FDP FPN	DIVISOR +377377777777
57647	0074 00 2 66060		TSX CHECK,2	CHECK DVP EXECUTED OK
57650	0000 00 0 00000		HTR	CORRECT IND CODE WORD
57651	0000 00 0 00000		HTR	CORRECT ACC 1-35
57652	-0 00000 0 00000		MZE	CORRECT MQ S,1-35
57653	0000 00 0 00000		HTR	CORRECT SI 0-35
57654	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
57655	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
57656	0074 00 4 00106		TSX OK,4	
57657	0020 00 0 57643		TRA FP26	

CHECK FDP WITH ZERO DIVISOR

57660	262447606060		BCD 1FDP	
57661	0074 00 4 66227	FP27	TSX CLEAR,4	
57662	0560 00 0 66526		LDQ FPN	L +377377777777 IN MQ
57663	0500 00 0 66534		CLA FPN+6	L -200777770000 IN ACC
57664	0241 00 0 66477		FDP ZERO	DIVISOR +0
57665	0074 00 2 66060		TSX CHECK,2	CHECK FDP EXECUTED OK
57666	-000004000000		OCT 400004000000	CORRECT IND CODE WORD
57667	+200777770000		OCT 200777770000	CORRECT ACC 1-35
57670	-0 00000 0 00000		MZE	CORRECT MQ S,1-35
57671	0000 00 0 00000		HTR	CORRECT SI 0-35
57672	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
57673	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
57674	0074 00 4 00106		TSX OK,4	
57675	0020 00 0 57661		TRA FP27	

9M718
2/1/63
PAGE 844

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK FDP WITH ACC FRACTION TWICE AS LARGE AS SR FRACTION

57676	262447606060	BCD 1FDP	
57677	0074 00 4 66227	FP28	TSX CLEAR,4
57700	0560 00 0 66513	LDQ ONES	L -377777777777 IN MQ
57701	0502 00 0 66513	CLS ONES	L +377777777777 IN ACC
57702	0241 00 0 66526	FDP FPN	DIVISOR +377377777777

WHEN FRACTION SIZE TEST IS MADE IN L TIME 1ST STEP, 9 CARRY
TGR SHOULD REMAIN OFF INDICATING THE ACC FRACTION IS TOO LARGE.
TURN ON T2 AND DIVIDE CHECK TGRS, SET MQ SIGN AND END OPERATION
IN L TIME 1ST STEP.

57703	0074 00 2 66060	TSX CHECK,2	CHECK DVP EXECUTED OK
57704	+000004000000	OCT 4000000	CORRECT IND CODE WORD
57705	+377777777777	OCT 377777777777	CORRECT ACC 1-35
57706	0000 00 0 00000	HTR	CORRECT MQ S,1-35
57707	0000 00 0 00000	HTR	CORRECT SI 0-35
57710	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57711	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57712	0074 00 4 00106	TSX OK,4	
57713	0020 00 0 57677	TRA FP28	

CHECK FDP INCREASES CHAR OF AC L TIME 2ND STEP

57714	262447606060	BCD 1FDP	
57715	0074 00 4 66227	FP29	TSX CLEAR,4
57716	0502 00 0 66546	CLS FPN+16	ACC -173516274051
57717	0241 00 0 66546	FDP FPN+16	SR +173516274051
57720	0074 00 2 66060	TSX CHECK,2	CHECK FDP EXECUTED OK
57721	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
57722	+141000000000	OCT 141000000000	CORRECT ACC 1-35
57723	-201400000000	OCT 601400000000	CORRECT MQ S,1-35
57724	0000 00 0 00000	HTR	CORRECT SI 0-35
57725	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
57726	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
57727	0074 00 4 00106	TSX OK,4	
57730	0020 00 0 57715	TRA FP29	

SECTION FIVE
SINGLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 845

CHECK FDP WITH BITS IN FRACTION OF DIVISOR AND DIVIDEND

57731	262447606060	BCD 1FDP
57732	0074 00 4 66227	FP30 TSX CLEAR,4
57733	0502 00 0 66546	CLS FPN+16 ACC CH 173 FR -516274051
57734	0241 00 0 66547	FDP FPN+17 SR CH 176 FR +444444445
57735	0074 00 2 66060	TSX CHECK,2 CHECK FDP EXECUTED OK
57736	-0 00000 0 00000	MZE CORRECT IND CODE WORD
57737	+141202471361	OCT 141202471361 CORRECT ACC 1-35
57740	-176444444443	OCT 576444444443 CORRECT MQ S,1-35
57741	0000 00 0 00000	HTR CORRECT SI 0-35
57742	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
57743	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
57744	0074 00 4 00106	TSX OK,4
57745	0020 00 0 57732	TRA FP30

CHECK FDP WITH QUOTIENT CHARACTERISTIC UNDERFLOW

57746	262447606060	BCD 1FDP
57747	0074 00 4 66227	FP31 TSX CLEAR,4
57750	0500 00 0 66550	CLA FPN+18 L +150760000000 IN ACC
57751	0241 00 0 66551	FDP FPN+19 DIV BY -352700000000
57752	0074 00 2 66060	TSX CHECK,2 CHECK FDP EXECUTED OK
57753	+014400000000	OCT 014400000000 CORRECT IND CODE WORD
57754	+116300000000	OCT 116300000000 CORRECT ACC 1-35
57755	-377433333333	OCT 777433333333 CORRECT MQ S,1-35
57756	0000 00 0 00000	HTR CORRECT SI 0-35
57757	0000 00 0 57752	HTR FP31+3 CORRECT ADR LOC ZERO
57760	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
57761	0074 00 4 00106	TSX OK,4
57762	0020 00 0 57747	TRA FP31

9M71B
2/1/63
PAGE 846

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

C H E C K F D P W I T H R E M A I N D E R C H A R A C T E R I S T I C U N D E R F L O W

57763	262447606060	BCD 1FDP
57764	0074 00 4 66227	FP32 TSX CLEAR,4
57765	0560 00 0 66552	LDQ FPN+20 L +031400000000
57766	0763 00 0 00043	LLS 35 SHIFT FOR DIVIDEND
57767	0241 00 0 66553	FDP FPN+21 DIVIDE BY +232400000000
57770	0074 00 2 66060	TSX CHECK,2 CHECK FDP EXECUTED OK
57771	+315000000000	OCT 315000000000 CORRECT CODE WORD
57772	+377000000000	OCT 377000000000 CORRECT ACC 1-35
57773	+000400000000	OCT 000400000000 CORRECT MQ S,1-35
57774	0000 00 0 00000	HTR CORRECT SI 0-35
57775	0000 00 0 57770	HTR FP32+4 CORRECT ADR LOC ZERO
57776	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
57777	0074 00 4 00106	TSX OK,4
60000	0020 00 0 57764	TRA FP32

C H E C K F D P W I T H Q U O T I E N T A N D R E M A I N D E R U N D E R F L O W

60001	262447606060	BCD 1FDP
60002	0074 00 4 66227	FP33 TSX CLEAR,4
60003	0500 00 0 66554	CLA FPN+22 DIVIDEND -032404040404
60004	0241 00 0 66555	FDP FPN+23 DIVISOR -344440404040
60005	0074 00 2 66060	TSX CHECK,2 CHECK FDP EXECUTED OK
60006	-315400000000	OCT 715400000000 CORRECT IND CODE WORD
60007	+377423035700	OCT 377423035700 CORRECT ACC 1-35
60010	+266715412642	OCT 266715412642 CORRECT MQ S,1-35
60011	0000 00 0 00000	HTR CORRECT SI 0-35
60012	0000 00 0 60005	HTR FP33+3 CORRECT ADR LOC ZERO
60013	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60014	0074 00 4 00106	TSX OK,4
60015	0020 00 0 60002	TRA FP33

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 847

CHECK FDP WITH QUOTIENT CHARACTERISTIC OVERFLOW

60016	262447606060	BCD 1FDP	
60017	0074 00 4 66227	FP34	TSX CLEAR,4
60020	0502 00 0 66556	CLS FPN+24	DIVIDEND -377070000000
60021	0241 00 0 66557	FDP FPN+25	DIVISOR +177700000000
60022	0074 00 2 66060	TSX CHECK,2	CHECK FDP EXECUTED OK
60023	-016400000000	OCT 416400000000	CORRECT IND CODE WORD
60024	+344000000000	OCT 344000000000	CORRECT ACC 1-35
60025	-000100000000	OCT 400100000000	CORRECT MQ S,1-35
60026	0000 00 0 00000	HTR	CORRECT SI 0-35
60027	0000 00 0 60022	HTR FP34+3	CORRECT ADR LOC ZERO
60030	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
60031	0074 00 4 00106	TSX OK,4	
60032	0020 00 0 60017	TRA FP34	

CHECK FDP WITH CHAR INDICATING TRAP AND DIVIDEND FRAC ZERO

60033	262447606060	BCD 1FDP	
60034	0074 00 4 66227	FP35	TSX CLEAR,4
60035	0502 00 0 66543	CLS FPN+13	L -032000000000
60036	0767 00 0 00002	ALS 2	DIVIDEND -150000000000
60037	0241 00 0 66551	FDP FPN+19	DIVISOR -352700000000
60040	0074 00 2 66060	TSX CHECK,2	CHECK FDP EXECUTED OK
60041	0000 00 0 00000	HTR	CORRECT IND CODE WORD
60042	0000 00 0 00000	HTR	CORRECT ACC 1-35
60043	0000 00 0 00000	HTR	CORRECT MQ S,1-35
60044	0000 00 0 00000	HTR	CORRECT SI 0-35
60045	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
60046	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
60047	0074 00 4 00106	TSX OK,4	
60050	0020 00 0 60034	TRA FP35	

9M718
2/1/63
PAGE 848

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK UAM WITH ACC AND SIGNS ALIKE AND CHAR
EQUAL , TRUE ADD
FACT 1-2-5 END OP IN FACT 5 3 CYCLES

60051	642144606060		BCD 1UAM
60052	0074 00 4 66227	FP38	TSX CLEAR,4
60053	0560 00 0 66513		LDQ ONES L-377777777777 IN MQ
60054	0500 00 0 66560		CLA FPN+26 L+200212121212
60055	-0304 00 0 66561		UAM FPN+27 L+200121212121
60056	0074 00 2 66060		TSX CHECK,2 CHECK UAM EXECUTED OK
60057	0000 00 0 00000		HTR CORRECT IND CODE WORD
60060	+200333333333		OCT 200333333333 CORRECT ACC 1-35
60061	+145000000000		OCT 145000000000 CORRECT MQ S,1-35
60062	0000 00 0 00000		HTR CORRECT SI 0-35
60063	0000 00 0 00000		HTR
60064	0074 00 4 00105		TSX ERROR,4 TO ERROR ROUTINE
60065	0074 00 4 00106		TSX OK,4
60066	0020 00 0 60052		TRA FP38

CHECK UAM FORCE SIGN PLUS , CHAR EQUAL , TRUE ADD
FACT 1-2-5 END OP IN FACT 5 3 CYCLES

60067	642144606060		BCD 1UAM
60070	0074 00 4 66227	FP39	TSX CLEAR,4
60071	0500 00 0 66561		CLA FPN+27 L+200121212121
60072	-0304 00 0 66562		UAM FPN+28 L-200121212121
60073	0074 00 2 66060		TSX CHECK,2 CHECK UFA EXECUTED OK
60074	0000 00 0 00000		HTR CORRECT IND CODE WORD
60075	+200242424242		OCT 200242424242 CORRECT ACC 1-35
60076	+145000000000		OCT 145000000000 CORRECT MQ S,1-35
60077	0000 00 0 00000		HTR CORRECT SI 0-35
60100	0000 00 0 00000		HTR CORRECT ADR LOC ZERO
60101	0074 00 4 00105		TSX ERROR,4 TO ERROR ROUTINE
60102	0074 00 4 00106		TSX OK,4
60103	0020 00 0 60070		TRA FP39

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 849

CHECK UAM WITH SIGNS UNLIKE AND CHAR EQUAL ,
COMP ADD, NO 9P CARRY-9P EQUAL ZERO, RECOMP
ACC

FACT 1-2-3-5 END OP IN FACT 5 3 CYCLES

60104	642144606060	BCD 1UAM
60105	0074 00 4 66227	FP40 TSX CLEAR,4
60106	0502 00 0 66560	CLS FPN+26 L-200212121212 IN ACC
60107	-0304 00 0 66561	UAM FPN+27 ADD +200121212121
60110	0074 00 2 66060	TSX CHECK,2 CHECK UAM EXECUTED OK
60111	-0 00000 0 00000	MZE CORRECT IND CODE WORD
60112	+200070707071	OCT 200070707071 CORRECT ACC 1-35
60113	-145000000000	OCT 545000000000 CORRECT MQ S,1-35
60114	0000 00 0 00000	HTR CORRECT SI 0-35
60115	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60116	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60117	0074 00 4 00106	TSX OK,4
60120	0020 00 0 60105	TRA FP40

CHECK UAM WITH SIGNS ALIKE AND CHAR EQUAL
ALLOW CARRY INTO AD 8 FOR CHAR ADJUST AND
SHIFT RIGHT FACT 5 FOR FRACTION OVERFLOW
FACT 2-5 END OP IN E TIME 2 CYCLES

60121	642144606060	BCD 1UAM
60122	0074 00 4 66227	FP41 TSX CLEAR,4
60123	0500 00 0 66547	CLA FPN+17 L+176444444445 IN ACC
60124	-0304 00 0 66547	UAM FPN+17 L+176444444445 IN SR
60125	0074 00 2 66060	TSX CHECK,2 CHECK UAM EXECUTED OK
60126	0000 00 0 00000	HTR CORRECT IND CODE WORD
60127	+177444444445	OCT 177444444445 CORRECT AC 1-35
60130	+144000000000	OCT 144000000000 CORRECT MQ S-35
60131	0000 00 0 00000	HTR CORRECT SI 0-35
60132	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60133	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60134	0074 00 4 00106	TSX OK,4
60135	0020 00 0 60122	TRA FP41

9M71B
2/1/63
PAGE 850

SECTION FIVE
SINGLE PRECISION ROUTINES

CHECK UAM WITH SIGNS UNLIKE AND CHAR EQUAL
COMP ADD, 9P CARRY-MQ EQUAL ZERO-ACC 9P EQUAL
ONE, ADD ONE TO ACC, INVERT SIGN ACC
FACT 1-2-3-5 END OP IN FACT 5 3 CYCLES

60136	642144606060	BCD 1UAM
60137	0074 00 4 66227	FP42 TSX CLEAR,4
60140	0500 00 0 66623	CLA FPN+61 L-342525252524 IN ACC
60141	-0304 00 0 66624	UAM FPN+62 L-342525252525 IN SR
60142	0074 00 2 66060	TSX CHECK,2 CHECK UAM EXECUTED OK
60143	0000 00 0 00000	HTR CORRECT IND CODE WORD
60144	+342000000001	OCT +342000000001 CORRECT AC 1-35
60145	+307000000000	OCT +307000000000 CORRECT MQ S-35
60146	0000 00 0 00000	HTR CORRECT SI 0-35
60147	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60150	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60151	0074 00 4 00106	TSX OK,4
60152	0020 00 0 60137	TRA FP42

EXECUTION OF USM AND UAM ARE THE SAME EXCEPT THAT IN
E TIME THE SR FACTOR SIGN IS FORCED MINUS

CHECK USM FORCE SR SIGN MINUS AND CHAR EQUAL
TRUE ADD
FACT 2-5 END OP IN E TIME 2 CYCLES

60153	646244606060	BCD 1USM
60154	0074 00 4 66227	FP43 TSX CLEAR,4
60155	0502 00 0 66564	CLS FPN+30 L -204740000000 IN ACC
60156	-0306 00 0 66565	USM FPN+31 MAKE SR -204037777777
60157	0074 00 2 66060	TSX CHECK,2 CHECK USM EXECUTED OK
60160	-0 00000 0 00000	MZE CORRECT IND CODE WORD
60161	+204777777777	OCT 204777777777 CORRECT ACC 1-35
60162	-151000000000	OCT 551000000000 CORRECT MQ S,1-35
60163	0000 00 0 00000	HTR CORRECT SI 0-35
60164	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60165	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60166	0074 00 4 00106	TSX OK,4
60167	0020 00 0 60154	TRA FP43

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 851

CHECK USM FORCE SR SIGN MINUS, EXCHANGE SR AND
ACC, PRESHIFT OF 1, TRUE ADD
FACT 1-2-5 END OP IN FACT 5 3 CYCLES

60170	646244606060	BCD 1USM
60171	0074 00 4 66227	FP44 TSX CLEAR,4
60172	0502 00 0 66566	CLS FPN+32 L -202400000000 IN ACC
60173	-0306 00 0 66532	USM FPN+4 MAKE SR -201400000000
60174	0074 00 2 66060	TSX CHECK,2 CHECK USM EXECUTED OK
60175	-0 00000 0 00000	MZE CORRECT IND CODE WORD
60176	+202600000000	OCT 202600000000 CORRECT ACC 1-35
60177	-147000000000	OCT 547000000000 CORRECT MQ S,1-35
60200	0000 00 0 00000	HTR CORRECT SI 0-35
60201	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60202	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60203	0074 00 4 00106	TSX OK,4
60204	0020 00 0 60171	TRA FP44

CHECK USM WITH LARGER FACTOR IN SR AND NO
EXCHANGE, PRESHIFT OF 2, TRUE ADD, FRACTION
OVERFLOW ADJUST
FACT 1-2-5 END OP IN FACT 5 3 CYCLES

60205	646244606060	BCD 1USM
60206	0074 00 4 66227	FP45 TSX CLEAR,4
60207	0502 00 0 66532	CLS FPN+4 L -201400000000 IN ACC
60210	-0306 00 0 66567	USM FPN+33 SR -203700000000
60211	0074 00 2 66060	TSX CHECK,2 CHECK USM EXECUTED OK
60212	-0 00000 0 00000	MZE CORRECT INDICATOR CODE WORD
60213	+204400000000	OCT 204400000000 CORRECT ACC 1-35
60214	-151000000000	OCT 551000000000 CORRECT MQ S,1-35
60215	0000 00 0 00000	HTR CORRECT SI 0-35
60216	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60217	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60220	0074 00 4 00106	TSX OK,4
60221	0020 00 0 60206	TRA FP45

9M71B
2/1/63
PAGE 852

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK UFA WITH CHAR DIFF GREATER THAN 77 OCTAL
LARGER ENDS UP IN THE ACC

FACT 5 END OP IN E TIME 2 CYCLES

60222	642621606060	BCD 1UFA
60223	0074 00 4 66227	FP46 TSX CLEAR,4
60224	0500 00 0 66561	CLA FPN+27 L+2001212121 IN ACC
60225	--0300 00 0 66513	UFA ONES ADD -377777777777
60226	0074 00 2 66060	TSX CHECK,2 CHECK UFA EXECUTED OK
60227	--0 00000 0 00000	MZE CORRECT IND CODE WORD
60230	+377777777777	OCT 377777777777 CORRECT ACC 1-35
60231	--344000000000	OCT 744000000000 CORRECT MQ S,1-35
60232	0000 00 0 00000	HTR CORRECT SI 0-35
60233	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60234	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60235	0074 00 4 00106	TSX OK,4
60236	0020 00 0 60223	TRA FP46

CHECK UFA WITH CHAR DIFF GREATER THAN 77 OCTAL
EXCHANGE TWICE

FACT 5 END OP IN E TIME 2 CYCLES

60237	642621606060	BCD 1UFA
60240	0074 00 4 66227	FP47 TSX CLEAR,4
60241	0500 00 0 66513	CLA ONES L -377777777777 IN ACC
60242	--0300 00 0 66561	UFA FPN+27 ADD +200121212121
60243	0074 00 2 66060	TSX CHECK,2 CHECK UFA EXECUTED OK
60244	--0 00000 0 00000	MZE CORRECT IND CODE WORD
60245	+377777777777	OCT 377777777777 CORRECT ACC 1-35
60246	--344000000000	OCT 744000000000 CORRECT S,1-35
60247	0000 00 0 00000	HTR CORRECT SI 0-35
60250	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60251	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60252	0074 00 4 00106	TSX OK,4
60253	0020 00 0 60240	TRA FP47

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 853

CHECK UFA WITH CHAR DIFF 10 OCTAL, EXCHANGE
COMP ADD, 9P CARRY-9P EQUALS ONE-MQ NOT ZERO,
RECOMP MQ

FACT 1-2-6-7-5 END OP IN FACT 5 6 CYCLES

60254	642621606060		BCD 1UFA
60255	0074 00 4 66227	FP48	TSX CLEAR,4
60256	0500 00 0 66625		CLA FPN+63 L+175002761547 IN ACC
60257	-0300 00 0 66626		UFA FPN+64 L-165715216356 IN SR
60260	0074 00 2 66060		TSX CHECK,2 CHECK UFA EXECUTED OK
60261	0000 00 0 00000		HTR CORRECT IND CODE WORD
60262	+175001127112		OCT 175001127112 CORRECT AC 1-35
60263	+142044000000		OCT 142044000000 CORRECT MQ S-35
60264	0000 00 0 00000		HTR CORRECT SI 0-35
60265	0000 00 0 00000		HTR CORRECT ADR LOC ZERO
60266	0074 00 4 00105		TSX ERROR,4 TO ERROR ROUTINE
60267	0074 00 4 00106		TSX OK,4
60270	0020 00 0 60255		TRA FP48

CHECK UFA DOES NOT RESET ACC WITH ZERO ACC
FRACTION, CHAR EQUAL, SIGNS UNLIKE, NO 9P -
CARRY-9P EQUAL ZERO, RECOMP ACC
FACT 1-2-3-5 END OP IN FACT 5 3 CYCLES

60271	642621606060		BCD 1UFA
60272	0074 00 4 66227	FP49	TSX CLEAR,4
60273	0502 00 0 66547		CLS FPN+17 ACC -176444444445
60274	-0300 00 0 66547		UFA FPN+17 SR +176444444445
60275	0074 00 2 66060		TSX CHECK,2 CHECK UFA EXECUTED OK
60276	-0 00000 0 00000		MZE CORRECT IND CODE WORD
60277	+176000000000		OCT 176000000000 CORRECT ACC 1-35
60300	-143000000000		OCT 543000000000 CORRECT MQ S,1-35
60301	0000 00 0 00000		HTR CORRECT SI 0-35
60302	0000 00 0 00000		HTR CORRECT ADR LOC ZERO
60303	0074 00 4 00105		TSX ERROR,4 TO ERROR ROUTINE
60304	0074 00 4 00106		TSX OK,4
60305	0020 00 0 60272		TRA FP49

9M71B
2/1/63
PAGE 854

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK UFS WITH SIGNS UNLIKE, SAME AS FP 48
EXCEPT SR SIGN INVERTED IN E TIME.
FACT 1-2-6-7-5 END OP IN FACT 5 6 CYCLES

60306	642662606060	BCD 1UFS
60307	0074 00 4 66227	FP50 TSX CLEAR,4
60310	0502 00 0 66570	CLS FPN+34 ACC --352111174240
60311	0302 00 0 66571	UFS FPN+35 SR +317476713074
60312	0074 00 2 66060	TSX CHECK,2 CHECK UFS EXECUTED OK
60313	000000 0 00000	MZE CORRECT IND CODE WORD
60314	+352111174237	OCT 352111174237 CORRECT ACC 1-35
60315	-317301064704	OCT 717301064704 CORRECT MQ S,1-35
60316	0000 00 0 00000	HTR CORRECT SI 0-35
60317	0000 00 0 00000	HTR CORRECT ADR LOC ZERO

60320	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60321	0074 00 4 00106	TSX OK,4
60322	0020 00 0 60307	TRA FP50

CHECK UFA WITH UNLIKE SIGNS, 9P CARRY, MQ NOT EQUAL ZERO,
RECOMP MQ.

FACT 1-2-6-7-5 END OP IN FACT 5 3 CYCLES

60323	642662606060	BCD 1UFS
60324	0074 00 4 66227	FP50A TSX CLEAR,4
60325	0500 00 0 66645	CLA FPN+79 L+222000060000 IN AC
60326	0300 00 0 66646	UFA FPN+80 L-220000240003
60327	0074 00 2 66060	TSX CHECK,2
60330	000000 0 00000	PZE CORR IND CODE WORD
60331	+222000007777	OCT 222000007777 CORRECT AC 1-35
60332	+167200000000	OCT 167200000000 CORRECT MQ S-35
60333	000000 0 00000	PZE CORRECT SI 0-35
60334	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60335	0074 00 4 00105	TSX ERROR,4
60336	0074 00 4 00106	TSX OK,4
60337	0020 00 0 60324	TRA FP50A

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 855

CHECK FAD SIGNS ALIKE, PRESIFT OF TWO, TRUE ADD,
POST SHIFT OF ONE. SLOW 9 SUM.
FACT 1-2-4-5 END OP IN FACT 5 3 CYCLES

60340	262124606060	BCD 1FAD	
60341	0074 00 4 66227	FP50B TSX CLEAR,4	
60342	0500 00 0 66647	CLA FPN+81	L-125377760000
60343	0300 00 0 66650	FAD FPN+82	L-123000040000
60344	0074 00 2 66060	TSX CHECK,2	
60345	-0 00000 0 00000	MZE	CORR IND CODE WORD
60346	+124777760000	OCT 124777760000	CORRECT AC 1-35
60347	-071000000000	OCT 471000000000	CORRECT MQ S-35
60350	0 00000 0 00000	PZE	CORRECT SI 0-35
60351	0000 00 0 00000	HTR	CORR ADR LOC ZERO
60352	0074 00 4 00105	TSX ERROR,4	
60353	0074 00 4 00106	TSX OK,4	
60354	0020 00 0 60341	TRA FP50B	

CHECK FAM FORCE SR SIGN PLUS, LEAVE SIGNED
NORMAL ZERO WITH ACC + MQ FRACTION RESULTS
ZERO, SAME AS FP 49 EXCEPT RESETTING ACC + MQ
CHARACTERISTICS.

FACT 1-2-3-4-5 END OP IN FACT 5 3 CYCLES

60355	262144606060	BCD 1FAM	
60356	0074 00 4 66227	FP51 TSX CLEAR,4	
60357	0500 00 0 66514	CLA ONES+1	ACC -177777777777
60360	0304 00 0 66514	FAM ONES+1	SR +177777777777
60361	0074 00 2 66060	TSX CHECK,2	CHECK FAM EXECUTED OK
60362	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
60363	0000 00 0 00000	HTR	CORRECT ACC 1-35
60364	-0 00000 0 00000	MZE	CORRECT MQ S,1-35
60365	0000 00 0 00000	HTR	CORRECT SI 0-35
60366	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
60367	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
60370	0074 00 4 00106	TSX OK,4	
60371	0020 00 0 60356	TRA FP51	

9M718
2/1/63
PAGE 856

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK FAM POST NORM, CHAR DIFF OF 2, SIGNS
UNLIKE, EXCHANGE, COMP ADD, RECOMP MQ, NORM
THIRTY FOUR OCTAL PLACES.

FACT 1-2-6-7-4-5 END OP IN FACT 5 6 CYCLES

60372	262144606060	BCD 1FAM
60373	0074 00 4 66227	FP52 TSX CLEAR,4
60374	0500 00 0 66627	CLA FPN+65 L-073125252525 IN AC
60375	0304 00 0 66630	FAM FPN+66 L-071525252523 IN SR
60376	0074 00 2 66060	TSX CHECK,2 CHECK FAM EXECUTED OK
60377	-0 00000 0 00000	MZE CORRECT IND CODE WORD
60400	+037400000000	OCT 037400000000 CORRECT AC 1-35
60401	-004000000000	OCT 404000000000 CORRECT MQ S-35
60402	0000 00 0 00000	HTR CORRECT SI 0-35
60403	0000 00 0 00000	HTR CORRECT LOC ADR ZERO
60404	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60405	0074 00 4 00106	TSX OK,4
60406	0020 00 0 60373	TRA FP52

CHECK FSM MAXIMUM POST SHIFT, SIGNS ALIKE,
EXCHANGE, CHAR DIFF 33 OCTAL, TRUE ADD, POST
SHIFT OF 65 OCTAL

FACT 1-2-4-5 END OP IN FACT 4 9 CYCLES

60407	266244606060	BCD 1FSM
60410	0074 00 4 66227	FP53 TSX CLEAR,4
60411	0500 00 0 66505	CLA CHAR+1 ACC -377000000000
60412	0306 00 0 66572	FSM FPN+36 MAKE SR -344000000001
60413	0074 00 2 66060	TSX CHECK,2 CHECK FSM EXECUTED OK
60414	-0 00000 0 00000	MZE CORRECT IND CODE WORD
60415	+312400000000	OCT 312400000000 CORRECT ACC 1-35
60416	-257000000000	OCT 657000000000 CORRECT MQ S,1-35
60417	0000 00 0 00000	HTR CORRECT SI 0-35
60420	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60421	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60422	0074 00 4 00106	TSX OK,4
60423	0020 00 0 60410	TRA FP53

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 857

CHECK FSM WITH ALL BITS SHIFTED OUT OF MQ WHEN
PRESHIFTING, SHOULD LEAVE SIGNED NORMAL ZERO.
FACT 1-2-4-5 END OP IN FACT 5 8 CYCLES

60424	266244606060	BCD 1FSM	
60425	0074 00 4 66227	FP54	TSX CLEAR,4
60426	0500 00 0 66523	CLA TWOS	ACC -222222222222
60427	0306 00 0 66506	FSM CHAR+2	SR -307000000000
60430	0074 00 2 66060	TSX CHECK,2	CHECK FSM EXECUTED OK
60431	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
60432	0000 00 0 00000	HTR	CORRECT ACC 1-35
60433	-0 00000 0 00000	MZE	CORRECT MQ S,1-35
60434	0000 00 0 00000	HTR	CORRECT SI 0-35
60435	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
60436	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
60437	0074 00 4 00106	TSX OK,4	
60440	0020 00 0 60425	TRA FP54	

CHECK FAD, SIGNS UNLIKE, CHAR + FRACS EQUAL
SHOULD LEAVE SIGNED NORMAL ZERO IN ACC + MQ,
COMP ADD, NO 9P CARRY-9P EQUAL ZERO, RECOMP
ACC, RESET ACC
FACT 1-2-3-4-5 END OP IN FACTS 3 CYCLES

60441	262124606060	BCD 1FAD	
60442	0074 00 4 66227	FP55	TSX CLEAR,4
60443	0502 00 0 66546	CLS FPN+16	ACC -173516274051
60444	0300 00 0 66546	FAD FPN+16	SR +173516274051
60445	0074 00 2 66060	TSX CHECK,2	CHECK FAD EXECUTED OK
60446	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
60447	0000 00 0 00000	HTR	CORRECT ACC 1-35
60450	-0 00000 0 00000	MZE	CORRECT MQ S,1-35
60451	0000 00 0 00000	HTR	CORRECT SI 0-35
60452	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
60453	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
60454	0074 00 4 00106	TSX OK,4	
60455	0020 00 0 60442	TRA FP55	

9M718
2/1/63
PAGE 858

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK FAD, SIGNS UNLIKE, PRESIFT OF 3, EX-
CHANGE, COMP ADD, 9P CARRY-9P EQUAL 1, ADD ONE
TO ACC 35, POSTSHIFT OF ONE
FACT 1-2-3-4-5 END OP IN FACT 4 3 CYCLES

60456	262124606060	BCD 1FAD
60457	0074 00 4 66227	FP56 TSX CLEAR,4
60460	0502 00 0 66563	CLS FPN+29 ACC +204400000000
60461	0300 00 0 66573	FAD FPN+37 SR -201400000000
60462	0074 00 2 66060	TSX CHECK,2 CHECK FAD EXECUTED OK
60463	0000 00 0 00000	HTR CORRECT IND CODE WORD
60464	+203700000000	OCT 203700000000 CORRECT ACC 1-35
60465	+150000000000	OCT 150000000000 CORRECT MQ S,1-35
60466	0000 00 0 00000	HTR CORRECT SI 0-35
60467	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60470	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60471	0074 00 4 00106	TSX OK,4
60472	0020 00 0 60457	TRA FP56

CHECK FSB, SIGNS UNLIKE, EXCHANGE, PRESIFT OF
5, COMP ADD, 9P CARRY-9P EQUAL ONE-MQ NOT
EQUAL ZERO, RECOMP MQ, POST SHIFT OF 5
FACT 1-2-6-7-4-5 END OP IN FACT 5 4 CYCLES

60473	266222606060	BCD 1FSB
60474	0074 00 4 66227	FP57 TSX CLEAR,4
60475	0502 00 0 66565	CLS FPN+31 ACC -204037777777
60476	0302 00 0 66514	FSB ONES+1 MAKE SR +177777777777
60477	0074 00 2 66060	TSX CHECK,2 CHECK FSB EXECUTED OK
60500	-0 00000 0 00000	MZE CORRECT IND CODE WORD
60501	+177777777741	OCT 177777777741 CORRECT ACC 1-35
60502	-144000000000	OCT 544000000000 CORRECT MQ S,1-35
60503	0000 00 0 00000	HTR CORRECT SI 0-35
60504	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
60505	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60506	0074 00 4 00106	TSX OK,4
60507	0020 00 0 60474	TRA FP57

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 859

CHECK UFA END OP IN FACT 1, SIGNS ALIKE,
PRESHIFT OF 9, TRUE ADD
FACT 1-2-5 END OP IN FACT 1 3 CYCLES

60510	642621606060		BCD 1UFA	
60511	0074 00 4 66227	FP57A	TSX	CLEAR,4
60512	0500 00 0 66603		CLA	FPN+45
60513	-0300 00 0 66604		UFA	FPN+46
60514	0074 00 2 66060		TSX	CHECK,2
60515	0 00000 0 00000		PZE	CORR IND CODE WORD
60516	+211100200000		OCT	211100200000 CORR ACC 1-35
60517	+156000000000		OCT	156000000000 CORR MQ S-35
60520	0 00000 0 00000		PZE	CORR SI 0-35
60521	0000 00 0 00000		HTR	CORR ADR LOC ZERO
60522	0074 00 4 00105		TSX	ERROR,4
60523	0074 00 4 00106		TSX	OK,4
60524	0020 00 0 60511		TRA	FP57A

CHECK UFS END OP IN FACT 1, SIGNS UNLIKE,
PRESHIFT OF 9, COMP ADD, 9P CARRY-9P EQUAL ONE
-MQ EQUAL ZERO, CARRY TO ACC 35
FACT 1-2-3-5 END OP IN FACT 1 3 CYCLES

60525	642662606060		BCD 1UFS	
60526	0074 00 4 66227	FP57B	TSX	CLEAR,4
60527	0500 00 0 66605		CLA	FPN+47
60530	-0302 00 0 66606		UFS	FPN+48
60531	0074 00 2 66060		TSX	CHECK,2
60532	-0 00000 0 00000		MZE	CORR IND CODE WORD
60533	+211377400000		OCT	211377400000 CORR ACC 1-35
60534	-156000000000		OCT	556000000000 CORR MQ S-35
60535	0 00000 0 00000		PZE	CORR SI 0-35
60536	0000 00 0 00000		HTR	CORR ADR LOC ZERO
60537	0074 00 4 00105		TSX	ERROR,4
60540	0074 00 4 00106		TSX	OK,4
60541	0020 00 0 60526		TRA	FP57B

9M71B
2/1/63
PAGE 860

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK FAD END OP IN FACT 1, SIGNS ALIKE,
PRESHIFT OF 9, TRUE ADD, NORMAL NUMBERS
FACT 1-2-5 END OP IN FACT 1 3 CYCLES

60542	262124606060	BCD 1FAD	
60543	0074 00 4 66227	FP57C TSX	CLEAR,4
60544	0500 00 0 66605	CLA	FPN+47
60545	0300 00 0 66606	FAD	FPN+48
60546	0074 00 2 66060	TSX	CHECK,2
60547	0 00000 0 00000	PZE	CORR IND CODE WORD
60550	+211400400000	OCT	211400400000 CORR ACC 1-35
60551	+156000000000	OCT	156000000000 CORR MQ S-35
60552	0 00000 0 00000	PZE	CORR SI 0-35
60553	0000 00 0 00000	HTR	CORR ADR LOC ZERO
60554	0074 00 4 00105	TSX	ERROR,4
60555	0074 00 4 00106	TSX	OK,4
60556	0020 00 0 60543	TRA	FP57C

CHECK FAD END OP IN FACT 2, SIGNS ALIKE,
PRESHIFT OF 7, NORM NUMBERS
FACT 1-2-5 END OP IN FACT 2 3 CYCLES

60557	262124606060	BCD 1FAD	
60560	0074 00 4 66227	FP57E TSX	CLEAR,4
60561	0500 00 0 66605	CLA	FPN+47
60562	0300 00 0 66610	FAD	FPN+50
60563	0074 00 2 66060	TSX	CHECK,2
60564	0 00000 0 00000	PZE	CORR IND CODE WORD
60565	+207402000000	OCT	207402000000 CORR ACC S-35
60566	+154000000000	OCT	154000000000 CORR MQ S-35
60567	0 00000 0 00000	PZE	CORR SI 0-35
60570	0000 00 0 00000	HTR	CORR ADR LOC ZERO
60571	0074 00 4 00105	TSX	ERROR,4
60572	0074 00 4 00106	TSX	OK,4
60573	0020 00 0 60560	TRA	FP57E

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 861

CHECK UFA END OP IN FACT 2, SIGNS ALIKE,
UNNORM NUMBERS, PRESIFT OF 7, TRUE ADD
FACT 2-5 END OP IN FACT 2 3 CYCLES

60574	642621606060	BCD 1UFA	
60575	0074 00 4 66227	FP57F TSX	CLEAR,4
60576	0500 00 0 66611	CLA	FPN+51
60577	-0300 00 0 66612	UFA	FPN+52
60600	0074 00 2 66060	TSX	CHECK,2
60601	0 00000 0 00000	PZE	
60602	+207040200000	OCT	CORR IND CODE WD
60603	+154000000000	OCT	207040200000 CORR ACC 1-35
60604	0 00000 0 00000	OCT	154000000000 CORR MQ S-35
60605	0000 00 0 00000	PZE	CORR SI 0-35
		HTR	CORR ADR LOC ZERO
60606	0074 00 4 00105	TSX	ERROR,4
60607	0074 00 4 00106	TSX	OK,4
60610	0020 00 0 60575	TRA	FP57F

CHECK FAD END OP IN FACT 2, SIGNS UNLIKE
PRESIFT OF 7, TWOS COMP TO MQ, COMP ADD,
9P CARRY -MQ NOT ZERO-NDL
FACT 1-2-5 END OP IN FACT 2 3 CYCLES

60611	262124606060	BCD 1FAD	
60612	0074 00 4 66227	FP57H TSX	CLEAR,4
60613	0500 00 0 66614	CLA	FPN+54
60614	0300 00 0 66615	FAD	FPN+55
60615	0074 00 2 66060	TSX	CHECK,2
60616	-0 00000 0 00000	MZE	
60617	+207775377777	OCT	CORR IND CODE WORD
60620	-154004000000	OCT	207775377777 CORR ACC 1-35
60621	0 00000 0 00000	OCT	554004000000 CORR MQ S-35
60622	0000 00 0 00000	PZE	CORR SI 0-35
		HTR	CORR ADR LOC ZERO
60623	0074 00 4 00105	TSX	ERROR,4
60624	0074 00 4 00106	TSX	OK,4
60625	0020 00 0 60612	TRA	FP57H

9M71B
2/1/63
PAGE 862

SECTION FIVE
SINGLE PRECISION ROUTINES

CHECK UFS END OP IN FACT 2, SIGNS UNLIKE
PRESHIFT OF 7, TWOS COMP TO MQ, COMP ADD,
9P CARRY-MQ NOT ZERO--UNNORM
FACT 1-2-5 END OP IN FACT 2 3 CYCLES

60626	642662606060	BCD 1UFS
60627	0074 00 4 66227	FP57K TSX CLEAR,4
60630	0500 00 0 66616	CLA FPN+56
60631	-0302 00 0 66610	UFS FPN+50
60632	0074 00 2 66060	TSX CHECK,2
60633	-0 00000 0 00000	MZE CORR IND CODE WORD
60634	+207375777777	OCT 207375777777 CORR ACC 1-35
60635	-154774000000	OCT 554774000000 CORR MQ S-35
60636	0 00000 0 00000	PZE CORR SI 0-35
60637	0000 00 0 00000	HTR CORR ADR LOC ZERO
60640	0074 00 4 00105	TSX ERROR,4
60641	0074 00 4 00106	TSX OK,4
60642	0020 00 0 60627	TRA FP57K

CHECK FAD END OP IN FACT 3, SIGNS UNLIKE,
PRESHIFT OF 6, COMP ADD, 9P CARRY-9P EQUAL ONE
MQ EQUAL ZERO, ADD ONE TO ACC 35, POST SHIFT 1
FACT 1-2-3-4-5 END OP IN FACT 3 3 CYCLES

60643	262124606060	BCD 1FAD
60644	0074 00 4 66227	FP57L TSX CLEAR,4
60645	0500 00 0 66605	CLA FPN+47
60646	0300 00 0 66617	FAD FPN+57
60647	0074 00 2 66060	TSX CHECK,2
60650	-0 00000 0 00000	MZE CORR IND CODE WORD
60651	+205770000000	OCT 205770000000 CORR ACC 1-35
60652	-152000000000	OCT 552000000000 CORR MQ S-35
60653	0 00000 0 00000	PZE CORR SI 0-35
60654	0000 00 0 00000	HTR CORR ADR LOC ZERO
60655	0074 00 4 00105	TSX ERROR,4
60656	0074 00 4 00106	TSX OK,4
60657	0020 00 0 60644	TRA FP57L

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 863

CHECK UFS END OP IN FACT 3, AS FP 57L EXCEPT
NO PST NORM
FACT 1-2-3-5 END OP IN FACT 3 3 CYCLES

60660	642662606060	BCD 1UFS
60661	0074 00 4 66227	FP57M TSX CLEAR,4
60662	0500 00 0 66605	CLA FPN+47
60663	-0302 00 0 66620	UFS FPN+58
60664	0074 00 2 66060	TSX CHECK,2
60665	--0 00000 0 00000	MZE CORR IND CODE WORD
60666	+206174000000	OCT 206174000000 CORR ACC 1-35
60667	-153000000000	OCT 553000000000 CORR MQ S-35
60670	0 00000 0 00000	PZE CORR SI 0-35
60671	0000 00 0 00000	HTR CORR ADR LOC ZERO

60672	0074 00 4 00105	TSX ERROR,4
60673	0074 00 4 00106	TSX OK,4
60674	0020 00 0 60661	TRA FP57M

CHECK FAD SIGNS UNLIKE, CHAR EQUAL, COMP ADD,
9PCARRY, MQ EQUAL ZERO, 9P EQUAL 1, ADD ONE TO
ACC, POSTSHIFT 7 PLACES, NO TRAP WITH MQ CHAR 0.
FACT 1-2-3-4-5 END OP IN FACT 4 3 CYCLES

60675	262124606060	BCD 1FAD
60676	0074 00 4 66227	FP57N TSX CLEAR,4
60677	0500 00 0 66631	CLA FPN+67 L+042557072700 IN AC
60700	0300 00 0 66634	FAD FPN+70 L-042562077674 IN SR
60701	0074 00 2 66060	TSX CHECK,2
60702	--0 00000 0 00000	MZE CORR IND CODE WORD
60703	+033601177000	OCT 033601177000 CORRECT AC 1-35
60704	--0 00000 0 00000	MZE CORRECT MQ S-35
60705	0 00000 0 00000	PZE CORRECT SI 0-35
60706	0000 00 0 00000	HTR ADR LOC ZERO
60707	0074 00 4 00105	TSX ERROR,4
60710	0074 00 4 00106	TSX OK,4
60711	0020 00 0 60676	TRA FP57N

9M71B
2/1/63
PAGE 864

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK FAD WITH CHAR DIFF EQUAL TO 41 OCTAL. NDL LATCH SHOULD
BE RESET BEFORE SHIFTING. SIGNS UNLIKE, 9P CARRY MQ NOT EQUAL
ZERO, RECOMPLIMENT THE MQ.

FACT 1-2-6-7-5 END OP IN FACT 5 6 CYCLES

60712	262124606060	BCD 1FAD
60713	0074 00 4 66227	FP57P TSX CLEAR,4
60714	0500 00 0 66635	CLA FPN+71 L+264704536653 IN AC
60715	0300 00 0 66636	FAD FPN+72 L-223702660034 IN SR
60716	0074 00 2 66060	TSX CHECK,2
60717	0 00000 0 00000	PZE CORR IND CODE WORD
60720	+264704536652	OCT 264704536652 CORRECT AC 1-35
60721	+231770751200	OCT 231770751200 CORRECT MQ S-35
60722	0 00000 0 00000	PZE CORRECT SI 0-35
60723	0000 00 0 00000	HTR CORR ADR LOC ZERO
60724	0074 00 4 00105	TSX ERROR,4
60725	0074 00 4 00106	TSX OK,4
60726	0020 00 0 60713	TRA FP57P

CHECK FAD CHAR DIFF 35 OCTAL. NDL SHOULD BE RESET BEFORE
SHIFTING. SIGNS UNLIKE, 9PCARRY-MQ NOT EQUAL TO ZERO-RECOMP
MQ. NO POST SHIFTING.

FACT 1-2-6-7-5 END OP IN FACT 5 6 CYCLES

60727	262124606060	BCD 1FAD
60730	0074 00 4 66227	FP57Q TSX CLEAR,4
60731	0500 00 0 66637	CLA FPN+73 L-057447432622 IN AC
60732	0300 00 0 66640	FAD FPN+74 L+022544105263 IN SR
60733	0074 00 2 66060	TSX CHECK,2
60734	-0 00000 0 00000	MZE CORR IND CODE WORD
60735	+057447432621	OCT 057447432621 CORRECT AC 1-35
60736	-024646756524	OCT 424646756524 CORRECT MQ S-35
60737	0 00000 0 00000	PZE CORRECT SI 0-35
60740	0000 00 0 00000	HTR CORR ADR LOC ZERO
60741	0074 00 4 00105	TSX ERROR,4
60742	0074 00 4 00106	TSX OK,4
60743	0020 00 0 60730	TRA FP57Q

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 865

CHECK FAD CHAR DIFF 100 OCTAL. SIGNS UNLIKE, EXCHANGE, NDL
RESET BEFORE SHIFTING, ALL BITS SHIFTED OUT OF AC-MQ.
FACT 1-2-5 END OP IN FACT 5 8 CYCLES

60744	262124606060	BCD 1FAD
60745	0074 00 4 66227	FP57R TSX CLEAR,4
60746	0500 00 0 66641	CLA FPN+75 L+264400000000 IN AC
60747	0300 00 0 66642	FAD FPN+76 L-164542163421 IN SR
60750	0074 00 2 66060	TSX CHECK,2
60751	0 00000 0 00000	PZE
60752	+264400000000	OCT 264400000000 CORRECT IND CODE WORD
60753	+231000000000	OCT 231000000000 CORRECT AC 1-35
60754	0 00000 0 00000	OCT 231000000000 CORRECT MQ S-35
60755	0000 00 0 00000	PZE CORRECT SI 0-35
		HTR CORRECT ADR LOC ZERO
60756	0074 00 4 00105	TSX ERROR,4
60757	0074 00 4 00106	TSX OK,4
60760	0020 00 0 60745	TRA FP57R

CHECK TRAPPING WITH FLOATING POINT ADD AND SUBTRACT INSTRUCTIONS

CHECK UAM WITH MQ UNDERFLOW TRAP, SIGNS ALIKE
TRUE ADD, FRACTION OVERFLOW ADJUST
FACT 2-5 END OP IN E TIME 2 CYCLES

60761	642144635147	BCD 1UAMTRP
60762	0074 00 4 66227	FP58 TSX CLEAR,4
60763	0502 00 0 66574	CLS FPN+38 ACC +031777777777
60764	-0304 00 0 66575	UAM FPN+39 MAKE SR +031000000001

IN I TIME NEXT INSTRUCTION, WHEN COMPUTING MQ CHARACTERISTIC, ADDERS
Q AND P SHOULD CONTAIN BITS RESULTING IN A FLOATING POINT TRAP

60765	0074 00 2 66060	TSX CHECK,2 CHECK UAM EXECUTED OK
60766	+010400000000	OCT 104000000000 CORRECT IND CODE WORD
60767	+032400000000	OCT 032400000000 CORRECT ACC 1-35
60770	+377000000000	OCT 377000000000 CORRECT MQ S,1-35
60771	0000 00 0 00000	HTR CORRECT SI 0-35
60772	0000 00 0 60765	HTR FP58+3 CORRECT ADR LOC ZERO
60773	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
60774	0074 00 4 00106	TSX OK,4
60775	0020 00 0 60762	TRA FP58

9M71B
2/1/63
PAGE 866

SECTION FIVE
SINGLE PRECISION ROUTINES

CHECK USM WITH ACC OVERFLOW TRAP, SIGNS ALIKE
PRESHIFT OF 32 OCTAL, TRUE ADD, FRACTION OVERFLOW
FACT 2-5 END OP IN E TIME 2 CYCLES

60776	646244635147	BCD 1USMTRP
60777	0074 00 4 66227	FP59 TSX CLEAR,4
61000	0500 00 0 66513	CLA ONES ACC -377777777777
61001	-0306 00 0 66526	USM FPN MAKE SR -377377777777
61002	0074 00 2 66060	TSX CHECK,2 CHECK USM TRAP EXECUTED OK
61003	-113000000000	OCT 513000000000 CORRECT IND CODE WORD
61004	+000577777777	OCT 5777777777 CORRECT ACC 1-35
61005	-345000000000	OCT 745000000000 CORRECT MQ S,1-35
61006	0000 00 0 00000	HTR CORRECT SI 0-35
61007	0000 00 0 61002	HTR FP59+3 CORRECT ADR LOC ZERO
61010	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
61011	0074 00 4 00106	TSX OK,4
61012	0020 00 0 60777	TRA FP59

CHECK FAD WITH MQ UNDERFLOW GOING FROM FACT 4 TO 5 AT 12.
SIGNS UNLIKE, 9PCARRY-9P EQUAL 1- ADD ONE TO ACC. POST
SHIFT 24 OCTAL PLACES.
FACT 1-2-3-4-5 END OP IN FACT 4 4 CYCLES

61013	262124606060	BCD 1FAD
61014	0074 00 4 66227	FP59A TSX CLEAR,4
61015	0500 00 0 66643	CLA FPN+77 L+056000000000 IN AC
61016	0300 00 0 66644	FAD FPN+78 L-0560000000104 IN SR
61017	0074 00 2 66060	TSX CHECK,2
61020	-010400000000	OCT 410400000000 CORR IND CODE WORD
61021	+032420000000	OCT 032420000000 CORRECT AC 1-35
61022	-377000000000	OCT 777000000000 CORRECT MQ S-35
61023	0 00000 0 00000	PZE CORRECT SI 0-35
61024	0000 00 0 61017	HTR FP59A+3 CORR ADR LOC ZERO
61025	0074 00 4 00105	TSX ERROR,4
61026	0074 00 4 00106	TSX OK,4
61027	0020 00 0 61014	TRA FP59A

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 867

CHECK FAD, SIGNS ALIKE, PRESIFT OF 32 OCTAL, FRACTION OVERFLOW
TO CHECK SHIFT RIGHT IN MQ AT 11

FACT 1-2-5 END OP IN FACT 2 5 CYCLES

61030	262124606060	BCD 1FAD
61031	0074 00 4 66227	FP59B TSX CLEAR,4
61032	0500 00 0 66540	CLA FPN+10 L +115777777777 IN AC
61033	0300 00 0 67017	FAD DV3+1 L +147777777777 IN SR
61034	0074 00 2 66060	TSX CHECK,2
61035	0000 00 0 00000	HTR CORRECT IND CODE WORD
61036	+150400000000	OCT 150400000000 CORRECT AC 1-35
61037	+115377777777	OCT 115377777777 CORRECT MQ S-35
61040	0000 00 0 00000	HTR CORRECT SI 0-35
61041	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
61042	0074 00 4 00105	TSX ERROR,4
61043	0074 00 4 00106	TSX OK,4
61044	0020 00 0 61031	TRA FP59B

CHECK UFA WITH MQ UNDERFLOW TRAP, SIGNS UNLIKE
COMP ADD, NO 9P CARRY-9 P EQUAL ZERO, RECOMP AC
FACT 1-2-3-5 END OP IN FACT 5 5 CYCLES

61045	642621635147	BCD 1UFATRP
61046	0074 00 4 66227	FP60 TSX CLEAR,4
61047	0502 00 0 66543	CLS FPN+13 ACC -032000000000
61050	-0300 00 0 66476	UFA ONE SR +000000000001
61051	0074 00 2 66060	TSX CHECK,2 CHECK UFA TRAP EXECUTED OK
61052	+010400000000	OCT 104000000000 CORRECT IND CODE WORD
61053	+032000000000	OCT 032000000000 CORRECT ACC 1-35
61054	+377000000002	OCT 377000000002 CORRECT MQ S,1-35
61055	0000 00 0 00000	HTR CORRECT SI 0-35
61056	0000 00 0 61051	HTR FP60+3 CORRECT ADR LOC ZERO
61057	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
61060	0074 00 4 00106	TSX OK,4
61061	0020 00 0 61046	TRA FP60

9M71B
2/1/63
PAGE 868

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

CHECK FAD WITH ACC+ MQ UNDERFLOW, SIGNS UNLIKE
PRESHIFT OF 33 OCTAL, COMP ADD, RECOMP ACC,
POSTSHIFT OF 65 OCTAL
FACT 1-2-3-4-5 END OP IN FACT 4 9 CYCLES

61062	262124606060	BCD 1FAD
61063	0074 00 4 66227	FP61 TSX CLEAR,4
61064	0500 00 0 66576	CLA FPN+40 ACC +064000000000
61065	0300 00 0 66575	FAD FPN+39 SR -031000000001
61066	0074 00 2 66060	TSX CHECK,2 CHECK FAD TRAP EXECUTED OK
61067	-311400000000	OCT 711400000000 CORRECT IND CODE WORD
61070	+377400000000	OCT 377400000000 CORRECT ACC 1-35
61071	-344000000000	OCT 744000000000 CORRECT MQ S,1-35
61072	0000 00 0 00000	HTR CORRECT SI 0-35
61073	0000 00 0 61066	HTR FP61+3 CORRECT ADR LOC ZERO
61074	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
61075	0074 00 4 00106	TSX OK,4
61076	0020 00 0 61063	TRA FP61

CHECK FSB WITH BITS IN Q AND P IN ACC FACTOR

61077	266222606060	BCD 1FSB
61100	0074 00 4 66227	FP62 TSX CLEAR,4
61101	0500 00 0 66577	CLA FPN+41 ACC +344477777777
61102	0760 00 0 00006	COM ACC NOW +QP033300000000
61103	0302 00 0 66600	FSB FPN+42 MAKE SR +031007777777
61104	0074 00 2 66060	TSX CHECK,2 CHECK FSB EXECUTED OK
61105	-010400000000	OCT 410400000000 CORRECT IND CODE WORD
61106	+032574000000	OCT 032574000000 CORRECT ACC 1-35
61107	-377400000000	OCT 777400000000 CORRECT MQ S,1-35
61110	0000 00 0 00000	HTR CORRECT SI 0-35
61111	0000 00 0 61104	HTR FP62+4 CORRECT ADR LOC ZERO
61112	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
61113	0074 00 4 00106	TSX OK,4
61114	0020 00 0 61100	TRA FP62

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 869

CHECK FSB WITH BITS IN Q AND P IN ACC FACTOR

61115	266222606060	BCD 1FSB	
61116	0074 00 4 66227	FP63 TSX CLEAR ₄	
61117	0500 00 0 66577	CLA FPN+4	
61120	0760 00 0 00006	COM	ACC NOW +QPC33300000000
61121	0302 00 0 66602	FSB FPN+44	MAKE SR +035007777777
61122	0074 00 2 66060	TSX CHECK ₂	CHECK FSB EXECUTED OK
61123	-010400000000	OCT 410400000000	CORRECT IND CODE WORD
61124	+032600000000	OCT 326000000000	CORRECT ACC 1-35
61125	-377000000000	OCT 777000000000	CORRECT MQ S, 1-35
61126	0000 00 0 00000	HTR	CORRECT SI 0-35
61127	0000 00 0 61122	HTR FP63+4	CORRECT ADR LOC ZERO
61130	0074 00 4 00105	TSX ERROR ₄	TO ERROR ROUTINE
61131	0074 00 4 00106	TSX OK ₄	
61132	0020 00 0 61116	TRA FP63	

CHECK THAT WITH AC P AND CHARS EQUAL, NORMALIZED, AND SIGNS ALIKE
THE VALUES ARE SUBTRACTED

FACT 1-2-3-4-5 END OP FACT 5 3 CYCLES			
61133	262124606060	BCD 1FAD	
61134	0074 00 4 66227	FP63A TSX CLEAR ₄	
61135	-0500 00 0 66534	CAL FPN+6	PUT BIT IN P
61136	0300 00 0 66614	FAD FPN+54	
61137	0074 00 2 66060	TSX CHECK ₂	
61140	-0 00000 0 00000	MZE	CORRECT IND CODE WORD
61141	+177577760002	OCT 177577760002	CORRECT AC 1-35
61142	-144000000000	OCT 544000000000	CORRECT MQ S-35
61143	0 00000 0 00000	PZE	CORRECT SI 0-35
61144	0 00000 0 00000	PZE	CORRECT ADR LOC ZERO
61145	0074 00 4 00105	TSX ERROR ₄	
61146	0074 00 4 00106	TSX OK ₄	
61147	0020 00 0 61134	TRA FP63A	

9M71B
2/1/63
PAGE 870

SECTION FIVE
SINGLE PRECISION ROUTINES

CHECK THAT WITH AC Q AND CHARS EQUAL, NORMALIZED, AND SIGNS UNLIKE
THAT EARLY END IS BLOCKED AND THE PROPER ADD TAKES PLACE
FACT 1-2-5 END OP FACT 5 3 CYCLES

61150	262124606060	BCD 1FAD	
61151	0074 00 4 66227	FP63B TSX CLEAR,4	
61152	-0500 00 0 66562	CAL FPN+28	
61153	0760 00 0 00006	COM	MAKE Q A ONE
61154	0300 00 0 66557	FAD FPN+25	
61155	0074 00 2 66060	TSX CHECK,2	
61156	0 00000 0 00000	PZE	CORRECT IND CODE WORD
61157	+200667272727	OCT 200667272727	CORRECT AC 1-35
61160	+145000000000	OCT 145000000000	CORRECT MQ S-35
61161	0 00000 0 00000	PZE	CORRECT SI 0-35
61162	0 00000 0 00000	PZE	CORRECT ADR LOC ZERO
61163	0074 00 4 00105	TSX ERROR,4	
61164	0074 00 4 00106	TSX OK,4	
61165	0020 00 0 61151	TRA FP63B	

CHECK FLOATING POINT COMPATABILITY FEATURE

CHECK UNDERFLOW TURNS ON INDICATORS WITH ACC AND MQ UNDERFLOW

61166	234644472163	BCD 1COMPAT	
61167	0074 00 4 66227	FP64 TSX CLEAR,4	
61170	0760 00 0 00142	SLN 2	TURN ON SENSE LITE 2
61171	-0760 00 0 00004	LFTM	FP T MODE TGR OFF
61172	0161 00 0 61173	TQO *+1	SHOULD ALREADY BE OFF
61173	0500 00 0 66601	CLA FPN+43	ACC +001040000000
61174	0300 00 0 66601	FAD FPN+43	SR +001040000000
61175	0074 00 2 66060	TSX CHECK,2	CHECK UNDERFLOW EXECUTED OK
61176	+300022000000	OCT 300022000000	CORRECT IND CODE WORD
61177	+377400000000	OCT 377400000000	CORRECT ACC 1-35
61200	+344000000000	OCT 344000000000	CORRECT MQ S, 1-35
61201	0000 00 0 00000	HTR	CORRECT SI 0-35
61202	0000 00 0 00000	HTR	CORRECT ADR LOC ZERO
61203	0074 00 4 00105	TSX ERROR,4	TO ERROR ROUTINE
61204	0074 00 4 00106	TSX OK,4	
61205	0020 00 0 61167	TRA FP64	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R O U T I N E S

9M71B
2/1/63
PAGE 871

CHECK THAT WITH THE FP TRAP TGR OFF AND A BIT IN P THE AC OV
TGR IS NOT SET WITH A NON FP INSTRUCTION.

61206	234644472163		BCD 1COMPAT	
61207	0074 00 4 66227	FP64A	TSX CLEAR,4	
61210	-0760 00 0 00004		LFTM	
61211	-0500 00 0 66513		CAL ONES	
61212	0074 00 2 66060		TSX CHECK,2	
61213	+1000000000000		OCT 100000000000	CORRECT IND CODE WORD
61214	+3777777777777		OCT 377777777777	CORRECT AC 1-35
61215	0 00000 0 00000		PZE	CORRECT MQ S-35
61216	0 00000 0 00000		PZE	CORRECT SI 0-35
61217	0 00000 0 00000		PZE	CORRECT ADR LOC ZERO
61220	0074 00 4 00105		TSX ERROR,4	
61221	0074 00 4 00106		TSX OK,4	
61222	0020 00 0 61207		TRA FP64A	

CHECK THAT WITH FP TRAP TGR OFF THE AC OV TGR IS NOT SET
WITH A ZERO RESULT AND A NORMALIZED INSTRUCTION.

61223	234644472163		BCD 1COMPAT	
61224	0074 00 4 66227	FP64B	TSX CLEAR,4	
61225	-0760 00 0 00004		LFTM	
61226	0560 00 0 66515		LDQ ONES+2	MULTIPLIER +377777777776
61227	0260 00 0 66444		FMP ELIM4	MULTIPLICAND -377000000000
61230	0074 00 2 66060		TSX CHECK,2	
61231	-0 00000 0 00000		MZE	CORRECT IND CODE WORD
61232	0 00000 0 00000		PZE	CORRECT AC 1-35
61233	-0 00000 0 00000		MZE	CORRECT MQ S-35
61234	0 00000 0 00000		PZE	CORRECT SI 0-35
61235	0 00000 0 00000		PZE	CORRECT ADR LOC ZERO
61236	0074 00 4 00105		TSX ERROR,4	
61237	0074 00 4 00106		TSX OK,4	
61240	0020 00 0 61224		TRA FP64B	

SECTION FIVE
SINGLE PRECISION ROUTINES

CHECK FMP WITH MULTIPLIER ZERO AND FP TRAP TGR OFF

61241	234644472163		BCD 1COMPAT	
61242	0074 00 4 66227	FP65	TSX CLEAR,4	
61243	0760 00 0 00142		SLN 2	TURN ON SENSE LITE 2
61244	-0760 00 0 00004		LFTM	FPT MODE TGR OFF
61245	0161 00 0 61246		TQO **1	SHOULD ALREADY BE OFF
61246	0560 00 0 66477		LDQ ZERO	MULTIPLIER ZERO
61247	0260 00 0 66514		FMP ONES+1	MULTIPLICAND -177777777777

MULTIPLICATION SHOULD BE EXECUTED THE SAME AS WITH FP TRAP
TGR ON-PRODUCT MINUS ALL ZEROS. ACC AND MQ OVERFLOW INDICATORS
SHOULD REMAIN OFF

61250	0074 00 2 66060		TSX CHECK,2	CHECK FMP EXECUTED OK
61251	-0 00000 0 00000		MZE	CORRECT IND CODE WORD
61252	0000 00 0 00000		HTR	CORRECT ACC 1-35
61253	-0 00000 0 00000		MZE	CORRECT ACC 1-35
61254	0000 00 0 00000		HTR	CORRECT SI 0-35
61255	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
61256	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
61257	0074 00 4 00106		TSX OK,4	
61260	0020 00 0 61242		TRA FP65	

CHECK UFM WITH MULTIPLIER ZERO AND FP TRAP TGR OFF

61261	234644472163		BCD 1COMPAT	
61262	0074 00 4 66227	FP65A	TSX CLEAR,4	
61263	0760 00 0 00142		SLN 2	TURN ON SENSE LITE 2
61264	-0760 00 0 00004		LFTM	FPT MODE TGR OFF
61265	0161 00 0 61266		TQO **1	SHOULD ALREADY BE OFF
61266	0560 00 0 66477		LDQ ZERO	MULTIPLIER ZERO
61267	-0260 00 0 66514		UFM ONES+1	MULTIPLICAND -177777777777

EXECUTE UFM THE SAME AS WITH FP TMODE TRIGGER ON. HOWEVER,
WITH BITS IN ACC Q AND P IN ACC CHAR AND ADDERS Q AND P
WHEN DETERMINING MQ CHAR, TURN ON ACC AND MQ OVERFLOW
INDICATORS INSTEAD OF TRAPPING

61270	0074 00 2 66060		TSX CHECK,2	CHECK UFM EXECUTED OK
61271	-300022000000		OCT 700022000000	CORRECT IND CODE WORD
61272	+377000000000		OCT 377000000000	CORRECT ACC 1-35
61273	-344000000000		OCT 744000000000	CORRECT MQ S,1-35
61274	0000 00 0 00000		HTR	CORRECT SI 0-35
61275	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
61276	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
61277	0074 00 4 00106		TSX OK,4	
61300	0020 00 0 61262		TRA FP65A	

SECTION FIVE SINGLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 873

CHECK INDIRECT ADDRESSING WITH FLOATING POINT INSTRUCTIONS

61301	312126476060	BCD 11AFP
61302	0074 00 4 66227	FP66 TSX CLEAR,4
61303	0500 60 0 66472	CLA* IAWD1 MAKE ACC -235146436060
61304	-0302 60 0 67146	UFS* RIT10+1

WITH IA CONTROL TGR SET, AN ADDITIONAL E TIME IN TAKEN TO
ACQUIRE THE CORRECT FACTORS AND THEN L TIME FP EXECUTION
TAKES PLACE

61305	0074 00 2 66060	TSX CHECK,2 CHECK IA UFS WORKED OK
61306	-0 00000 0 00000	MZE CORRECT MQ S,1-35
61307	+235146436054	OCT 235146436054 CORRECT ACC 1-35
61310	-202075414470	OCT 602075414470 CORRECT MQ S,1-35
61311	0000 00 0 00000	HTR CORRECT SI 0-35
61312	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
61313	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
61314	0074 00 4 00106	TSX OK,4
61315	0020 00 0 61302	TRA FP66

CHECK FDP WITH IA TGR ON BLOCKS ACC RIGHT SHIFT 1ST E TIME

61316	262447312160	BCD 1FDPIA
61317	0074 00 4 66227	FP66A TSX CLEAR,4
61320	0500 00 0 66524	CLA FOURS ACC +222444444444
61321	0241 60 0 60426	FDP* FP54+1 MAKE SR -222222222222
61322	0074 00 2 66060	TSX CHECK,2 CHECK FDP IA EXECUTED OK
61323	+000004000000	OCT 4000000 CORRECT IND CODE WORD
61324	+222444444444	OCT 222444444444 CORRECT ACC 1-35
61325	0000 00 0 00000	HTR CORRECT MQ S,1-35
61326	0000 00 0 00000	HTR CORRECT SI 0-35
61327	0000 00 0 00000	HTR CORRECT ADR LOC ZERO
61330	0074 00 4 00105	TSX ERROR,4 TO ERROR ROUTINE
61331	0074 00 4 00106	TSX OK,4
61332	0020 00 0 61317	TRA FP66A

S E C T I O N F I V E
SINGLE PRECISION ROUTINES

CHECK FDP WITH XEC INDIRECTLY ADDRESSED AND TAGGED

61333	672523312160		BCD 1XECIA
61334	0074 00 4 66227	FP67	TSX CLEAR,4
61335	0774 00 1 00030		AXT 24,1 L 24 IN XRA
61336	0522 60 1 66523		XEC* IAWD+27,1 DIVIDEND -032404040404
61337	0522 60 1 66524		XEC* IAWD2+24,1 DIVISOR -344404040404

EXECUTE INSTRUCTIONS ARE INDIRECTLY ADDRESSED AND TAGGED, THE INDIRECT ADDRESSED ADDRESS IS TAGGED AND THE INSTRUCTION TO BE EXECUTED IS TAGGED. AFTER FDP EXECUTION, QUOTIENT AND REMAINDER UNDERFLOW SHOULD RESULT IN QUOTIENT AND REMAINDER CHARACTERISTICS CONDITIONING FP TRAP CONTROLS.

61340	0074 00 2 66060		TSX CHECK,2	CHECK XEC IA FDP WORKED OK
61341	-315400000000		OCT 715400000000	CORRECT IND CODE WORD
61342	+377423035700		OCT 377423035700	CORRECT ACC 1-35
61343	+266715412642		OCT 266715412642	CORRECT MQ S,1-35
61344	0000 00 0 00000		HTR	CORRECT SI 0-35
61345	0000 00 0 61340		HTR FP67+4	CORRECT ADR LOC ZERO
61346	0074 00 4 00105		TSX ERROR,4	TO ERROR ROUTINE
61347	0074 00 4 00106		TSX OK,4	
61350	0020 00 0 61334		TRA FP67	

CHECK UFS WITH CHARACTERISTIC DIFFERENCE GREATER THAN 77 OCTAL

61351	642662606060		BCD 1UFS	
61352	0074 00 4 66227	UFS	TSX CLEAR,4	
61353	0500 00 0 66500		CLA MZE	ACC -000000000000
61354	-0302 00 0 66537		UFS FPN+9	SR -200000000000
61355	0074 00 2 66060		TSX CHECK,2	CHECK UFS EXECUTED OK
61356	-0 00000 0 00000		MZE	CORRECT IND CODE WORD
61357	+200000000000		OCT 200000000000	CORRECT ACC 1-35
61360	-145000000000		OCT 545000000000	CORRECT MQ S,1-35
61361	0 00000 0 00000		PZE	SI 0-35
61362	0 00000 0 00000		PZE	CORRECT ADR LOCATION ZERO
61363	0020 00 0 61365		TRA **2	
61364	0020 00 0 61367		TRA **3	
61365	0074 00 4 00104		TSX ERROR-1,4	
61366	0020 00 0 61352		TRA UFS	
61367	0600 00 0 66461		STZ XRA	CLEAR
61370	0600 00 0 66462		STZ XRB	THESE
61371	0600 00 0 66460		STZ N	LOCATIONS
61372	0074 00 4 00106		TSX OK,4	
61373	0020 00 0 61352		TRA UFS	

SECTION FIVE
SINGLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 875

THIS ROUTINE WILL DO 100 FADS AND SIMULATE EACH IN FIXED POINT

61374	606060262124		BCD 1	FAD	
61375	-0625 00 0 67636	FADS	STL	LOCT	HOUSEKEEP
61376	0600 00 0 66475		STZ	DBL	
61377	0760 00 0 00140		SLF		
61400	0074 00 4 66262		TSX	RAN,4	
61401	0774 00 1 00314		AXT	204,1	
61402	-2 00002 1 61445	INITH	TNX	SNXT,1,2	
61403	0074 00 4 66227		TSX	CLEAR,4	
61404	0560 00 0 66477		LDQ	ZERO	
61405	0500 00 1 67570		CLA	TABLE,1	LOAD VALUES
61406	0601 00 0 67234		STO	COM	
61407	0601 00 0 67240		STO	COM+4	
61410	0500 00 1 67571		CLA	TABLE+1,1	
61411	0601 00 0 67236		STO	COM+2	
61412	0601 00 0 67242		STO	COM+6	
61413	0634 00 1 67641		SXA	TSAVE,1	
61414	0074 00 4 65320		TSX	DOFIX,4	SIMULATE IN FIXED POINT
61415	0761 00 0 00000		NOP		
61416	0500 00 0 67234		CLA	COM	DO HARDWARE FAD AND
61417	0300 00 0 67236		FAD	COM+2	SAVE RESULTS
61420	0601 00 0 67252		STO	COM+14	
61421	-0600 00 0 67253		STQ	COM+15	
61422	0500 00 0 00000		CLA	0	SAVE DEC LOC ZERO
61423	0622 00 0 67254		STD	COM+16	
61424	0074 00 4 65664		TSX	COMP,4	TO COMPARE ROUTINE
61425	0020 00 0 61441		TRA	SWT1	SUCCESS RETURN
61426	0760 00 0 00162		SWT	2	CHECK FOR BYPASS ERROR
61427	0020 00 0 61431		TRA	++2	NO
61430	0020 00 0 61441		TRA	SWT1	YES
61431	0760 00 0 00163		SWT	3	CHECK FOR PRINT
61432	0020 00 0 61436		TRA	++4	
61433	0500 00 0 67252		CLA	COM+14	
61434	0560 00 0 67253		LDQ	COM+15	
61435	0000 00 0 61441		HTR	SWT1	ERROR FAD MACHINE ANS IN AC
61436	0500 00 0 61374		CLA	FADS-1	AND MQ
61437	0601 00 0 65730		STO	ORIG	SET OP CODE
61440	0074 00 4 65703		TSX	SEPR,4	PRINT ERROR MESSAGE
61441	0534 00 1 67641	SWT1	LXA	TSAVE,1	
61442	0760 00 0 00161		SWT	1	CHECK FOR LOOPING
61443	0020 00 0 61402		TRA	INITH	NO
61444	0020 00 0 61403		TRA	INITH+1	YES
61445	0074 00 4 00106	SNXT	TSX	OK,4	
61446	0020 00 0 61375		TRA	FADS	

9M71B
2/1/63
PAGE 876

SECTION FIVE SINGLE PRECISION RELIABILITY

CHECK FAD,FSB,FMP,AND FDP IN A PROBLEM WITH FACTORS N PLUS N
SUBTRACT N MPY BY N AND DIVIDE BY N EQUALS N AFTER PRECISION
IS COMPENSATED FOR WITH UFA INSTRUCTION.

61447	512543706060		BCD 1RELY	
61450	0074 00 4 66227	RELI	TSX CLEAR,4	
61451	0520 00 0 66462		ZET XRB	INITIAL TIME THRU
61452	0020 00 0 61456		TRA **4	ROUTINE LOAD XRA, XRB
61453	0774 00 1 00275		AXT 189,1	L 275 IN XRA
61454	0774 00 2 00033		AXT 27,2	L 33 IN XRB
61455	0020 00 0 61460		TRA **3	EXECUTE INITIAL TIME THRU

EXECUTE 2 FOLLOWING LXA INSTRUCTIONS ONLY WITH SENSE SWITCHES 1 OR
4 DOWN.

61456	0534 00 1 66461	LXA XRA,1	L SAVED XRA
61457	0534 00 2 66462	LXA XRB,2	L SAVED XRB
61460	0600 00 0 66460	STZ N	CLEAR THESE
61461	0600 00 0 61505	STZ RELI1	LOCATIONS
61462	0500 00 2 67143	CLA QU0+27,2	L PROBLEM FACTOR
61463	0601 00 0 66460	STO N	
61464	0602 00 0 61505	SLW RELI1	CORRECT ACC 1-35 RESULT
61465	0300 00 0 66460	FAD N	N PLUS N
61466	0302 60 0 66470	FSB* IAWD	SHOULD SUBTRACT N
61467	0131 00 0 00000	XCA	SET UP MULTIPLIER
61470	0260 60 0 66471	FMP* IAWD+1	PRODUCT EQU N SQUARED
61471	0241 00 0 66460	FDP N	QUOTIENT NOT QUITE N
61472	0131 00 0 00000	XCA	QUOTIENT TO ACC TO
61473	-0300 00 0 67143	UFA QU0+27	COMPENSATE FOR PRECISION
61474	0634 00 1 66461	SXA XRA,1	SAVE XRA
61475	0634 00 2 66462	SXA XRB,2	SAVE XRB
61476	3 00007 1 61503	TXH **5,1,7	WHEN COMPUTING FACTORS
61477	-0773 00 0 00011	RQL 9	WITH ZERO IN POSITION 9,
61500	-0763 00 0 00001	LGL 1	REMOVE BIT IN MQ POSITION
61501	0771 00 0 00001	ARS 1	9 PUT THERE WHEN ADJUSTING
61502	-0773 00 0 00032	RQL 26	ANSWER WITH UFA INSTR

AFTER EXECUTION OF FLOATING POINT INSTRUCTIONS, RESULT IN ACC
SHOULD BE N FACTOR, THE MQ SHOULD BE -144000000000 AND NO
FLOATING POINT TRAP.

S E C T I O N F I V E
S I N G L E P R E C I S I O N R E L I A B I L I T Y

9M71B
2/1/63
PAGE 877

61503	0074 00 2 66060		TSX CHECK,2	CHECK PROBLEM EXECUTED OK
61504	--0 00000 0 00000		MZE	CORRECT IND CODE WORD
61505	0000 00 0 00000	RELI 1	HTR	INSERT CORRECT ACC 1-35
61506	--144000000000		OCT	544000000000 CORRECT MQ S,1-35
61507	0000 00 0 00000		HTR	CORRECT SI 0-35
61510	0000 00 0 00000		HTR	CORRECT ADR LOC ZERO
61511	0020 00 0 61513		TRA	**2
61512	0020 00 0 61515		TRA	**3
61513	0534 00 2 66462		LXA	XRB,2
61514	0074 00 4 00104		TSX	ERROR-1,4
61515	0761 00 0 61450		NOP	RELI
61516	0760 00 0 00161		SWT	1
61517	0020 00 0 61521		TRA	**2
61520	0020 00 0 61456		TRA	RELI+6
61521	0761 00 0 00000		NOP	
61522	0534 00 1 66461		LXA XRA,1	L SAVED XRA
61523	0534 00 2 66462		LXA XRB,2	L SAVED XRB
61524	2 00007 1 61525		TIX **1,1,7	TEST EACH POS IN
61525	2 00001 2 61460		TIX RELI+8,2,1	FRAC WITH A ZERO
61526	0600 00 0 66462		STZ XRB	CLEAR THESE
61527	0600 00 0 66461		STZ XRA	LOCATIONS
61530	0074 00 4 00106		TSX	OK,4
61531	0020 00 0 61450		TRA	RELI

IN THE PRECEEDING RELIABILITY ROUTINE, A RESULT IS CHECKED AFTER THE EXECUTION OF VARIOUS FLOATING POINT INSTRUCTIONS. THE FOLLOWING FOUR PAGES LIST THE VARIOUS VALUES THAT SHOULD APPEAR IN THE ACC + MQ AFTER THE EXECUTION OF EACH FLOATING POINT INSTRUCTION FOR THE FACTOR USED. THESE LISTED VALUES SHOULD AID IN DETERMINING SPECIFIC FLOATING POINT INSTRUCTION FAILURE WHEN AN ERROR OCCURS.

S E C T I O N F I V E
S I N G L E P R E C I S I O N R E L I A B I L I T Y

R E L I A B I L I T Y S E C T I O N V A L U E S F O R F P I N S T R U C T I O N S E X E C U T E D

XRA	XRB	INSTR**	N FACTOR	ACCUMULATOR	MQ
00275	00033	FAD	-177777777776	-200777777776	-145000000000
00275	00033	FSB*	-177777777776	-177777777776	-144000000000
00275	00033	FMP*	-177777777776	+176777777774	+143000000004
00275	00033	FDP	-177777777776	+143777777772	-177777777775
00275	00033	UFA	-177000000001	-177777777776	-144000000000
00266	00032	FAD	-177777777775	-200777777775	-145000000000
00266	00032	FSB*	-177777777775	-177777777775	-144000000000
00266	00032	FMP*	-177777777775	+176777777772	+143000000011
00266	00032	FDP	-177777777775	+143777777764	-177777777774
00266	00032	UFA	-177000000001	-177777777775	-144000000000
00257	00031	FAD	-177777777773	-200777777773	-145000000000
00257	00031	FSB*	-177777777773	-177777777773	-144000000000
00257	00031	FMP*	-177777777773	+176777777766	+143000000031
00257	00031	FDP	-177777777773	+143777777742	-177777777772
00257	00031	UFA	-177000000001	-177777777773	-144000000000
00250	00030	FAD	-177777777767	-200777777767	-145000000000
00250	00030	FSB*	-177777777767	-177777777767	-144000000000
00250	00030	FMP*	-177777777767	+176777777756	+143000000121
00250	00030	FDP	-177777777767	+143777777646	-177777777766
00250	00030	UFA	-177000000001	-177777777767	-144000000000
00241	00027	FAD	-177777777757	-200777777757	-145000000000
00241	00027	FSB*	-177777777757	-177777777757	-144000000000
00241	00027	FMP*	-177777777757	+175777777736	+143000000441
00241	00027	FDP	-177777777757	+143777777316	-177777777756
00241	00027	UFA	-177000000001	-177777777757	-144000000000
00232	00026	FAD	-177777777737	-200777777737	-145000000000
00232	00026	FSB*	-177777777737	-177777777737	-144000000000
00232	00026	FMP*	-177777777737	+176777777676	+143000002101
00232	00026	FDP	-177777777737	+143777775636	-177777777736
00232	00026	UFA	-177000000001	-177777777737	-144000000000

*INSTRUCTION INDIRECTLY ADDRESSED
**INSTRUCTION EXECUTED

S E C T I O N F I V E
S I N G L E P R E C I S I O N R E L I A B I L I T Y

9M71B
2/1/63
PAGE 879

XRA	XRB	INSTR**	N FACTOR	ACCUMULATOR	MQ
00223	00025	FAD	-17777777677	-200777777677	-145000000000
00223	00025	FSB*	-17777777677	-177777777677	-144000000000
00223	00025	FMP*	-17777777677	+176777777576	+143000010201
00223	00025	FDP	-17777777677	+143777767476	-177777777676
00223	00025	UFA	-177000000001	-177777777677	-144000000000
00214	00024	FAD	-177777777577	-200777777577	-145000000000
00214	00024	FSB*	-177777777577	-177777777577	-144000000000
00214	00024	FMP*	-177777777577	+176777777376	+143000040401
00214	00024	FDP	-177777777577	+143777737176	-177777777576
00214	00024	UFA	-177000000001	-177777777577	-144000000000
00205	00023	FAD	-177777777377	-200777777377	-145000000000
00205	00023	FSB*	-177777777377	-177777777377	-144000000000
00205	00023	FMP*	-177777777377	+176777776776	+1430000201001
00205	00023	FDP	-177777777377	+143777576376	-177777777376
00205	00023	UFA	-177000000001	-177777777377	-144000000000
00176	00022	FAD	-177777776777	-200777776777	-145000000000
00176	00022	FSB*	-177777776777	-177777776777	-144000000000
00176	00022	FMP*	-177777776777	+176777775776	+143001002001
00176	00022	FDP	-177777776777	+143776774776	-177777776776
00176	00022	UFA	-177000000001	-177777776777	-144000000000
00167	00021	FAD	-177777775777	-200777775777	-145000000000
00167	00021	FSB*	-177777775777	-177777775777	-144000000000
00167	00021	FMP*	-177777775777	+176777773777	+143004004001
00167	00021	FDP	-177777775777	+143773771776	-177777775776
00167	00021	UFA	-177000000001	-177777775777	-144000000000
00160	00020	FAD	-177777773777	-200777773777	-145000000000
00160	00020	FSB*	-177777773777	-177777773777	-144000000000
00160	00020	FMP*	-177777773777	+176777767776	+143020010001
00160	00020	FDP	-177777773777	+143757763776	-177777773776
00160	00020	UFA	-177000000001	-177777773777	-144000000000
00151	00017	FAD	-177777767777	-200777767777	-145000000000
00151	00017	FSB*	-177777767777	-177777767777	-144000000000
00151	00017	FMP*	-177777767777	+176777757776	+143100020001
00151	00017	FDP	-177777767777	+143677747776	-177777767776
00151	00017	UFA	-177000000001	-177777767777	-144000000000

*INSTRUCTION INDIRECTLY ADDRESSED

**INSTRUCTION EXECUTED

S E C T I O N F I V E
S I N G L E P R E C I S I O N R E L I A B I L I T Y

XRA	XRB	INSTR**	N FACTOR	ACCUMULATOR	MQ
00142	00016	FAD	-17777757777	-20077757777	-14500000000
00142	00016	FSB*	-17777757777	-17777757777	-14400000000
00142	00016	FMP*	-17777757777	+17677737776	+143400040001
00142	00016	FDP	-17777757777	+14337717776	-17777757776
00142	00016	UFA	-177000000001	-17777757777	-14400000000
00133	00015	FAD	-17777737777	-20077737777	-14500000000
00133	00015	FSB*	-17777737777	-17777737777	-14400000000
00133	00015	FMP*	-17777737777	+17677700000	+143000100001
00133	00015	FDP	-17777737777	+143777637776	-17777737776
00133	00015	UFA	-177000000001	-17777737777	-14400000000
00124	00014	FAD	-17777767777	-20077767777	-14500000000
00124	00014	FSB*	-17777767777	-17777767777	-14400000000
00124	00014	FMP*	-17777767777	+176777600006	+143000200001
00124	00014	FDP	-17777767777	+143777477776	-17777767776
00124	00014	UFA	-177000000001	-17777767777	-14400000000
00115	00013	FAD	-17777757777	-20077757777	-14500000000
00115	00013	FSB*	-17777757777	-17777757777	-14400000000
00115	00013	FMP*	-17777757777	+176777400036	+143000400001
00115	00013	FDP	-17777757777	+143777177776	-17777757776
00115	00013	UFA	-177000000001	-17777757777	-14400000000
00106	00012	FAD	-17777737777	-20077737777	-14500000000
00106	00012	FSB*	-17777737777	-17777737777	-14400000000
00106	00012	FMP*	-17777737777	+176777000176	+143001000001
00106	00012	FDP	-17777737777	+143776377776	-17777737776
00106	00012	UFA	-177000000001	-17777737777	-14400000000
00077	00011	FAD	-17777677777	-20077677777	-14500000000
00077	00011	FSB*	-17777677777	-17777677777	-14400000000
00077	00011	FMP*	-17777677777	+176776000776	+143002000001
00077	00011	FDP	-17777677777	+143774777776	-17777677776
00077	00011	UFA	-177000000001	-17777677777	-14400000000
00070	00010	FAD	-17777577777	-20077577777	-14500000000
00070	00010	FSB*	-17777577777	-17777577777	-14400000000
00070	00010	FMP*	-17777577777	+176774003776	+143004000001
00070	00010	FDP	-17777577777	+143771777776	-17777577776
00070	00010	UFA	-17777577777	-17777577777	-14400000000

*INSTRUCTION INDIRECTLY ADDRESSED

**INSTRUCTION EXECUTED

S E C T I O N F I V E
S I N G L E P R E C I S I O N R E L I A B I L I T Y

9M71R
2/1/63
PAGE 881

XRA	XRB	INSTR**	N FACTOR	ACCUMULATOR	MQ
00061	00007	FAD	-177773777777	-200773777777	-145000000000
00061	00007	FSB*	-177773777777	-177773777777	-144000000000
00061	00007	FMP*	-177773777777	+176770017776	+143010000001
00061	00007	FDP	-177773777777	+143763777776	-177773777776
00061	00007	UFA	-177000000001	-177773777777	-144000000000
00052	00006	FAD	-177767777777	-200767777777	-145000000000
00052	00006	FSB*	-177767777777	-177767777777	-144000000000
00052	00006	FMP*	-177767777777	+176760077776	+143020000001
00052	00006	FDP	-177767777777	+143747777776	-177767777776
00052	00006	UFA	-177000000001	-177767777777	-144000000000
00043	00005	FAD	-177757777777	-200757777777	-145000000000
00043	00005	FSB*	-177757777777	-177757777777	-144000000000
00043	00005	FMP*	-177757777777	+176740377776	+143040000001
00043	00005	FDP	-177757777777	+143717777776	-177757777776
00043	00005	UFA	-177000000001	-177757777777	-144000000000
00034	00004	FAD	-177737777777	-200737777777	-145000000000
00034	00004	FSB*	-177737777777	-177737777777	-144000000000
00034	00004	FMP*	-177737777777	+176701777776	+143100000001
00034	00004	FDP	-177737777777	+143637777776	+177737777776
00034	00004	UFA	-177000000001	-177737777777	-144000000000
00025	00003	FAD	-177677777777	-200677777777	-145000000000
00025	00003	FSB*	-177677777777	-177677777777	-144000000000
00025	00003	FMP*	-177677777777	+176607777776	+143200000001
00025	00003	FDP	-177677777777	+143477777776	-177677777776
00025	00003	UFA	-177000000001	-177677777777	-144000000000
00016	00002	FAD	-177577777777	-200577777777	-145000000000
00016	00002	FSB*	-177577777777	-177577777777	-144000000000
00016	00002	FMP*	-177577777777	+176437777776	+143400000001
00016	00002	FDP	-177577777777	+143177777776	-177577777776
00016	00002	UFA	-177000000001	-177577777777	-144000000000
00007	00001	FAD	-177377777777	-177777777776	-144000000000
00007	00001	FSB*	-177377777777	-176777777776	-143000000000
00007	00001	FMP*	-177377777777	+174777777774	+141000000004
00007	00001	FDP	-177377777777	+142377777775	-176777777775
00007	00001	UFA	-177000000001	-177377777777	-144400000000
00007	00001	RQL		-177377777777	-144000000000

*INSTRUCTION INDIRECTLY ADDRESSED
**INSTRUCTION EXECUTED

9M71B
2/1/63
PAGE 882

SECTION FIVE SINGLE PRECISION RELIABILITY

SINGLE PRECISION SQUARE ROOT

THIS ROUTINE WILL FIND THE SQUARE ROOT OF TEN NUMBERS
FROM A TABLE AND CHECK THE RESULTS AGAINST THE KNOWN
ANSWER . MQ CONTAINS THE CORRECT ROOT IN THE PRINT

61532	625051636060		BCD	1SQRT	
61533	0074 00 4 66227	REL2	TSX	CLEAR,4	
61534	0774 00 1 00012		AXT	10,1	
61535	0500 00 1 67202		CLA	SQRN+10,1	
61536	-0120 00 0 61554	SQRT	TMI	++14	
61537	0100 00 0 61567		TZE	++24	
61540	0774 00 2 00015		AXT	13,2	
61541	0601 00 0 66652		STO	TEMP	RADICAND EQU N
61542	0402 00 0 67206		SUB	HALPH	
61543	0300 00 0 67203		FAD	COEF	+1
61544	0601 00 0 66653		STO	TEMP+1	GUESS EQU X
61545	0500 00 0 66652		CLA	TEMP	N
61546	0241 00 0 66653		FDP	TEMP+1	N/X
61547	0131 00 0 00000		XCA		
61550	0300 00 0 66653		FAD	TEMP+1	+X
61551	0402 00 0 67206		SUB	HALPH	
61552	-0760 00 0 00141		SLT	1	
61553	0020 00 0 61555		TRA	++2	
61554	0020 00 0 61562		TRA	++6	
61555	2 00001 2 61544		TIX	*-9,2,1	
61556	0560 00 1 67170		LDQ	SQRA+10,1	
61557	0340 00 1 67170		CAS	SQRA+10,1	
61560	0020 00 0 61562		TRA	++2	NG
61561	0020 00 0 61564		TRA	++3	OK
61562	0074 00 4 00104		TSX	ERROR-1,4	
61563	0761 00 0 61533		NOP	REL2	
61564	0760 00 0 00161		SWT	1	
61565	0020 00 0 61567		TRA	++2	
61566	0020 00 0 61535		TRA	SQRT-1	
61567	2 00001 1 61535		TIX	REL2+2,1,1	
61570	0074 00 4 00106		TSX	OK,4	
61571	0020 00 0 61533		TRA	REL2	

S E C T I O N F I V E
S I N G L E P R E C I S I O N R E L I A B I L I T Y

9M71B
2/1/63
PAGE 883

P R I M I T I V E R O O T S U B R O U T I N E

GIVEN A PRIME NUMBER P, FIND THE SMALLEST PRIME A LESS
THAN P, NOT COUNTING ONE, SUCH THAT THE P-1 POWER
OF A IS THE FIRST POWER OF A TO YIELD UNITY MODULO
P, A IS CALLED THE PRIMITIVE ROOT OF P

61572	475131516360		BCD	1PRIRT	
61573	0774 00 1 00010	REL3	AXT	8,1	
61574	0500 00 1 67233		CLA	FERM,1	PRIME TO ACC
61575	0761 00 0 00000		NOP		
61576	0601 00 0 67204	PRIRT	STO	SALON	
61577	0302 00 0 67202		FSB	MIN3	-3
61600	0120 00 0 61603		TPL	**3	
61601	0500 00 0 67204		CLA	SALON	
61602	0020 00 0 61702		TRA	RATS	
61603	0300 00 0 67203		FAD	COEF	+1
61604	-0300 00 0 67210	B	UFA	FLOAT	
61605	-0320 00 0 67207		ANA	KK	
61606	0601 00 0 67205		STO	SALON+1	
61607	0771 00 0 00014		ARS	12	CHECK SIZE
61610	0760 00 0 00001		LBT		4095 MAX
61611	0020 00 0 61613		TRA	**2	OK
61612	0020 00 0 61601		TRA	PRIRT+3	TOO HIGH
61613	0634 00 1 61656		SXA	B1,1	SAVE XRA
61614	0774 00 1 00012		AXT	10,1	10 TRIAL ROOTS
61615	0534 00 2 67205		LXA	SALON+1,2	SET TALLY CTR
61616	0500 00 1 67223		CLA	PRIMS,1	
61617	0602 00 0 66652		SLW	TEMP	MAG TRIAL ROOT
61620	0560 00 1 67223		LDQ	PRIMS,1	
61621	0260 00 0 66652		FMP	TEMP	GET DIVIDEND
61622	0601 00 0 66653		STO	TEMP+1	SAVE DIVIDEND
61623	0241 60 0 61601		FDP*	PRIRT+3	RE/P
61624	0131 00 0 00000		XCA		
61625	0522 00 0 61604		XEC	B	GET INTEGRAL
61626	0300 00 0 67210		FAD	FLOAT	PART OF QUOTIENT
61627	0131 00 0 00000		XCA		
61630	0260 00 0 67204		FMP	SALON	QUOTIENT TIME DIVISOR
61631	0302 00 0 66653		FSB	TEMP+1	SHOULD GO TO ZERO OR MIN
61632	0100 00 0 61650		TZE	**14	NOT PRIME
61633	0120 00 0 61713		TPL	MACH	
61634	0300 00 0 67203		FAD	COEF	IS THIS UNITY MOD P
61635	0100 00 0 61651		TZE	**12	IF ZERO ROOT FOUND
61636	0120 00 0 61713		TPL	MACH	
61637	-0760 00 0 00141		SLT	1	
61640	0020 00 0 61642		TRA	**2	
61641	0020 00 0 61706		TRA	RATS+4	
61642	0302 60 0 61603		FSB*	B-1	RESTORE REMAINDER
61643	2 00001 2 61617		TIX	PRIRT+17,2,1	
61644	2 00001 1 61615		TIX	PRIRT+15,1,1	
61645	0534 00 1 61656		LXA	B1,1	
61646	0761 00 0 00000		NOP		RESTORE XRA
61647	0020 00 0 61601		TRA	PRIRT+3	PRIME OUT OF RANGE
61650	2 00001 4 61645		TIX	*-3,4,1	NOT A PRIME NUMBER
61651	2 00001 2 61644		TIX	*-5,2,1	IF XFER ROOT NO GOOD
61652	0500 00 0 67204		CLA	SALON	ROOT OK

9M71B
2/1/63
PAGE 884

S E C T I O N F I V E
S I N G L E P R E C I S I O N R E L I A B I L I T Y

61653	0302	00	0	67203		FSB	COEF	-1
61654	0131	00	0	00000		XCA		
61655	0500	00	1	67223		CLA	PRIMS,1	
61656	0774	00	1	00000	B1	AXT	0,1	
61657	-0600	00	0	66657		STQ	TEMP+5	SUCCESSFUL RETURN HERE
61660	0340	00	1	67234		CAS	FERM+1,1	CHECK ROOT
61661	0020	00	0	61663		TRA	*+2	ERROR
61662	0020	00	0	61666		TRA	*+4	OK
61663	0560	00	1	67234		LDQ	FERM+1,1	CORR ROOT IN MQ
61664	0074	00	4	00104		TSX	ERROR-1,4	
61665	0020	00	0	61573		TRA	REL3	
61666	0500	00	0	66657		CLA	TEMP+5	CHECK MQ FACTOR
61667	0300	00	0	67203		FAD	COEF	MQ FACTOR +1 SHOULD
61670	0340	00	1	67233		CAS	FERM,1	BE EQU ORIG PRIME
61671	0020	00	0	61673		TRA	*+2	ERROR
61672	0020	00	0	61716		TRA	REL3R	
61673	0500	00	1	67233		CLA	FERM,1	
61674	0302	00	0	67203		FSB	COEF	-1
61675	0131	00	0	00000		XCA		
61676	0500	00	0	66657		CLA	TEMP+5	RESTORE ACC
61677	0074	00	4	00104		TSX	ERROR-1,4	ERROR IN MQ FACTOR
61700	0020	00	0	61573		TRA	REL3	CORRECT ANS IN MQ, ORIG
61701	0020	00	0	61716		TRA	REL3R	ANS IN ACC
61702	0560	00	1	67234	RATS	LDQ	FERM+1,1	CORRECT ROOT IN MQ
61703	0074	00	4	00104		TSX	ERROR-1,4	PRIME OUT OF RANGE
61704	0020	00	0	61573		TRA	REL3	
61705	0020	00	0	61716		TRA	REL3R	
61706	0560	00	1	67233		LDQ	FERM,1	ERROR FP TRAP IN PRINT
61707	0761	00	0	00000		NOP		
61710	0074	00	4	00104		TSX	ERROR-1,4	
61711	0020	00	0	61573		TRA	REL3	
61712	0020	00	0	61716		TRA	REL3R	
61713	0074	00	4	00104	MACH	TSX	ERROR-1,4	DIVIDEND NOT EQU
61714	0020	00	0	61573		TRA	REL3	QUOTIENT TIMES DIV
61715	0534	00	1	61656		LXA	B1,1	
61716	2 00002	1	61574	REL3R	TIX	REL3+1,1,2	NEXT PRIME	
61717	0074	00	4	00106		TSX	OK,4	
61720	0020	00	0	61573		TRA	REL3	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 885

THE FOLLOWING PART WILL PROVIDE ROUTINES TO TEST
THE DOUBLE PRECISION INSTRUCTIONS. THIS SECTION ASSUMES
ALL SINGLE-PRECISION INSTRUCTIONS TO BE OPERATIVE
CONSTANTS ARE SHOWN AS BROUGHT FROM CORE

TEST DLD ABILITY TO LOAD AC AND MQ

61721	602443240160	BCD 1 DLD1	
61722	0074 00 4 66227	DP1 TSX CLEAR,4	INITIALIZE
61723	0443 00 0 66664	DLD ONEZ	
		+377 777777777	+377 777777777
61724	0074 00 2 66060	TSX CHECK,2	CHECK RESULTS
61725	-0 00000 0 00000	MZE	INDICATOR CONT WD
61726	+377777777777	OCT 377777777777	CORRECT AC 1-35
61727	-377777777777	OCT 777777777777	CORRECT MQ 5-35
61730	0 00000 0 00000	PZE	CORRECT SI 0-35
61731	0000 00 0 00000	HTR	CONTS OF LOC ZERO
61732	0074 00 4 00105	TSX ERROR,4	TO ERROR PRINT OR HALT
61733	0074 00 4 00106	TSX OK,4	CHECK FOR LOOP SS1
61734	0020 00 0 61722	TRA DP1	

9M718
2/1/63
PAGE 886

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DLD FOR CLEARING OF AC AND MQ

61735	602443240260		BCD 1 DLD2	
61736	0074 00 4 66227	DP2	TSX CLEAR,4	
61737	0500 00 0 66513		CLA ONES	FILL AC AND MQ
61740	0560 00 0 66513		LDQ ONES	WITH BITS
61741	0443 00 0 66652		DLD TEMP	
			+000 000000000	+000 000000000
61742	0074 00 2 66060		TSX CHECK,2	
61743	0 00000 0 00000		PZE	IND CW
61744	0 00000 0 00000		PZE	AC
61745	0 00000 0 00000		PZE	MQ
61746	0 00000 0 00000		PZE	SI
61747	0000 00 0 00000		HTR	LOC ZERO
61750	0074 00 4 00105		TSX ERROR,4	
61751	0074 00 4 00106		TSX OK,4	
61752	0020 00 0 61736		TRA DP2	

TEST LOAD WITH UNIQUE NUMBERS

61753	602443240360		BCD 1 DLD3	
61754	0074 00 4 66227	DP3	TSX CLEAR,4	
61755	0443 00 0 66666		DLD AB	
			+272 525262525	+102 030405060
61756	0074 00 2 66060		TSX CHECK,2	
61757	0 00000 0 00000		PZE	IND CW
61760	+272525262525		OCT 272525262525	AC
61761	+102030405060		OCT 102030405060	MQ
61762	0 00000 0 00000		PZE	SI
61763	0000 00 0 00000		HTR	LOC ZERO
61764	0074 00 4 00105		TSX ERROR,4	
61765	0074 00 4 00106		TSX OK,4	
61766	0020 00 0 61754		TRA DP3	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 887

CHECK TRAP ON ODD LOCATION

61767	602443240460		BCD 1 DLD4	
61770	0074 00 4 66227	DP4	TSX CLEAR,4	
61771	0443 00 0 66665		DLD ONEZ+1	
61772	0074 00 2 66060		TSX CHECK,2	
61773	-010001000000		OCT 410001000000	IND CW
61774	+377777777777		OCT 377777777777	AC
61775	-377777777777		OCT 777777777777	MQ
61776	0 00000 0 00000		PZE	SI
61777	0000 00 0 61772		HTR DP4+2	
62000	0074 00 4 00105		TSX ERROR,4	
62001	0074 00 4 00106		TSX OK,4	
62002	0020 00 0 61770		TRA DP4	

TEST DOUBLE STORE

62003	602462630160		BCD 1 DST1	
62004	0074 00 4 66227	DP5	TSX CLEAR,4	
62005	0500 00 0 66666		CLA AB	
62006	0560 00 0 66667		LDQ AB+1	
+272 525262525 +102 030405060				
62007	-0603 00 0 66652		DST TEMP	
62010	0500 00 0 66652		CLA TEMP	
62011	0560 00 0 66653		LDQ TEMP+1	
62012	0074 00 2 66060		TSX CHECK,2	
62013	0 00000 0 00000		PZE	IND CW
62014	+272525262525		OCT 272525262525	AC
62015	+102030405060		OCT 102030405060	MQ
62016	0 00000 0 00000		PZE	SI
62017	0000 00 0 00000		HTR	LOC ZERO
62020	0074 00 4 00105		TSX ERROR,4	
62021	0074 00 4 00106		TSX OK,4	
62022	0020 00 0 62004		TRA DP5	

9M71B
2/1/63
PAGE 888

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST DUFA NO PRESIFT-SIGNS ALIKE NO OVERFLO
NO MQ TO AC CARRY

62023	602464262101		BCD 1 DUFA1
62024	0074 00 4 66227	DP6	TSX CLEAR,4
62025	0443 00 0 66670		DLD AD1
			+100 252525252 +045 323232323
62026	-0301 00 0 66672		DUFA AD2
			+100 101010101 +045 141414141
62027	0074 00 2 66060		TSX CHECK,2
62030	0 00000 0 00000		PZE
62031	+100353535353		OCT 100353535353
62032	+045464646464		OCT 045464646464
62033	+100101010101		OCT 100101010101
62034	0000 00 0 00000		HTR
			IND CW
			AC
			MQ
			SI
			LOC ZERO
62035	0074 00 4 00105		TSX ERROR,4
62036	0074 00 4 00106		TSX OK,4
62037	0020 00 0 62024		TRA DP6

TEST DUFA AS IN DP6 WITH PRESIFT OF 1

62040	602464262102		BCD 1 DUFA2
62041	0074 00 4 66227	DP7	TSX CLEAR,4
62042	0443 00 0 66674		DLD AD3
			+077 000777776 +044 000777776
62043	-0301 00 0 66676		DUFA AD4
			+100 000000003 +045 000000003
62044	0074 00 2 66060		TSX CHECK,2
62045	0 00000 0 00000		PZE
62046	+100000400002		OCT 100000400002
62047	+045000400002		OCT 045000400002
62050	+100000000003		OCT 100000000003
62051	0000 00 0 00000		HTR
			IND CW
			AC
			MQ
			SI
			LOC ZERO
62052	0074 00 4 00105		TSX ERROR,4
62053	0074 00 4 00106		TSX OK,4
62054	0020 00 0 62041		TRA DP7

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 889

TEST DUFA PRESIFT 1 AND EXCHANGE

62055	602464262103		BCD 1 DUFA3
62056	0074 00 4 66227	DP8	TSX CLEAR,4
62057	0443 00 0 66700		DLD AD5
			+100 000000001 +045 007777777
62060	-0301 00 0 66702		DUFA AD6
			+077 000000001 +044 000000001
62061	0074 00 2 66060		TSX CHECK,2
62062	0 00000 0 00000		PZE
62063	+100000000001		OCT 100000000001
62064	+045407777777		OCT 045407777777
62065	+100000000001		OCT 100000000001
62066	0000 00 0 00000		HTR
			IND CW AC MQ SI LOC ZERO
62067	0074 00 4 00105		TSX ERROR,4
62070	0074 00 4 00106		TSX OK,4
62071	0020 00 0 62056		TRA DP8

TEST DUFA PRESIFT 53-EXCHANGE-MQ TO AC CARRY

62072	602464262104		BCD 1 DUFA4
62073	0074 00 4 66227	DP9	TSX CLEAR,4
62074	0443 00 0 66704		DLD AD7
			+165 377777777 +132 777777777
62075	-0301 00 0 66706		DUFA AD8
			+100 400000000 +045 000000000
62076	0074 00 2 66060		TSX CHECK,2
62077	0 00000 0 00000		PZE
62100	+165400000000		OCT 165400000000
62101	+132000000000		OCT 132000000000
62102	+165377777777		OCT 165377777777
62103	0000 00 0 00000		HTR
			IND CW AC MQ SI LOC ZERO
62104	0074 00 4 00105		TSX ERROR,4
62105	0074 00 4 00106		TSX OK,4
62106	0020 00 0 62073		TRA DP9

9M71B
2/1/63
PAGE 890

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST DUFA COMP ADD NO RECOMP

62107	602464262105		BCD 1 DUFA5
62110	0074 00 4 66227	DP10	TSX CLEAR,4
62111	0443 00 0 66710		DLD AD9
-177 222222222 -144 111111111			
62112	-0301 00 0 66712		DUFA AD10
+177 333333333 +144 555555555			
62113	0074 00 2 66060		TSX CHECK,2
62114	0 00000 0 00000	PZE	
62115	+177111111111	OCT	177111111111 IND CW
62116	+144444444444	OCT	144444444444 AC
62117	+177333333333	OCT	177333333333 MQ
62120	0000 00 0 00000	HTR	SI
			LOC ZERO
62121	0074 00 4 00105	TSX	ERROR,4
62122	0074 00 4 00106	TSX	OK,4
62123	0020 00 0 62110	TRA	DP10

TEST DUFA COMP-RECOMP-MQ NOT ZERO

62124	602464262106		BCD 1 DUFA6
62125	0074 00 4 66227	DP11	TSX CLEAR,4
62126	0443 00 0 66712		DLD AD10
+177 333333333 +144 555555555			
62127	-0301 00 0 66710		DUFA AD9
-177 222222222 -144 111111111			
62130	0074 00 2 66060		TSX CHECK,2
62131	0 00000 0 00000	PZE	
62132	+177111111111	OCT	177111111111 IND CW
62133	+144444444444	OCT	144444444444 AC
62134	-177222222222	OCT	577222222222 MQ
62135	0000 00 0 00000	HTR	SI
			LOC ZERO
62136	0074 00 4 00105	TSX	ERROR,4
62137	0074 00 4 00106	TSX	OK,4
62140	0020 00 0 62125	TRA	DP11

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M718
2/1/63
PAGE 891

TEST DUFA COMP ADD-RECOMP-MQ ZERO

62141	602464262107		BCD 1 DUFA7
62142	0074 00 4 66227	DP12	TSX CLEAR,4
62143	0443 00 0 66712		DLD AD10

+177 333333333 +144 55555555

62144	-0301 00 0 66720	DUFA AD13
-------	------------------	-----------

-177 111111111 -144 55555555

62145	0074 00 2 66060	TSX CHECK,2
-------	-----------------	-------------

62146	0 00000 0 00000	PZE		IND CW
62147	+17722222222	OCT	17722222222	AC
62150	+144000000000	OCT	144000000000	MQ
62151	-177111111111	OCT	577111111111	SI
62152	0000 00 0 00000	HTR		LOC ZERO

62153	0074 00 4 00105	TSX ERROR,4
62154	0074 00 4 00106	TSX OK,4
62155	0020 00 0 62142	TRA DP12

TEST DUFA TRUE ADD-OVERFLOW ADJUST
AC 35 TO MQ9

62156	602464262110		BCD 1 DUFA8
62157	0074 00 4 66227	DP13	TSX CLEAR,4
62160	0443 00 0 66720		DLD AD13

-177 111111111 -144 55555555

62161	-0301 00 0 66722	DUFA AD14
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-177 766666667 -144 22222223

62162	0074 00 2 66060	TSX CHECK,2
-------	-----------------	-------------

62163	-0 00000 0 00000	MZE		IND CW
62164	+200440000000	OCT	200440000000	AC
62165	-145400000000	OCT	545400000000	MQ
62166	-177766666667	OCT	577766666667	SI
62167	0000 00 0 00000	HTR		LOC ZERO

62170	0074 00 4 00105	TSX ERROR,4
62171	0074 00 4 00106	TSX OK,4
62172	0020 00 0 62157	TRA DP13

9M71B
2/1/63
PAGE 892

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST DFAD 3 PRE NO POST SHIFTS-EXCHANGE
OVERFLOW ADJUST

62173	602426212401		BCD 1 DFAD1
62174	0074 00 4 66227	DP14	TSX CLEAR,4
62175	0443 00 0 66724		DLD AD15
+133 725252525 +100 343434343			
62176	0301 00 0 66726		DFAD AD16
+130 525252525 +075 343434343			
62177	0074 00 2 66060		TSX CHECK,2
62200	0 00000 0 00000		PZE
62201	+134400000000		OCT 134400000000 AC
62202	+101037777777		OCT 101037777777 MQ
62203	+133725252525		OCT 133725252525 SI
62204	0000 00 0 00000		HTR LOC ZERO
62205	0074 00 4 00105		TSX ERROR,4
62206	0074 00 4 00106		TSX OK,4
62207	0020 00 0 62174		TRA DP14

TEST DFAD - EXCHANGE - 6 PRESIFTS -
COMP ADD - RECOMP,MQ NOT ZERO - 8 POST SHIFTS

62210	602426212402		BCD 1 DFAD2
62211	0074 00 4 66227	DP15	TSX CLEAR,4
62212	0443 00 0 66730		DLD AD17
+206 004666666 +153 123456701			
62213	0301 00 0 66732		DFAD AD18
-200 577777777 -145 777777777			
62214	0074 00 2 66060		TSX CHECK,2
62215	-0 00000 0 00000		MZE
62216	+176444444726		OCT 176444444726 IND CW
62217	-143150437000		OCT 543150437000 AC
62220	+206004666666		OCT 206004666666 MQ
62221	0000 00 0 00000		HTR SI
LOC ZERO			
62222	0074 00 4 00105		TSX ERROR,4
62223	0074 00 4 00106		TSX OK,4
62224	0020 00 0 62211		TRA DP15

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 893

TEST DFAD EARLY END-SHIFTS GREATER THAN 63

62225	602426212403		BCD 1 DFAD3
62226	0074 00 4 66227	DP16	TSX CLEAR,4
62227	0443 00 0 66702		DLD AD6
+077 000000001 +044 000000001			
62230	0301 00 0 66732		DFAD AD18
-200 577777777 -145 777777777			
62231	0074 00 2 66060		TSX CHECK,2
62232	-0 00000 0 00000	MZE	IND CW
62233	+200577777777	OCT 200577777777	AC
62234	-145777777777	OCT 545777777777	MQ
62235	-200000000001	OCT 600000000001	SI
62236	0000 00 0 00000	HTR	LOC ZERO
62237	0074 00 4 00105	TSX ERROR,4	
62240	0074 00 4 00106	TSX OK,4	
62241	0020 00 0 62226	TRA DP16	

TEST DFAD END OP IN E , SHIFTS GREATER THAN 64, LARGER IN AC

62242	242621240321		BCD 1DFAD3A
62243	0074 00 4 66227	DP16A	TSX CLEAR,4
62244	0443 00 0 66732		DLD AD18
-200 577777777 -145 777777777			
62245	0301 00 0 66702		DFAD AD6
+077 000000001 +044 000000001			
62246	0074 00 2 66060		TSX CHECK,2
62247	-0 00000 0 00000	MZE	IND CW
62250	+200577777777	OCT 200577777777	AC
62251	-145777777777	OCT 545777777777	MQ
62252	0 00000 0 00000	PZE	SI
62253	0000 00 0 00000	HTR	LOC ZERO
62254	0074 00 4 00105	TSX ERROR,4	
62255	0074 00 4 00106	TSX OK,4	
62256	0020 00 0 62243	TRA DP16A	

9M71B
2/1/63
PAGE 894

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DFAD WITH LARGER IN AC AND CHAR DIFF EQUAL 100 OCTAL

62257	242621240322	BCD	1DFAD3B	
62260	0074 00 4 66227	DP16B	TSX	CLEAR,4
62261	0443 00 0 66762	DLD	MP6	
				+263 450000000 +230 152000000
62262	0301 00 0 67642	DFAD	AT1	
				+163 000077000 +130 000007700
62263	0074 00 2 66060	TSX	CHECK,2	
62264	0 00000 0 00000	PZE		IND CW
62265	+263450000000	OCT	263450000000	AC
62266	+230152000000	OCT	230152000000	MQ
62267	+263450000000	OCT	263450000000	SI
62270	0000 00 0 00000	HTR		LOC ZERO
62271	0074 00 4 00105	TSX	ERROR,4	
62272	0074 00 4 00106	TSX	OK,4	
62273	0020 00 0 62260	TRA	DP16B	

TEST DFAD CHAR DIFF GREATER THAN 100 OCTAL WITH LARGER IN SR
AND NOT NORMALIZED.

62274	242621240421	BCD	1DFAD4A	
62275	0074 00 4 66227	DP17A	TSX	CLEAR,4
62276	0443 00 0 66702	DLD	AD6	
				+077 000000001 +044 000000001
62277	0301 00 0 66526	DFAD	FPN	
				+377377777777 +344 400000000
62300	0074 00 2 66060	TSX	CHECK,2	
62301	0 00000 0 00000	PZE		IND CW
62302	+376777777777	OCT	376777777777	AC
62303	+343000000000	OCT	343000000000	MQ
62304	+377377777777	OCT	377377777777	SI
62305	0000 00 0 00000	HTR		LOC ZERO
62306	0074 00 4 00105	TSX	ERROR,4	
62307	0074 00 4 00106	TSX	OK,4	
62310	0020 00 0 62275	TRA	DP17A	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 895

TEST DFAD WITH CHAR DIFF 200 OCTAL AND UNNORMALIZED NUMBERS SHOULD
GO TO FACT ONE AND RESET AC AND MQ. LARGER IN SR.

62311	242621240422	BCD	1DFAD4B
62312	0074 00 4 66227	DP17B	TSX CLEAR,4
62313	0443 00 0 66710	DLD	AD9
-177 22222222 -144 11111111			
62314	0301 00 0 67066	DFAD	TAD1
+377 214567244 +344 214567244			
62315	0074 00 2 66060	TSX	CHECK,2
62316	0 00000 0 00000	PZE	IND CW
62317	+376431356510	OCT	376431356510 AC
62320	+343431356510	OCT	343431356510 MQ
62321	+377214567244	OCT	377214567244 SI
62322	0000 00 0 00000	HTR	LOC ZERO
62323	0074 00 4 00105	TSX	ERROR,4
62324	0074 00 4 00106	TSX	OK,4
62325	0020 00 0 62312	TRA	DP17B

TEST DFAD-EARLY END-POST SHIFT-EXCHANGE

62326	602426212404	BCD	1 DFAD4
62327	0074 00 4 66227	DP17	TSX CLEAR,4
62330	0443 00 0 66730	DLD	AD17
+206 004666666 +153 123456701			
62331	0301 00 0 66702	DFAD	AD6
+077 000000001 +044 000000001			
62332	0074 00 2 66060	TSX	CHECK,2
62333	0 00000 0 00000	PZE	IND CW
62334	+200466666612	OCT	200466666612 AC
62335	+145345670100	OCT	145345670100 MQ
62336	+206004666666	OCT	206004666666 SI
62337	0000 00 0 00000	HTR	LOC ZERO
62340	0074 00 4 00105	TSX	ERROR,4
62341	0074 00 4 00106	TSX	OK,4
62342	0020 00 0 62327	TRA	DP17

9M71B
2/1/63
PAGE 896

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST DFAD ZERO RESULT

62343	602426212405	BCD 1 DFAD5
62344	0074 00 4 66227	DP19 TSX CLEAR,4
62345	0443 00 0 66734	DLD AD19
		-206 004666666 -153 123456701
62346	0301 00 0 66730	DFAD AD17
		+206 004666666 +153 123456701
62347	0074 00 2 66060	TSX CHECK,2
62350	-0 00000 0 00000	MZE
62351	0 00000 0 00000	PZE
62352	-0 00000 0 00000	MZE
62353	+206004666666	OCT 206004666666
62354	0000 00 0 00000	HTR
		IND CW
		AC
		MQ
		SI
		LOC ZERO
62355	0074 00 4 00105	TSX ERROR,4
62356	0074 00 4 00106	TSX OK,4
62357	0020 00 0 62344	TRA DP19

TEST DFAD PRESIFT OF 31 OCTAL, EXCHANGE, COMPLIMENT ADD , CARRY
BETWEEN SUMS, RECOMP AC AND MQ WITH CARRY INTO AC. PS OF 33.

62360	242621240660	BCD 1DFAD6
62361	0074 00 4 66227	DP19A TSX CLEAR,4
62362	0443 00 0 66736	DLD AD20
		-271 000000000 -236 333333333
62363	0301 00 0 66740	DFAD AD21
		+240 244444444 +205 333333333
62364	0074 00 2 66060	TSX CHECK,2
62365	0 00000 0 00000	PZE
62366	+236666666666	OCT 236666666666
62367	+203000000000	OCT 203000000000
62370	-271000000000	OCT 671000000000
62371	0000 00 0 00000	HTR
		IND CW
		AC
		MQ
		SI
		LOC ZERO
62372	0074 00 4 00105	TSX ERROR,4
62373	0074 00 4 00106	TSX OK,4
62374	0020 00 0 62361	TRA DP19A

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M718
2/1/63
PAGE 897

TEST DFAD CONSECUTIVE ADDS.

62375	242621245160		BCD 1DFADR
62376	0074 00 4 66227	DP25A	TSX CLEAR,4
62377	0443 00 0 66720		DLD AD13
62400	0301 00 0 66732		DFAD AD18

PARTIAL RESULTS -200 6444444444 -145 666666665

62401	0303 00 0 67016	DFSB DV3
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PARTIAL RESULTS -201442222224 -146333333330

62402	-0301 00 0 66730	DUFA AD17
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PARTIAL RESULTS -206004155556 -153363207765

62403	0305 00 0 66734	DFAM AD19
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62404	0074 00 2 66060	TSX CHECK,2
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62405	0 00000 0 00000	PZE		
62406	+175511107540	OCT	175511107540	IND CW
62407	+142246714000	OCT	142246714000	AC
62410	+206004666666	OCT	206004666666	MQ
62411	0000 00 0 00000	HTR		SI
				LOC ZERO

62412	0074 00 4 00105	TSX	ERROR,4
62413	0074 00 4 00106	TSX	OK,4
62414	0020 00 0 62376	TRA	DP25A

TEST DUFFS EXCHANGE-NORECOMP

62415	602464266201		BCD 1 DUFFS1
62416	0074 00 4 66227	DP20	TSX CLEAR,4
62417	0443 00 0 66724		DLD AD15

+133 725252525 +100 343434343

62420	-0303 00 0 66726	DUFFS AD16
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+130 525252525 +075 343434343

62421	0074 00 2 66060	TSX CHECK,2
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62422	0 00000 0 00000	PZE		
62423	+133652525252	OCT	133652525252	IND CW
62424	+100607070707	OCT	100607070707	AC
62425	+133725252525	OCT	133725252525	MQ
62426	0000 00 0 00000	HTR		SI
				LOC ZERO

62427	0074 00 4 00105	TSX	ERROR,4
62430	0074 00 4 00106	TSX	OK,4
62431	0020 00 0 62416	TRA	DP20

9M71B
2/1/63
PAGE 898

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DFSB EXCHANGE

62432	602426622201		BCD 1 DFSB1
62433	0074 00 4 66227	DP21	TSX CLEAR,4
62434	0443 00 0 66730		DLD AD17
			+206 004666666 +153 123456701
62435	0303 00 0 66732		DFSB AD18
			-200 577777777 -145 777777777
62436	0074 00 2 66060		TSX CHECK,2
62437	0 00000 0 00000	PZE	IND CW
62440	+201533333305	OCT	201533333305 AC
62441	+146162734000	OCT	146162734000 MQ
62442	+206004666666	OCT	206004666666 SI
62443	0000 00 0 00000	HTR	LOC ZERO
62444	0074 00 4 00105	TSX	ERROR,4
62445	0074 00 4 00106	TSX	OK,4
62446	0020 00 0 62433	TRA	DP21

TEST DFAM SIGN OF SR FORCED PLUS

62447	602426214401		BCD 1 DFAM1
62450	0074 00 4 66227	DP22	TSX CLEAR,4
62451	0443 00 0 66702		DLD AD6
			+077 000000001 +044 000000001
62452	0305 00 0 66742		DFAM AM1
			-077 000000007 -047 000000007
62453	0074 00 2 66060		TSX CHECK,2
62454	0 00000 0 00000	PZE	IND CW
62455	+050400000000	OCT	050400000000 AC
62456	+015400000000	OCT	015400000000 MQ
62457	+077000000007	OCT	077000000007 SI
62460	0000 00 0 00000	HTR	LOC ZERO
62461	0074 00 4 00105	TSX	ERROR,4
62462	0074 00 4 00106	TSX	OK,4
62463	0020 00 0 62450	TRA	DP22

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 899

TEST DFSM

62464	602426624401		BCD 1 DFSM1
62465	0074 00 4 66227	DP23	TSX CLEAR,4
62466	0443 00 0 66744		DLD SM1
+035 235416517 +002 765234145			
62467	0307 00 0 66746		DFSM SM2
-035 421366312 -002 551713524			
62470	0074 00 2 66060		TSX CHECK,2
62471	-0 00000 0 00000		MZE IND CW
62472	+033717636752		OCT AC
62473	-000722275674		OCT MQ
62474	-035421366312		OCT SI
62475	0000 00 0 00000		HTR LOC ZERO
62476	0074 00 4 00105		TSX ERROR,4
62477	0074 00 4 00106		TSX OK,4
62500	0020 00 0 62465		TRA DP23

TEST DUAM SIGN FORCED PLUS-NO POST SHIFT

62501	602464214401		BCD 1 DUAM1
62502	0074 00 4 66227	DP24	TSX CLEAR,4
62503	0443 00 0 66702		DLD AD6
+077 000000001 +044 000000001			
62504	-0305 00 0 66742		DUAM AM1
-077 000000007 -047 000000007			
62505	0074 00 2 66060		TSX CHECK,2
62506	0 00000 0 00000		PZE IND CW
62507	+077000000010		OCT AC
62510	+044000000010		OCT MQ
62511	+077000000007		OCT SI
62512	0000 00 0 00000		HTR LOC ZERO
62513	0074 00 4 00105		TSX ERROR,4
62514	0074 00 4 00106		TSX OK,4
62515	0020 00 0 62502		TRA DP24

9M71B
2/1/63
PAGE 900

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DUSM

62516	602464624401		BCD 1 DUSM1
62517	0074 00 4 66227	DP25	TSX CLEAR,4
62520	0443 00 0 66744		DLD SM1
			+035 235416517 +002 765234145
62521	-0307 00 0 66746		DUSM SM2
			-035 421366312 -002 551713524
62522	0074 00 2 66060		TSX CHECK,2
62523	-0 00000 0 00000	MZE	IND CW
62524	+035163747572	OCT	035163747572 AC
62525	-002564457357	OCT	402564457357 MQ
62526	-035421366312	OCT	435421366312 SI
62527	0000 00 0 00000	HTR	LOC ZERO
62530	0074 00 4 00105	TSX	ERROR,4
62531	0074 00 4 00106	TSX	OK,4
62532	0020 00 0 62517	TRA	DP25

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 901

TEST DUFM EARLY END-A+C EQUAL ZERO

62533	602464264401		BCD 1 DUFM1
62534	0074 00 4 66227	DP26	TSX CLEAR,4
62535	0443 00 0 66750		DLD MP1

+000 000000000 -032 456721352

62536	-0261 00 0 66750	DUFM MP1
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+000 000000000 -032 456721352

62537	0074 00 2 66060	TSX CHECK,2	
62540	0 00000 0 00000	PZE	IND CW
62541	0 00000 0 00000	PZE	AC
62542	0 00000 0 00000	PZE	MQ
62543	0 00000 0 00000	PZE	SI
62544	0000 00 0 00000	HTR	LOC ZERO
62545	0074 00 4 00105	TSX ERROR,4	
62546	0074 00 4 00106	TSX OK,4	
62547	0020 00 0 62534	TRA DP26	

TEST DUFM WITH A AND D ZERO AND C AND B ALL BITS. THIS SHOULD
CHECK INTERREGISTER DATA TRANSFERS AND THE C TIMES B MULTIPLY.

62550	246426446060		BCD 1DUFM
62551	0074 00 4 66227	DP26A	TSX CLEAR,4
62552	0443 00 0 67004		DLD MP15

+200 000000000 +377 777777777

62553	-0261 00 0 67006	DUFM MP16
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+200 777777777 +000 000000000

62554	0074 00 2 66060	TSX CHECK,2	
62555	0 00000 0 00000	PZE	IND CW
62556	+200000000000	OCT 200000000000	AC
62557	+145777777776	OCT 145777777776	MQ
62560	+000777777776	OCT 000777777776	SI
62561	0000 00 0 00000	HTR	LOC ZERO
62562	0074 00 4 00105	TSX ERROR,4	
62563	0074 00 4 00106	TSX OK,4	
62564	0020 00 0 62551	TRA DP26A	

9M71B
2/1/63
PAGE 902

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DUFM EARLY END-A+B EQUAL ZERO

62565	602464264402		BCD 1 DUFM2
62566	0074 00 4 66227	DP27	TSX CLEAR,4
62567	0443 00 0 66752		DLD MP2
			+214 000000000 +000 000000000
62570	-0261 00 0 66754		DUFM MP3
			-064 252525252 -031 373737373
62571	0074 00 2 66060		TSX CHECK,2
62572	-0 00000 0 00000		MZE
62573	+100000000000		OCT 100000000000
62574	-045000000000		OCT 445000000000
62575	-064000000000		OCT 464000000000
62576	0000 00 0 00000		HTR
			IND CW
			AC
			MQ
			SI
			LOC ZERO
62577	0074 00 4 00105		TSX ERROR,4
62600	0074 00 4 00106		TSX OK,4
62601	0020 00 0 62566		TRA DP27

TEST DUFM EARLY END-C+D EQUAL ZERO
SIGNS ALIKE-MINUS

62602	602464264403		BCD 1 DUFM3
62603	0074 00 4 66227	DP28	TSX CLEAR,4
62604	0443 00 0 66664		DLD ONEZ
			-377 777777777 -377 777777777
62605	-0261 00 0 66760		DUFM MP5
			-000 000000000 -000 000000000
62606	0074 00 2 66060		TSX CHECK,2
62607	0 00000 0 00000		PZE
62610	0 00000 0 00000		PZE
62611	0 00000 0 00000		PZE
62612	-0 00000 0 00000		MZE
62613	0000 00 0 00000		HTR
			IND CW
			AC
			MQ
			SI
62614	0074 00 4 00105		TSX ERROR,4
62615	0074 00 4 00106		TSX OK,4
62616	0020 00 0 62603		TRA DP28

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 903

TEST DUFM B+D EQUAL ZERO

62617	602464264404		BCD 1 DUFM4
62620	0074 00 4 66227	DP29	TSX CLEAR,4
62621	0443 00 0 66756		DLD MP4
			+220 000000077 +000 000000000
62622	-0261 00 0 66756		DUFM MP4
			+220 000000077 +000 000000000
62623	0074 00 2 66060		TSX CHECK,2
62624	0 00000 0 00000		PZE
62625	+240000000000		OCT 240000000000
62626	+205000007601		OCT 205000007601
62627	+000000000000		OCT 000000000000
62630	0000 00 0 00000		HTR
			IND CW AC MQ SI LOC ZERO
62631	0074 00 4 00105		TSX ERROR,4
62632	0074 00 4 00106		TSX OK,4
62633	0020 00 0 62620		TRA DP29

TEST DUFM C EQU ZERO-A*D IN MQ

62634	602464264405		BCD 1 DUFM5
62635	0074 00 4 66227	DP30	TSX CLEAR,4
62636	0443 00 0 66762		DLD MP6
			+263 450000000 +230 152000000
62637	-0261 00 0 66764		DUFM MP7
			+235 000000000 +202 110000000
62640	0074 00 2 66060		TSX CHECK,2
62641	0 00000 0 00000		PZE
62642	+320000000000		OCT 320000000000
62643	+265051500000		OCT 265051500000
62644	0 00000 0 00000		PZE
62645	0000 00 0 00000		HTR
			IND CW AC MQ SI LOC ZERO
62646	0074 00 4 00105		TSX ERROR,4
62647	0074 00 4 00106		TSX OK,4
62650	0020 00 0 62635		TRA DP30

9M71B
2/1/63
PAGE 904

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DUFM-A*C IN AC ONLY-B*C+A*D IN MQ

62651	602464264406		BCD 1 DUFM6
62652	0074 00 4 66227	DP31	TSX CLEAR,4
62653	0443 00 0 66762		DLD MP6
			+263 450000000 +230 152000000
62654	-0261 00 0 66766		DUFM MP8
			+235 210000000 +202 120000000
62655	0074 00 2 66060		TSX CHECK,2
62656	0 00000 0 00000	PZE	IND CW
62657	+320116500000	OCT	320116500000 AC
62660	+265112320000	OCT	265112320000 MQ
62661	+000034120000	OCT	000034120000 SI
62662	0000 00 0 00000	HTR	LOC ZERO
62663	0074 00 4 00105	TSX	ERROR,4
62664	0074 00 4 00106	TSX	OK,4
62665	0020 00 0 62652	TRA	DP31

TEST DUFM FULL (B*C)+(A*D)NO CARRY

62666	602464264407		BCD 1 DUFM7
62667	0074 00 4 66227	DP32	TSX CLEAR,4
62670	0443 00 0 66770		DLD MP9
			+200 333330000 +145 040000000
62671	-0261 00 0 66772		DUFM MP10
			+200 777770000 +145 040000000
62672	0074 00 2 66060		TSX CHECK,2
62673	0 00000 0 00000	PZE	IND CW
62674	+200333324444	OCT	200333324444 AC
62675	+145555555000	OCT	145555555000 MQ
62676	+000037777400	OCT	000037777400 SI
62677	0000 00 0 00000	HTR	LOC ZERO
62700	0074 00 4 00105	TSX	ERROR,4
62701	0074 00 4 00106	TSX	OK,4
62702	0020 00 0 62667	TRA	DP32

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 905

TEST DUFM FULL WITH CARRY

62703	602464264410		BCD 1 DUFM8
62704	0074 00 4 66227	DP33	TSX CLEAR,4
62705	0443 00 0 66774		DLD MP11
+200 777770000 +145 700000000			
62706	-0261 00 0 66776		DUFM MP12
+200 733330000 +145 700000000			
62707	0074 00 2 66060		TSX CHECK,2
62710	0 00000 0 00000		PZE
62711	+200733320446		OCT 200733320446
62712	+145237766000		OCT 145237766000
62713	+000637775000		OCT 000637775000
62714	0000 00 0 00000		HTR
			IND CW
			AC
			MQ
			SI
			LOC ZERO
62715	0074 00 4 00105		TSX ERROR,4
62716	0074 00 4 00106		TSX OK,4
62717	0020 00 0 62704		TRA DP33

TEST DFMP CHECK POST NORMALIZATION

62720	602426444701		BCD 1 DFMP1
62721	0074 00 4 66227	DP34	TSX CLEAR,4
62722	0443 00 0 67000		DLD MP13
+240 660000007 +205 700000000			
62723	0261 00 0 67002		DFMP MP14
+141 440000007 +106 300000000			
62724	0074 00 2 66060		TSX CHECK,2
62725	0 00000 0 00000		PZE
62726	+200746000025		OCT 200746000025
62727	+145234000162		OCT 145234000162
62730	+000374000006		OCT 000374000006
62731	0000 00 0 00000		HTR
			IND CW
			AC
			MQ
			SI
			LOC ZERO
62732	0074 00 4 00105		TSX ERROR,4
62733	0074 00 4 00106		TSX OK,4
62734	0020 00 0 62721		TRA DP34

9M71B
2/1/63
PAGE 906

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DFMP WITH ZERO MULTIPLIER END OP

62735	242644476060		BCD	IDFMP
62736	0074 00 4 66227	DP34A	TSX	CLEAR,4
62737	0443 00 0 67644		DLD	AT2
			+345 000000000 +000 000000000	
62740	0261 00 0 67646		DFMP	AT3
			-267 252525252 -234 373737373	
62741	0074 00 2 66060		TSX	CHECK,2
62742	-0 00000 0 00000		MZE	IND CW
62743	0 00000 0 00000		PZE	AC
62744	-0 00000 0 00000		MZE	MQ
62745	-267252525252		OCT	667252525252 SI
62746	0000 00 0 00000		HTR	LOC ZERO
62747	0074 00 4 00105		TSX	ERROR,4
62750	0074 00 4 00106		TSX	OK,4
62751	0020 00 0 62736		TRA	DP34A

TEST DFMP WITH ZERO MULTIPLICAND FRACTION

62752	242644476060		BCD	IDFMP
62753	0074 00 4 66227	DP35	TSX	CLEAR,4
62754	0443 00 0 67646		DLD	AT3
			-267 252525252 -234 373737373	
62755	0261 00 0 67644		DFMP	AT2
			+345 000000000 +312 000000000	
62756	0074 00 2 66060		TSX	CHECK,2
62757	-0 00000 0 00000		MZE	IND CW
62760	0 00000 0 00000		PZE	AC
62761	-0 00000 0 00000		MZE	MQ
62762	0 00000 0 00000		PZE	SI
62763	0000 00 0 00000		HTR	LOC ZERO
62764	0074 00 4 00105		TSX	ERROR,4
62765	0074 00 4 00106		TSX	OK,4
62766	0020 00 0 62753		TRA	DP35

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 907

TEST DFDP FIRST DIVIDE CHECK

62767	602426244701		BCD 1 DFDP1
62770	0074 00 4 66227	DP36	TSX CLEAR,4
62771	0443 00 0 67010		DLD DV

+064 777777777 +031 252525252

62772	-0241 00 0 67012	DFDP DV1
-------	------------------	----------

-064 077777777 -031 343434343

62773	0074 00 2 66060	TSX CHECK,2	
62774	+000004000000	OCT 000004000000	IND CW
62775	+064777777777	OCT 064777777777	AC
62776	+031252525252	OCT 031252525252	MQ
62777	0 00000 0 00000	PZE	SI
63000	0000 00 0 00000	HTR	LOC ZERO

63001	0074 00 4 00105	TSX ERROR,4
63002	0074 00 4 00106	TSX OK,4
63003	0020 00 0 62770	TRA DP36

TEST DFDP SECOND DIVIDE CHECK -Q1*D IN AC
EVEN FIRST DIVIDE

63004	602426244702		BCD 1 DFDP2
63005	0074 00 4 66227	DP37	TSX CLEAR,4
63006	0443 00 0 67014		DLD DV2

+202 031000000 +00 000000000

63007	-0241 00 0 67016	DFDP DV3
-------	------------------	----------

+202 050000000 +147 777777777

63010	0074 00 2 66060	TSX CHECK,2	
63011	-000004000000	OCT 400004000000	IND CW
63012	+000477777777	OCT 000477777777	AC
63013	-0 00000 0 00000	MZE	MQ
63014	+200500000000	OCT 200500000000	SI
63015	0000 00 0 00000	HTR	LOC ZERO

63016	0074 00 4 00105	TSX ERROR,4
63017	0074 00 4 00106	TSX OK,4
63020	0020 00 0 63005	TRA DP37

9M71B
2/1/63
PAGE 908

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST DFDP WITH SECOND DIVIDE CHECK. FIRST DIVIDE CAUSED A
TEMPERARY AC OVERFLOW. AC Q-8 SHOULD BE RESET ON SECOND
DIVIDE CHECK. R1-Q10 IS LEFT IN AC

63021	242624476060		BCD	1DFDP	
63022	0074 00 4 66227	DP37B	TSX	CLEAR,4	
63023	0443 00 0 67036		DLD	DV11	
-377 060000000 -344 001234567					
63024	-0241 00 0 67040		DFDP	DV12	
+200 060000000 +145 400000000					
63025	0074 00 2 66060		TSX	CHECK,2	
63026	+000004000000		OCT	000004000000	IND CW
63027	+000177261505		OCT	000177261505	AC
63030	+000000000000		OCT	000000000000	MQ
63031	-000400000000		OCT	400400000000	SI
63032	0000 00 0 00000		HTR		LOC ZERO
63033	0074 00 4 00105		TSX	ERROR,4	
63034	0074 00 4 00106		TSX	OK,4	
63035	0020 00 0 63022		TRA	DP37B	

TEST DFDP SIGNS PLUS- R1 LARGER THAN Q1 * D

63036	242624470360		BCD	1DFDP3	
63037	0074 00 4 66227	DP38	TSX	CLEAR,4	
63040	0443 00 0 67020		DLD	DV4	
+177 256352122 +00 000000000					
63041	-0241 00 0 67022		DFDP	DV5	
+202 500000000 +147 003000000					
63042	0074 00 2 66060		TSX	CHECK,2	
63043	0 00000 0 00000		PZE		IND CW
63044	+175427103351		OCT	175427103351	AC
63045	+142460452443		OCT	142460452443	MQ
63046	+175427103351		OCT	175427103351	SI
63047	0000 00 0 00000		HTR		LOC ZERO
63050	0074 00 4 00105		TSX	ERROR,4	
63051	0074 00 4 00106		TSX	OK,4	
63052	0020 00 0 63037		TRA	DP38	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 909

TEST DFDP POSITIVE SIGNS R1 LESS Q1*D
Q1 AND Q2 OVERLAP

63053	242624470460		BCD	1DFDP4	
63054	0074 00 4 66227	DP39	TSX	CLEAR,4	
63055	0443 00 0 67024		OLD	DV6	
				+200 1400000000	+000 0000000000
63056	-0241 00 0 67026		DFDP	DV7	
				+200 2000000000	+145 4000000000
63057	0074 00 2 66060		TSX	CHECK,2	
63060	0 00000 0 00000		PZE		IND CW
63061	+200577777776		OCT	200577777776	AC
63062	+145400000000		OCT	145400000000	MQ
63063	+200600000000		OCT	200600000000	SI
63064	0000 00 0 00000		HTR		LOC ZERO
63065	0074 00 4 00105		TSX	ERROR,4	
63066	0074 00 4 00106		TSX	OK,4	
63067	0020 00 0 63054		TRA	DP39	

TEST DFDP SIGNS UNLIKE R1 LARGER Q1*D

63070	242624470560		BCD	1DFDP5	
63071	0074 00 4 66227	DP40	TSX	CLEAR,4	
63072	0443 00 0 67030		OLD	DV8	
				+200 3333333333	+145 3000000000
63073	-0241 00 0 67032		DFDP	DV9	
				-200 4000000000	-145 2000000000
63074	0074 00 2 66060		TSX	CHECK,2	
63075	-0 00000 0 00000		MZE		IND CW
63076	+200666666666		OCT	200666666666	AC
63077	-145244444446		OCT	545244444446	MQ
63100	-200666666666		OCT	600666666666	SI
63101	0000 00 0 00000		HTR		LOC ZERO
63102	0074 00 4 00105		TSX	ERROR,4	
63103	0074 00 4 00106		TSX	OK,4	
63104	0020 00 0 63071		TRA	DP40	

9M71B
2/1/63
PAGE 910

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DFDP ZERO DIVISOR FIRST DIVIDE CHECK

63105	242624470660		BCD	1DFDP6	
63106	0074 00 4 66227	DP41	TSX	CLEAR,4	
63107	0443 00 0 67022		DLD	DV5	
				+202 500000000	+147 003000000
63110	-0241 00 0 67034		DFDP	DV10	
				+000 000000000	+00 000000000
63111	0074 00 2 66060		TSX	CHECK,2	
63112	+000004000000		OCT	000004000000	IND CW
63113	+202500000000		OCT	202500000000	AC
63114	+147003000000		OCT	147003000000	MQ
63115	0 00000 0 00000		PZE		SI
63116	0000 00 0 00000		HTR		LOC ZERO
63117	0074 00 4 00105		TSX	ERROR,4	
63120	0074 00 4 00106		TSX	OK,4	
63121	0020 00 0 63106		TRA	DP41	

TEST DFDP ZERO DIVIDEND

63122	242624470760		BCD	1DFDP7	
63123	0074 00 4 66227	DP42	TSX	CLEAR,4	
63124	0443 00 0 67034		DLD	DV10	
				+000 000000000	+00 000000000
63125	-0241 00 0 67032		DFDP	DV9	
				-200 400000000	-145 200000000
63126	0074 00 2 66060		TSX	CHECK,2	
63127	-0 00000 0 00000		MZE		IND CW
63130	0 00000 0 00000		PZE		AC
63131	-0 00000 0 00000		MZE		MQ
63132	-0 00000 0 00000		MZE		SI
63133	0000 00 0 00000		HTR		LOC ZERO
63134	0074 00 4 00105		TSX	ERROR,4	
63135	0074 00 4 00106		TSX	OK,4	
63136	0020 00 0 63123		TRA	DP42	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 911

CHECK THAT DFDP WITH SIGNS ALIKE, DIVISOR AND DIVIDEND NORMALIZED.
PRODUCES A NORMALIZED QUOTIENT

63137	242624476045	BCD 1DFDP N	
63140	0761 00 0 00000	DP43 NOP	REPLACE THIS LOCATION *** WITH A TRA TO OK 43 *** UNTIL THIS CONDITION IS CORRECTED
63141	0074 00 4 66227	TSX CLEAR,4	
63142	0443 00 0 67056	DLD DV19	
			+233.400000000 +200.000000001
63143	-0241 00 0 67060	DFDP DV20	
			+233.400000000 +200.000000002
63144	0074 00 2 66060	TSX CHECK,2	
63145	0 00000 0 00000	PZE	IND CW
63146	+200777777777	OCT 200777777777	ACC
63147	+145777777774	OCT 145777777774	MQ
63150	+201400000000	OCT 201400000000	SI
63151	0 00000 0 00000	PZE	LOC ZERO
63152	0074 00 4 00105	TSX ERROR,4	
63153	0074 00 4 00106	OK43 TSX OK,4	
63154	0020 00 0 63140	TRA DP43	
63155	242624474502	BCD 1DFDPN2	
63156	0761 00 0 00000	DP43A NOP	REPLACE THIS LOCATION *** WITH A TRA TO OK43A *** UNTIL THIS CONDITION IS CORRECTED
63157	0074 00 4 66227	TSX CLEAR,4	
63160	0443 00 0 67062	DLD DV21	
			-200.400000000 +145.000000001
63161	-0241 00 0 67064	DFDP DV22	
			+346.400000000 +313.000000002
63162	0074 00 2 66060	TSX CHECK,2	
63163	-010400000000	OCT 410400000000	IND CW
63164	+032777777777	OCT 032777777777	AC
63165	-377777777774	OCT 777777777774	MQ
63166	-033400000000	OCT 433400000000	SI
63167	0 00000 0 63162	PZE DP43A+4	LOC ZERO
63170	0074 00 4 00105	TSX ERROR,4	
63171	0074 00 4 00106	OK43A TSX OK,4	
63172	0020 00 0 63156	TRA DP43A	

9M71B
2/1/63
PAGE 912

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST UNDERFLOW, OVERFLOW, AND FLOATING POINT
TRAP WITH DOUBLE PRECISION INSTRUCTIONS

TEST DFAD WITH AC EXPONENT OVERFLOW

63173	634721240160	BCD	ITPAD1	
63174	0074 00 4 66227	DP44	TSX	CLEAR, 4
63175	0443 00 0 66664	DLD	ONEZ	
-377 777777777 -377 777777777				
63176	0301 00 0 66664	DFAD	ONEZ	
-377 777777777 -377 777777777				
63177	0074 00 2 66060	TSX	CHECK, 2	
63200	-113000000000	OCT	513000000000	IND CW
63201	+000777777777	OCT	000777777777	AC
63202	-345777777777	OCT	745777777777	MQ
63203	-377777777777	OCT	777777777777	SI
63204	0000 00 0 63177	HTR	DP44+3	LOC ZERO
63205	0074 00 4 00105	TSX	ERROR, 4	
63206	0074 00 4 00106	TSX	OK, 4	
63207	0020 00 0 63174	TRA	DP44	

TEST DFAD MQ UNDERFLOW TRAP

63210	634721240260	BCD	ITPAD2	
63211	0074 00 4 66227	DP45	TSX	CLEAR, 4
63212	0443 00 0 67072	DLD	TAD3	
+031 222222222 +000 222222222				
63213	0301 00 0 67074	DFAD	TAD4	
+031 111111111 +000 111111111				
63214	0074 00 2 66060	TSX	CHECK, 2	
63215	+010400000000	OCT	010400000000	IND CW
63216	+030666666666	OCT	030666666666	AC
63217	+375666666666	OCT	375666666666	MQ
63220	+031111111111	OCT	031111111111	SI
63221	0000 00 0 63214	HTR	DP45+3	LOC ZERO
63222	0074 00 4 00105	TSX	ERROR, 4	
63223	0074 00 4 00106	TSX	OK, 4	
63224	0020 00 0 63211	TRA	DP45	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 913

CHECK THAT DLD INSTRUCTION IN THE INSTRUCTION REGISTER CAUSES NO
ODD LOCATION TRAP DUE TO DLA AND SWITCH IN PODS AT E7 TIME.

63225	244324606060		BCD	1DLD	
63226	0074 00 4 66227	DP45A	TSX	CLEAR,4	
63227	0761 00 0 00000		NOP		
63230	0443 00 0 66714		DLD	AD11	
63231	0401 00 0 66715		ADM	AD11+1	
63232	0074 00 2 66060		TSX	CHECK,2	
63233	0 00000 0 00000		PZE		IND CONTROL WORD
63234	0 00000 0 00000		PZE		AC
63235	0 00000 0 00000		PZE		MQ
63236	0 00000 0 00000		PZE		SI
63237	0 00000 0 00000		PZE		LOC ZERO
63240	0074 00 4 00105		TSX	ERROR,4	
63241	0074 00 4 00106		TSX	OK,4	
63242	0020 00 0 63226		TRA	DP45A	

CHECK THAT AN ODD REFERENCE ON A DLA OVERLAPPED DLD WILL BE
DETECTED AND A TRAP OCCUR

63243	244324606060		BCD	1DLD	
63244	0074 00 4 66227	DP45B	TSX	CLEAR,4	
63245	0500 00 0 66513		CLA	ONES	
63246	0443 00 0 66715		DLD	AD11+1	
63247	0074 00 2 66060		TSX	CHECK,2	
63250	+010001000000		OCT	010001000000	IND CONTROL WORD
63251	0 00000 0 00000		PZE		AC
63252	0 00000 0 00000		PZE		MQ
63253	0 00000 0 00000		PZE		SI
63254	0000 00 0 63247		HTR	DP45B+3	LOC ZERO
63255	0074 00 4 00105		TSX	ERROR,4	
63256	0074 00 4 00106		TSX	OK,4	
63257	0020 00 0 63244		TRA	DP45B	

9M71B
2/1/63
PAGE 914

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DFAD ODD REFERENCE TRAP

63260	634721240360		BCD	ITPAD3	
63261	0074 00 4 66227	DP46	TSX	CLEAR,4	
63262	0443 00 0 67070		DLD	TAD2	
				+377 163210533	+344 163210533
63263	0301 00 0 67071		DFAD	TAD2+1	
				+344 163210533	+344 163210533
63264	0074 00 2 66060		TSX	CHECK,2	
63265	+010001000000		OCT	010001000000	IND CW
63266	+377163210533		OCT	377163210533	AC
63267	+344163210533		OCT	344163210533	MQ
63270	0 00000 0 00000		PZE		SI
63271	0000 00 0 63264		HTR	DP46+3	LOC ZERO
63272	0074 00 4 00105		TSX	ERROR,4	
63273	0074 00 4 00106		TSX	OK,4	
63274	0020 00 0 63261		TRA	DP46	

TEST DFMP AC AND MQ UNDERFLOW

63275	634744470160		BCD	ITPMP1	
63276	0074 00 4 66227	DP47	TSX	CLEAR,4	
63277	0443 00 0 67076		DLD	TMP1	
				+100 700000000	+000 000000000
63300	0261 00 0 67100		DFMP	TMP2	
				+077 700000000	+000 000000000
63301	0074 00 2 66060		TSX	CHECK,2	
63302	+311400000000		OCT	311400000000	IND CW
63303	+377610000000		OCT	377610000000	AC
63304	+344000000000		OCT	344000000000	MQ
63305	0 00000 0 00000		PZE		SI
63306	0000 00 0 63301		HTR	DP47+3	LOC ZERO
63307	0074 00 4 00105		TSX	ERROR,4	
63310	0074 00 4 00106		TSX	OK,4	
63311	0020 00 0 63276		TRA	DP47	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 915

TEST DFMP ODD REFERENCE TRAP

63312	634744470260		BCD	1TPMP2	
63313	0074 00 4 66227	DP48	TSX	CLEAR,4	
63314	0443 00 0 67070		DLD	TAD2	
				+377 163210533	+344 163210533
63315	0261 00 0 67071		DFMP	TAD2+1	
				+344 163210533	+344 163210533
63316	0074 00 2 66060		TSX	CHECK,2	
63317	+010001000000		OCT	010001000000	IND CW
63320	+377163210533		OCT	377163210533	AC
63321	+344163210533		OCT	344163210533	MQ
63322	0 00000 0 00000		PZE		SI
63323	0000 00 0 63316		HTR	DP48+3	LOC ZERO
63324	0074 00 4 00105		TSX	ERROR,4	
63325	0074 00 4 00106		TSX	OK,4	
63326	0020 00 0 63313		TRA	DP48	
	TEST DFDP MQ UNDERFLOW, SIGNS ALIKE-MINUS, R1 LESS THAN Q1 TIMES D, Q1 AND Q2 OVERLAP WITH SIGNS UNLIKE				
63327	242624476060		BCD	1DFDP	
63330	0074 00 4 66227	DP49A	TSX	CLEAR,4	
63331	0443 00 0 67042		DLD	DV13	
				-130 530134466	-075 202023736
63332	-0241 00 0 67044		DFDP	DV14	
				-300 713332366	-245 577441743
63333	0074 00 2 66060		TSX	CHECK,2	
63334	+010400000000		OCT	010400000000	IND CW
63335	+030577441742		OCT	030577441742	AC
63336	+375741466727		OCT	375741466727	MQ
63337	+030577441743		OCT	030577441743	SI
63340	0000 00 0 63333		HTR	DP49A+3	LOC ZERO
63341	0074 00 4 00105		TSX	ERROR,4	
63342	0074 00 4 00106		TSX	OK,4	
63343	0020 00 0 63330		TRA	DP49A	

9M71B
2/1/63
PAGE 916

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DFDP WITH AC OVERFLOW , Q2 ADD TO Q1)

63344	242624476060	BCD	1DFDP	
63345	0074 00 4 66227	DP49B	TSX	CLEAR,4
63346	0443 00 0 67046	DLD	DV15	
-332 415324200 -277 714137104				
63347	-0241 00 0 67050	DFDP	DV16	
+100 773225522 +045 417724256				
63350	0074 00 2 66060	TSX	CHECK,2	
63351	-113000000000	OCT	513000000000	IND CW
63352	+032417724257	OCT	032417724257	AC
63353	-377417123424	OCT	777417123424	MQ
63354	-032417724257	OCT	432417724257	SI
63355	0000 00 0 63350	HTR	DP49B+3	
63356	0074 00 4 00105	TSX	ERROR,4	
63357	0074 00 4 00106	TSX	OK,4	
63360	0020 00 0 63345	TRA	DP49B	

TEST DFDP WITH AC AND MQ UNDERFLOW.

63361	242624476060	BCD	1DFDP	
63362	0074 00 4 66227	DP49C	TSX	CLEAR,4
63363	0443 00 0 67052	DLD	DV17	
-033 070115777 -000 220065144				
63364	-0241 00 0 67054	DFDP	DV18	
+361 376744133 +000 160611624				
63365	0074 00 2 66060	TSX	CHECK,2	
63366	-311400000000	OCT	711400000000	IND CW
63367	+252160611625	OCT	252160611625	AC
63370	-217020726266	OCT	617020726266	MQ
63371	-252160611625	OCT	652160611625	SI
63372	0000 00 0 63365	HTR	DP49C+3	LOC ZERO
63373	0074 00 4 00105	TSX	ERROR,4	
63374	0074 00 4 00106	TSX	OK,4	
63375	0020 00 0 63362	TRA	DP49C	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 917

TEST DFDP WITH AC AND MQ OVERFLOW TRAP.

63376	244763470160		BCD	1DPTP1	
63377	0074 00 4 66227	DP49	TSX	CLEAR,4	
63400	0443 00 0 67102		DLD	TDV1	
+267 200000000 +000 000000000					
63401	-0241 00 0 67104		DFDP	TDV2	
+033 400000000 +000 000000000					
63402	0074 00 2 66060		TSX	CHECK,2	
63403	+113400000000		OCT	113400000000	IND CW
63404	+034400000000		OCT	034400000000	AC
63405	+001000000000		OCT	001000000000	MQ
63406	+034400000000		OCT	034400000000	SI
63407	0000 00 0 63402		HTR	DP49+3	LOC ZERO
63410	0074 00 4 00105		TSX	ERROR,4	
63411	0074 00 4 00106		TSX	OK,4	
63412	0020 00 0 63377		TRA	DP49	

TEST DFDP ODD REFERENCE TRAP

63413	244763470260		BCD	1DPTP2	
63414	0074 00 4 66227	DP50	TSX	CLEAR,4	
63415	0443 00 0 67070		DLD	TAD2	
+377 163210533 +344 163210533					
63416	-0241 00 0 67071		DFDP	TAD2+1	
+344 163210533 +344 163210533					
63417	0074 00 2 66060		TSX	CHECK,2	
63420	+010001000000		OCT	010001000000	IND CW
63421	+377163210533		OCT	377163210533	AC
63422	+344163210533		OCT	344163210533	MQ
63423	0 00000 0 00000		PZE		SI
63424	0000 00 0 63417		HTR	DP50+3	LOC ZERO
63425	0074 00 4 00105		TSX	ERROR,4	
63426	0074 00 4 00106		TSX	OK,4	
63427	0020 00 0 63414		TRA	DP50	

9M71B
2/1/63
PAGE 918

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST DOUBLE PRECISION INSTRUCTIONS WITH
INDEXING AND INDIRECT ADDRESSING

TEST DLD WITH INDEXING

63430	316724432460		BCD	11XDLD	
63431	0074 00 4 66227	DP51	TSX	CLEAR,4	
63432	0774 00 1 00002		AXT	2,1	
63433	0443 00 1 66724		DLD	AD15,1	
					-177 766666667 -144 222222223
63434	0074 00 2 66060		TSX	CHECK,2	
63435	-0 00000 0 00000		MZE		IND CW
63436	+177766666667		OCT	177766666667	AC
63437	-144222222223		OCT	544222222223	MQ
63440	0 00000 0 00000		PZE		SI
63441	0000 00 0 00000		HTR		LOC ZERO
63442	0074 00 4 00105		TSX	ERROR,4	
63443	0074 00 4 00106		TSX	OK,4	
63444	0020 00 0 63431		TRA	DP51	

TEST DST WITH INDEXING

63445	016724626360		BCD	11XDST	
63446	0074 00 4 66227	DP52	TSX	CLEAR,4	
63447	0774 00 1 00012		AXT	10,1	
63450	0443 00 0 66670		DLD	AD1	
					+100 252525252 +045 323232323
63451	-0603 00 1 66664		DST	ONEZ,1	
63452	0443 00 0 66652		DLD	TEMP	
63453	0074 00 2 66060		TSX	CHECK,2	
63454	0 00000 0 00000		PZE		IND CW
63455	+100252525252		OCT	100252525252	AC
63456	+045323232323		OCT	045323232323	MQ
63457	0 00000 0 00000		PZE		SI
63460	0000 00 0 00000		HTR		LOC ZERO
63461	0074 00 4 00105		TSX	ERROR,4	
63462	0074 00 4 00106		TSX	OK,4	
63463	0020 00 0 63446		TRA	DP52	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 919

TEST DFAD WITH INDEXING

63464	672426212460		BCD 1XDFAD	
63465	0074 00 4 66227	DP53	TSX CLEAR,4	
63466	0774 00 1 00004		AXT 4,1	
63467	0443 00 0 66774		DLD MP11	
			+200 777770000 +145 700000000	
63470	0301 00 1 66776		DFAD MP12,1	
			+200 777770000 +145 040000000	
63471	0074 00 2 66060		TSX CHECK,2	
63472	0 00000 0 00000		PZE	IND CW
63473	+201777770000		OCT 201777770000	AC
63474	+146360000000		OCT 146360000000	MQ
63475	+200777770000		OCT 200777770000	SI
63476	0000 00 0 00000		HTR	LOC ZERO
63477	0074 00 4 00105		TSX ERROR,4	
63500	0074 00 4 00106		TSX OK,4	
63501	0020 00 0 63465		TRA DP53	

TEST DFMP WITH INDEXING

63502	672426444760		BCD 1XDFMP	
63503	0074 00 4 66227	DP54	TSX CLEAR,4	
63504	0774 00 1 00004		AXT 4,1	
63505	0443 00 0 67032		DLD DV9	
			-200 400000000 -145 200000000	
63506	0261 00 1 67032		DFMP DV9,1	
			+200 200000000 +145 400000000	
63507	0074 00 2 66060		TSX CHECK,2	
63510	-0 00000 0 00000		MZE	IND CW
63511	+177200000000		OCT 177200000000	AC
63512	-144500000000		OCT 544500000000	MQ
63513	+000040000000		OCT 000040000000	SI
63514	0000 00 0 00000		HTR	LOC ZERO
63515	0074 00 4 00105		TSX ERROR,4	
63516	0074 00 4 00106		TSX OK,4	
63517	0020 00 0 63503		TRA DP54	

9M71B
2/1/63
PAGE 920

SECTION FIVE
DOUBLE PRECISION ROUTINES

TEST DFDP WITH INDEXING

63520	672426244760		BCD	1XDFDP	
63521	0074 00 4 66227	DP55	TSX	CLEAR,4	
63522	0774 00 1 00002		AXT	2,1	
63523	0443 00 0 67024		DLD	DV6	
				+200 140000000	+000 000000000
63524	-0241 00 1 67030		DFDP	DV8,1	
				+200 200000000	+145 400000000
63525	0074 00 2 66060		TSX	CHECK,2	
63526	0 00000 0 00000		PZE		IND CW
63527	+200577777776		OCT	200577777776	AC
63530	+145400000000		OCT	145400000000	MQ
63531	+200600000000		OCT	200600000000	SI
63532	0000 00 0 00000		HTR		LOC ZERO
63533	0074 00 4 00105		TSX	ERROR,4	
63534	0074 00 4 00106		TSX	OK,4	
63535	0020 00 0 63521		TRA	DP55	

TEST DLD WITH INDIRECT ADDRESSING

63536	312124432460		BCD	1IADLD	
63537	0074 00 4 66227	DP56	TSX	CLEAR,4	
63540	0443 60 0 63056		DLD*	DP39+2	
				+200 200000000	+145 400000000
63541	0074 00 2 66060		TSX	CHECK,2	
63542	0 00000 0 00000		PZE		IND CW
63543	+200200000000		OCT	200200000000	AC
63544	+145400000000		OCT	145400000000	MQ
63545	0 00000 0 00000		PZE		SI
63546	0000 00 0 00000		HTR		LOC ZERO
63547	0074 00 4 00105		TSX	ERROR,4	
63550	0074 00 4 00106		TSX	OK,4	
63551	0020 00 0 63537		TRA	DP56	

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

9M71B
2/1/63
PAGE 921

TEST DLD WITH INDIRECT ADDRESSING
AND INDEXING

63552	312124432401		BCD	1IADLD1	
63553	0074 00 4 66227	DP57	TSX	CLEAR,4	
63554	0774 00 1 00002		AXT	2,1	
63555	0443 60 1 63435		DLD*	DP51+4,1	
				-177 766666667	-144 222222223
63556	0074 00 2 66060		TSX	CHECK,2	
63557	-0 00000 0 00000		MZE		IND CW
63560	+177766666667		OCT	177766666667	AC
63561	-144222222223		OCT	544222222223	MQ
63562	0 00000 0 00000		PZE		SI
63563	0000 00 0 00000		HTR		LOC ZERO
63564	0074 00 4 00105		TSX	ERROR,4	
63565	0074 00 4 00106		TSX	OK,4	
63566	0020 00 0 63553		TRA	DP57	

TEST DFAD WITH IND ADDR AND INDEXING

63567	312426212460		BCD	1IDFAD	
63570	0074 00 4 66227	DP58	TSX	CLEAR,4	
63571	0774 00 1 00002		AXT	2,1	
63572	0443 00 0 66774		DLD	MP11	
				+200 777770000	+145 700000000
63573	0301 60 1 63472		DFAD*	DP53+5,1	
				+200 777770000	+145 700000000
63574	0074 00 2 66060		TSX	CHECK,2	
63575	0 00000 0 00000		PZE		IND CW
63576	+201777770000		OCT	201777770000	AC
63577	+146700000000		OCT	146700000000	MQ
63600	+200777770000		OCT	200777770000	SI
63601	0000 00 0 00000		HTR		LOC ZERO
63602	0074 00 4 00105		TSX	ERROR,4	
63603	0074 00 4 00106		TSX	OK,4	
63604	0020 00 0 63570		TRA	DP58	

9M71B
2/1/63
PAGE 922

S E C T I O N F I V E
DOUBLE PRECISION ROUTINES

TEST DFMP WITH IND ADDR AND INDEXING

63605	312426444760		BCD 1IDFMP	
63606	0074 00 4 66227	DP59	TSX CLEAR,4	
63607	0774 00 1 00004		AXT 4,1	
63610	0443 00 0 67032		DLD DV9	
			-200 400000000	-145 200000000
63611	0261 60 1 63512		DFMP* DP54+7,1	
			+200 200000000	+145 400000000
63612	0074 00 2 66060		TSX CHECK,2	
63613	-0 00000 0 00000		MZE	IND CW
63614	+177200000000		OCT 177200000000	AC
63615	-144500000000		OCT 544500000000	MQ
63616	+000040000000		OCT 000040000000	SI
63617	0000 00 0 00000		HTR	LOC ZERO
63620	0074 00 4 00105		TSX ERROR,4	
63621	0074 00 4 00106		TSX OK,4	
63622	0020 00 0 63606		TRA DP59	

TEST DFDP WITH IND ADDR AND INDEXING

63623	312426244760		BCD 1IDFDP	
63625	0774 00 1 00002		AXT 2,1	
63626	0443 00 0 67024		DLD DV6	
			+200 140000000	+000 000000000
63627	-0241 60 1 63526		DFDP* DP55+5,1	
			+200 200000000	+145 400000000
63630	0074 00 2 66060		TSX CHECK,2	
63631	0 00000 0 00000		PZE	IND CW
63632	+200577777776		OCT 200577777776	AC
63633	+145400000000		OCT 145400000000	MQ
63634	+200600000000		OCT 200600000000	SI
63635	0000 00 0 00000		HTR	LOC ZERO
63636	0074 00 4 00105		TSX ERROR,4	
63637	0074 00 4 00106		TSX OK,4	
63640	0020 00 0 63624		TRA DP60	

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 923

THIS ROUTINE WILL DO 50 DFADS AND SIMULATE EACH IN FIXED POINT

63641	606024262124		BCD 1	DFAD	
63642	-0625 00 0 67636	DFADS	STL	LOCT	
63643	-0625 00 0 66475		STL	DBL	
63644	0774 00 1 00314		AXT	204,1	
63645	-2 00004 1 63705	DINT	TNX	FNXT,1,4	
63646	0074 00 4 66227		TSX	CLEAR,4	
63647	0443 00 1 67570		DLD	TABLE,1	
63650	-0603 00 0 67234		DST	COM	LOAD NEW VALUES
63651	-0603 00 0 67240		DST	COM+4	
63652	0443 00 1 67572		DLD	TABLE+2,1	
63653	-0603 00 0 67236		DST	COM+2	
63654	-0603 00 0 67242		DST	COM+6	
63655	0634 00 1 67641		SXA	TSAVE,1	
63656	0074 00 4 65320		TSX	DOFIX,4	SIMULATE IN FIXED POINT
63657	0761 00 0 00000		NOP		
63660	0443 00 0 67234		DLD	COM	DO HARDWARE INSTRUCTION
63661	0301 00 0 67236		DFAD	COM+2	
63662	-0603 00 0 67252		DST	COM+14	
63663	0500 00 0 00000		CLA	0	SAVE LOC ZERO
63664	0622 00 0 67254		STD	COM+16	
63665	0074 00 4 65664		TSX	COMP,4	TO COMPARE ROUTINE
63666	0020 00 0 63701		TRA	SWTID	SUCCESS RETURN
63667	0760 00 0 00162		SWT	2	CHECK FOR BYPASS ERROR
63670	0020 00 0 63672		TRA	**2	
63671	0020 00 0 63701		TRA	SWTID	
63672	0760 00 0 00163		SWT	3	CHECK FOR PRINT
63673	0020 00 0 63676		TRA	**3	
63674	0443 00 0 67252		DLD	COM+14	NO
63675	0000 00 0 63701		HTR	SWTID	ERROR-DFAD ANS IN AC+MQ
63676	0500 00 0 63641		CLA	DFADS-1	
63677	0601 00 0 65730		STO	ORIG	
63700	0074 00 4 65703		TSX	SEPR,4	PRINT ERROR MESSAGE
63701	0534 00 1 67641	SWTID	LXA	TSAVE,1	
63702	0760 00 0 00161		SWT	1	CHECK FOR LOOPING
63703	0020 00 0 63645		TRA	DINT	NO
63704	0020 00 0 63646		TRA	DINT+1	YES
63705	0074 00 4 00106	FNXT	TSX	OK,4	
63706	0020 00 0 63642		TRA	DFADS	

9M71B
2/1/63
PAGE 924

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

THIS ROUTINE WILL DO 50 DFMPs AND SIMULATE EACH IN SINGLE PRECISION

63707	242644476260		BCD	1DFMPs	
63710	0774 00 1 00314	DFMPs	AXT	204,1	
63711	-0625 00 0 66475		STL	DBL	
63712	-0625 00 0 67636		STL	LOCT	
63713	0500 00 0 63707		CLA	DFMPs-1	
63714	0601 00 0 65730		STO	ORIG	
63715	0634 00 1 67641		SXA	TSAVE,1	
63716	0020 00 0 64056		TRA	INT	
63717	0534 00 1 67641	LOAD	LXA	TSAVE,1	RESTORE VALUE CTR.
63720	-2 00004 1 64114		TNX	NXT,1,4	
63721	0443 00 1 67570		DLD	TABLE,1	
63722	-0603 00 0 67234		DST	COM	
63723	0443 00 1 67572		DLD	TABLE+2,1	
63724	-0603 00 0 67236		DST	COM+2	
63725	0634 00 1 67641		SXA	TSAVE,1	
63726	0500 00 0 67234	ERED	CLA	COM	CHECK FOR EARLY END
63727	-0320 00 0 66445		ANA	ELIM5	CONDITIONS
63730	-0100 00 0 63740		TNZ	**8	
63731	0520 00 0 67236		ZET	COM+2	
63732	0020 00 0 63734		TRA	**2	
63733	0020 00 0 64067		TRA	FEND	A+C EQUAL ZERO
63734	0500 00 0 67235		CLA	COM+1	
63735	-0320 00 0 66445		ANA	ELIM5	
63736	0100 00 0 64067		TZE	FEND	A+B EQUAL ZERO
63737	0020 00 0 63745		TRA	ARITH	
63740	0520 00 0 67236		ZET	COM+2	
63741	0020 00 0 63745		TRA	ARITH	
63742	0520 00 0 67237		ZET	COM+3	
63743	0020 00 0 63745		TRA	ARITH	
63744	0020 00 0 64067		TRA	FEND	C+D EQUAL ZERO
63745	0500 00 0 67235	ARITH	CLA	COM+1	SET CHAR OF LO-ORDER
63746	-0320 00 0 66445		ANA	ELIM5	NUMBERS GENERATED TO
63747	-0501 00 0 67635		ORA	TWOH	200 OCTAL
63750	0601 00 0 67235		STO	COM+1	
63751	0500 00 0 67237		CLA	COM+3	
63752	-0320 00 0 66445		ANA	ELIM5	
63753	-0501 00 0 67635		ORA	TWOH	
63754	0601 00 0 67237		STO	COM+3	
63755	0560 00 0 67237		LDQ	COM+3	D
63756	-0260 00 0 67234		UFM	COM	A
63757	0601 00 0 67240		STO	COM+4	A*D
63760	0560 00 0 67236		LDQ	COM+2	C
63761	-0260 00 0 67235		UFM	COM+1	B
63762	0601 00 0 67242		STO	COM+6	B*C
63763	0560 00 0 67236		LDQ	COM+2	C
63764	-0260 00 0 67234		UFM	COM	A
63765	0601 00 0 67244		STO	COM+8	A*C HIGH ORDER
63766	-0600 00 0 67245		STQ	COM+9	A*C LOW ORDER

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 925

63767	0500	00	0	67240	CLA	COM+4	A*D
63770	-0320	00	0	66445	ANA	ELIM5	DELETE EXP.
63771	0601	00	0	66652	STO	TEMP	
63772	0500	00	0	67242	CLA	COM+6	B*C
63773	-0320	00	0	66445	ANA	ELIM5	DELETE EXP
63774	0400	00	0	66652	ADD	TEMP	A*D FRAC.
63775	0601	00	0	66652	STO	TEMP	
63776	0500	00	0	67245	CLA	COM+9	A*C LO-ORDER
63777	-0320	00	0	66445	ANA	ELIM5	DELETE EXP
64000	0400	00	0	66652	ADD	TEMP	A*D + B*C
64001	0601	00	0	66652	STO	TEMP	TOTAL LO-ORDER SUM
64002	-0320	00	0	66444	ANA	ELIM4	DELETE FRACTION
64003	0771	00	0	00033	ARS	27	ADD LO-ORDER CARRY
64004	0401	00	0	67244	ADM	COM+8	TO HI-ORDER A*C
64005	0601	00	0	66653	STO	TEMP+1	
64006	0767	00	0	00011	ALS	9	CHECK IF NORMALIZED
64007	-0760	00	0	00001	PBT		
64010	0020	00	0	64012	TRA	++2	NONE
64011	0020	00	0	64050	TRA	NORM	
64012	0500	00	0	66652	CLA	TEMP	
64013	-0320	00	0	66445	ANA	ELIM5	DELETE CARRY
64014	0131	00	0	00000	XCA		
64015	0500	00	0	66653	CLA	TEMP+1	NORMALIZR FRACTIONS
64016	0763	00	0	00012	LLS	10	
64017	0765	00	0	00002	LRS	2	
64020	0771	00	0	00010	ARS	8	
64021	0763	00	0	00001	LLS	1	
64022	-0773	00	0	00034	RQL	28	
64023	-0603	00	0	67250	DST	COM+12	STORE FRACTION ANS
64024	-0760	00	0	00141	SLT	1	TURN OFF SLT 1
64025	0761	00	0	00000	NOP		
64026	0500	00	0	67155	CLA	LAST	
64027	0601	00	0	00000	STO	0	
64030	0560	00	0	67234	LDQ	COM	
64031	0260	00	0	67236	FMP	COM+2	A*C
64032	0601	00	0	66652	STO	TEMP	
64033	-0500	00	0	66652	CAL	TEMP	
64034	-0320	00	0	66444	ANA	ELIM4	DELETE FRAC AND
64035	-0602	00	0	67250	ORS	COM+12	
64036	-0130	00	0	00000	XCL		AND SIGNS WITH FINAL
64037	-0320	00	0	66444	ANA	ELIM4	PRODUCTS
64040	-0602	00	0	67251	ORS	COM+13	PLACE CORRECT CHAR
64041	-0760	00	0	00141	SLT	1	CHECK FOR TRAP
64042	0020	00	0	64072	TRA	DFMP	NO
64043	0500	00	0	00000	CLA		
64044	0622	00	0	67255	STD	COM+17	STORE FLAG BITS
64045	0500	00	0	67155	CLA	LAST	
64046	0601	00	0	00000	STO	0	
64047	0020	00	0	64072	TRA	DFMP	

9M71B
2/1/63
PAGE 926

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

64050	0500	00	0	66652	NORM	CLA	TEMP	
64051	-0320	00	0	66445		ANA	ELIM5	
64052	0131	00	0	00000		XCA		
64053	0500	00	0	66653		CLA	TEMP+1	
64054	-0320	00	0	66445		ANA	ELIM5	
64055	0020	00	0	64023		TRA	A+1	
64056	0774	00	1	00024	INT	AXT	20,1	
64057	0600	00	1	67260		STZ	COM+20,1	
64060	2 00001	1		64057		TIX	*-1,1,1	
64061	0600	00	0	66652		STZ	TEMP	
64062	0600	00	0	66653		STZ	TEMP+1	
64063	0760	00	0	00161		SWT	1	
64064	0020	00	0	63717		TRA	LOAD	
64065	0534	00	1	67641		LXA	TSAVE,1	
64066	0020	00	0	63721		TRA	LOAD+2	
64067	0560	00	0	67234	FEND	LDQ	COM	STORE PROPER ANS
64070	0260	00	0	67236		FMP	COM+2	IF EARLY END OP
64071	-0603	00	0	67250		DST	COM+12	
64072	0443	00	0	67234	DFMP	DLD	COM	DO HARDWARE DFMP
64073	0261	00	0	67236		DFMP	COM+2	
64074	-0603	00	0	67252		DST	COM+14	
64075	-0760	00	0	00141		SLT	1	CHECK FOR TRAP
64076	0020	00	0	64101		TRA	*+3	
64077	0500	00	0	00000		CLA	0	
64100	0622	00	0	67254		STD	COM+16	
64101	0074	00	4	65664		TSX	COMP,4	
64102	0020	00	0	64056		TRA	INT	
64103	0760	00	0	00162	OUT1	SWT	2	TEST ERROR BYPASS
64104	0020	00	0	64106		TRA	*+2	
64105	0020	00	0	64056		TRA	INT	
64106	0443	00	0	67250		DLD	COM+12	DFMP ANS IN AC+MQ
64107	0760	00	0	00163		SWT	3	TEST NO PRINT
64110	0020	00	0	64112		TRA	*+2	
64111	0000	00	0	64056		HTR	INT	
64112	0074	00	4	65703		TSX	SEPR,4	
64113	0020	00	0	64056		TRA	INT	
64114	0074	00	4	00106	NXT	TSX	OK,4	
64115	0020	00	0	63710		TRA	DFMPS	

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 927

THIS ROUTINE WILL DO 50 DFDPS AND SIMULATE EACH IN SINGLE PRECISION

64116	242624476260		BCD	1DFDPS	
64117	0774 00 1 00314	DFDPS	AXT	204,1	
64120	-0625 00 0 67636		STL	LOCT	
64121	-0625 00 0 66475		STL	DBL	
64122	0500 00 0 64116		CLA	DFDPS-1	
64123	0601 00 0 65730		STO	ORIG	
64124	0634 00 1 67641		SXA	TSAVE,1	
64125	0020 00 0 64477		TRA	INIT	GO TO INITIALIZE
64126	0534 00 1 67641	PROC	LXA	TSAVE,1	
64127	-2 00004 1 64520		TNX	NEXT,1,4	TEST FOR MORE VALUES
64130	0443 00 1 67570		DLD	TABLE,1	MOVE CURRENT VALUES
64131	-0603 00 0 67234		DST	COM	
64132	0443 00 1 67572		DLD	TABLE+2,1	INTO WORKING CELLS
64133	-0603 00 0 67236		DST	COM+2	
64134	0634 00 1 67641		SXA	TSAVE,1	
64135	0600 00 0 66652		STZ	TEMP	
64136	0774 00 2 00004		AXT	4,2	TEST FOR SPECIAL CASE
64137	0441 00 2 67240		LDI	COM+4,2	WHERE NORMALIZING CYCLE
64140	-0057 00 777400		RIL	777400	WOULD BE REQUIRED AND
64141	-0046 00 0 00000		PIA		GET NEW NUMBERS IF THIS
64142	-0602 00 0 66652		ORS	TEMP	IS THE CASE.
64143	0441 00 2 67241		LDI	COM+5,2	
64144	-0057 00 777000		RIL	777000	CONDITIONS ARE - HIGH
64145	-0046 00 0 00000		PIA		ORDER FRACTIONS OF BOTH
64146	0131 00 0 00000		XCA		DIVIDEND AND DIVISOR
64147	2 00002 2 64137		TIX	*-8,2,2	EQUAL .4 OCTAL AND LOW
64150	0131 00 0 00000		XCA		DIVIDEND SMALLER THAN
64151	-0520 00 0 66652		NZT	TEMP	LOW ORDER FRACTION OF
64152	0040 00 0 64477		TLQ	INIT	DIVISOR.
64153	0560 00 0 66477		LDQ	ZERO	
64154	0441 00 0 66477		LDI	ZERO	
64155	0774 00 2 00004	CADJ	AXT	4,2	
64156	0500 00 2 67240		CLA	COM+4,2	
64157	-0320 00 0 66444		ANA	ELIM4	DELETE FRACTION
64160	-0300 00 2 67240		UFA	COM+4,2	FIND MQ CHAR
64161	-0760 00 0 00141		SLT	1	DID IT TRAP
64162	0020 00 0 64164		TRA	*+2	NO GO ON
64163	0020 00 0 64477		TRA	INIT	YES GET NEW NUMBER
64164	0500 00 0 66445		CLA	ELIM5	GET MASK
64165	0320 00 2 67241		ANS	COM+5,2	DELETE CHAR
64166	0131 00 0 00000		XCA		MOVE CHAR TO AC
64167	-0602 00 2 67241		ORS	COM+5,2	PLACE IN WORD
64170	0500 00 2 67240		CLA	COM+4,2	
64171	0760 00 0 00000		CLM		
64172	-0501 00 2 67241		ORA	COM+5,2	
64173	0601 00 2 67241		STO	COM+5,2	
64174	2 00002 2 64156		TIX	CADJ+1,2,2	
64175	0500 00 0 67234	CALC	CLA	COM	DIVIDE A BY C
64176	0241 00 0 67236		FDP	COM+2	
64177	-0600 00 0 67240		STQ	COM+4	
64200	0601 00 0 67242		STO	COM+6	

9M71B
2/1/63
PAGE 928

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

64201 0760 00 0 00012
64202 0020 00 0 64326
64203 -0760 00 0 00141
64204 0020 00 0 64227
64205 0441 00 0 00000
64206 -0056 00 0 000004
64207 0020 00 0 64222
64210 0500 00 0 67632
64211 -0602 00 0 67255
64212 0500 00 0 67240
64213 0760 00 0 00003
64214 0402 00 0 66440
64215 0120 00 0 64217
64216 0020 00 0 64224
64217 0500 00 0 67633
64220 -0602 00 0 67255
64221 0020 00 0 64224

DCT
TRA FDCT
SLT 1
TRA **19
LDI
LNT 4
TRA UND
CLA B1516
ORS COM+17
CLA COM+4
SSP
SUB E33
TPL **2
TRA **6
CLA B17
ORS COM+17
TRA **3

DIVIDE CHECK
YES
CHECK FOR TRAP
NO

CHECK IF OVERFLOW
NO UNDERFLOW
SET BITS 15 AND 16

CHECK FOR MQ OVERFLOW
AND IF SO STORE
BIT 17

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 929

64222	0500	00	0	67634	UND	CLA	81617	STORE BITS 16 +17
64223	-0602	00	0	67255		ORS	COM+17	
64224	0500	00	0	67155		CLA	LAST	
64225	0601	00	0	00000		STO	0	
64226	0500	00	0	67242		CLA	COM+6	R1
64227	-0320	00	0	66444		ANA	ELIM4	DELETE FRAC.
64230	0601	00	0	66652		STO	TEMP	
64231	0500	00	0	67235		CLA	COM+1	B
64232	-0320	00	0	66444		ANA	ELIM4	
64233	0340	00	0	66652		CAS	TEMP	
64234	0761	00	0	00000		NOP		
64235	0020	00	0	64237		TRA	**+2	
64236	-0625	00	0	66437		STL	OFL	
64237	0500	00	0	67242		CLA	COM+6	R1
64240	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64241	0601	00	0	66652		STO	TEMP	
64242	0500	00	0	67235		CLA	COM+1	
64243	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64244	0520	00	0	66437		ZET	OFL	
64245	0771	00	0	00001		ARS	1	
64246	0600	00	0	66437		STZ	OFL	
64247	0400	00	0	66652		ADD	TEMP	
64250	0765	00	0	00043		LRS	35	
64251	0500	00	0	67236		CLA	COM+2	C
64252	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64253	0601	00	0	66652		STO	TEMP	
64254	-0754	00	0	00000		PXD	0,0	
64255	0221	00	0	66652		DVP	TEMP	R1+B/C
64256	0601	00	0	66652		STO	TEMP	R1 FINAL FRAC
64257	-0600	00	0	66653		STQ	TEMP+1	Q ADJUST FRAC
64260	-0500	00	0	66444		CAL	ELIM4	
64261	0320	00	0	67242		ANS	COM+6	DELETE FRACTION
64262	0500	00	0	66652		CLA	TEMP	R1
64263	-0602	00	0	67242		ORS	COM+6	ADD FRAC
64264	0500	00	0	66653		CLA	TEMP+1	Q1 ADJUST
64265	0401	00	0	67240		ADM	COM+4	ADJUST Q1
64266	0601	00	0	66652		STO	TEMP	
64267	-0500	00	0	66444		CAL	ELIM4	PUT FRAC WITH
64270	0320	00	0	67240		ANS	COM+4	CHAR
64271	0500	00	0	66652		CLA	TEMP	
64272	-0602	00	0	67240		ORS	COM+4	

9M71B
2/1/63
PAGE 930

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

64273	0560	00	0	67240	MUL	LDQ	COM+4	Q1
64274	-0260	00	0	67237		UFM	COM+3	D
64275	0601	00	0	66652		STO	TEMP	
64276	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64277	0601	00	0	67244		STO	COM+8	Q1*D
64300	0500	00	0	67242		CLA	COM+6	R1
64301	-0320	00	0	66444		ANA	ELIM4	DELETE FRAC.
64302	-0602	00	0	67244		ORS	COM+8	PUT CHAR WITH Q1*D
64303	0500	00	0	66652		CLA	TEMP	
64304	0120	00	0	64307		TPL	*+3	
64305	-0500	00	0	67650		CAL	SIGN	
64306	-0602	00	0	67244		ORS	COM+8	
64307	0500	00	0	67242		CLA	COM+6	R1
64310	-0302	00	0	67244		UFS	COM+8	Q1*D
64311	0601	00	0	67246		STO	COM+10	R1 - Q1*D
64312	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64313	0601	00	0	66652		STO	TEMP	
64314	0500	00	0	67236		CLA	COM+2	C
64315	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64316	-0400	00	0	66652		SBM	TEMP	CHECK FOR DIVIDEND
64317	-0120	00	0	64454		TMI	G00	
64320	0500	00	0	67246	C	CLA	COM+10	
64321	0241	00	0	67236		FDP	COM+2	C
64322	-0600	00	0	66652		STQ	TEMP	Q2
64323	0760	00	0	00012		DCT		DIVIDE CHECK
64324	0020	00	0	64334		TRA	SDCT	YES
64325	0020	00	0	64346		TRA	FADD	
64326	-0625	00	0	67640	FDCT	STL	FDC	SET INDICATOR
64327	0500	00	0	67234		CLA	COM	STORE CORR RESULTS FOR
64330	0601	00	0	67250		STO	COM+12	FIRST DIVIDE CHECK
64331	0500	00	0	67235		CLA	COM+1	
64332	0601	00	0	67251		STO	COM+13	
64333	0020	00	0	64432		TRA	DPA	
64334	-0625	00	0	67637	SDCT	STL	SDC	ST INDICATOR FOR PRINT
64335	0600	00	0	67255		STZ	COM+17	CLEAR ZERO FLAGS
64336	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64337	0601	00	0	67250		STO	COM+12	
64340	0500	00	0	67246		CLA	COM+10	
64341	0120	00	0	64432		TPL	DPA	WITH R1 -Q1*D
64342	-0500	00	0	67650		CAL	SIGN	
64343	-0602	00	0	67250		ORS	COM+12	
64344	-0602	00	0	67251		ORS	COM+13	
64345	0020	00	0	64432		TRA	DPA	

SECTION FIVE DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 931

64346	0131	00	0	00000	FADD	XCA		
64347	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64350	-0520	00	0	66436		NZT	ADJ	CHECK FOR DIV SHIFT
64351	0020	00	0	64354		TRA	++3	NO
64352	-0501	00	0	66435		ORA	Q2P1	ADJUST Q2 CHAR FOR
64353	0020	00	0	64355		TRA	++2	OVERLAP OR NO OVERLAP
64354	-0501	00	0	66434		ORA	Q2P	ON Q1
64355	0601	00	0	66653		STO	TEMP+1	
64356	0500	00	0	66652		CLA	TEMP	
64357	0120	00	0	64362		TPL	++3	
64360	-0500	00	0	67650		CAL	SIGN	RESTORE PROPER SIGN
64361	-0602	00	0	66653		ORS	TEMP+1	
64362	0500	00	0	67240		CLA	COM+4	
64363	-0320	00	0	66445		ANA	ELIM5	
64364	-0501	00	0	66433		ORA	Q1P	
64365	0601	00	0	66652		STO	TEMP	
64366	0500	00	0	67240		CLA	COM+4	
64367	0120	00	0	64372		TPL	++3	
64370	-0500	00	0	67650		CAL	SIGN	
64371	-0602	00	0	66652		ORS	TEMP	
64372	0500	00	0	66652		CLA	TEMP	
64373	-0300	00	0	66653		UFA	TEMP+1	Q1 + Q2
64374	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64375	0601	00	0	67250		STO	COM+12	
64376	0131	00	0	00000		XCA		
64377	-0320	00	0	66445		ANA	ELIM5	DELETE CHAR
64400	0601	00	0	67251		STO	COM+13	
64401	-0760	00	0	00141		SLT	1	
64402	0761	00	0	00000		NOP		
64403	0500	00	0	67155		CLA	LAST	
64404	0601	00	0	00000		STO	0	
64405	0500	00	0	67240		CLA	COM+4	Q1
64406	-0320	00	0	66444		ANA	ELIM4	DELETE FRAC.
64407	-0300	00	0	67240		UFA	COM+4	FIND CHAR OF LO-ORDER
64410	0601	00	0	66652		STO	TEMP	
64411	-0760	00	0	00141		SLT	1	
64412	0020	00	0	64423		TRA	++9	
64413	0441	00	0	67255		LDI	COM+17	CHECK FOR PREVIOUS
64414	-0054	00	0	000004		LFT	4	OVERFLOW
64415	0020	00	0	64423		TRA	++6	NO
64416	0441	00	0	00000		LDI		
64417	-0056	00	0	000001		LNT	1	CHECK MQ UNDERFLOW
64420	0020	00	0	64423		TRA	++3	NO
64421	0500	00	0	67633		CLA	B17	YES-STORE BIT 17
64422	-0602	00	0	67255		ORS	COM+17	
64423	-0500	00	0	66652		CAL	TEMP	
64424	-0320	00	0	66444		ANA	ELIM4	DELETE FRAC.
64425	-0602	00	0	67250		ORS	COM+12	SET CHAR FINAL ANS
64426	-0130	00	0	00000		XCL		
64427	-0320	00	0	66444		ANA	ELIM4	DELETE FRAC.
64430	-0602	00	0	67251		ORS	COM+13	
64431	0020	00	0	64432		TRA	DPA	

9M71B
2/1/63
PAGE 932

SECTION FIVE
DOUBLE PRECISION RELIABILITY

64432	-0760	00	0	00141	DPA	SLT	1	
64433	0761	00	0	00000		NOP		
64434	0443	00	0	67234		DLD	COM	DO HARDWARE DFDP
64435	-0241	00	0	67236		DFDP	COM+2	
64436	-0603	00	0	67252		DST	COM+14	
64437	-0760	00	0	00141		SLT	1	CHECK FOR TRAP
64440	0020	00	0	64443		TRA	**3	
64441	0500	00	0	00000		CLA		
64442	0622	00	0	67254		STD	COM+16	
64443	0074	00	4	65664		TSX	COMP,4	
64444	0020	00	0	64477		TRA	INIT	
64445	0443	00	0	67252		DLD	COM+14	
64446	0760	00	0	00162		SWT	2	BYPASS ERROR
64447	0020	00	0	64451		TRA	**2	
64450	0020	00	0	64477		TRA	INIT	
64451	0760	00	0	00163		SWT	3	PRINT
64452	0020	00	0	64456		TRA	OUT	YES
64453	0000	00	0	64477		HTR	INIT	NO
64454	-0625	00	0	66436	GOO	STL	ADJ	SET INDICATOR
64455	0020	00	0	64320		TRA	C	
64456	0074	00	4	65703	OUT	TSX	SEPR,4	PRINT ERROR
64457	-0520	00	0	67637		NZT	SDC	
64460	0020	00	0	64467		TRA	**7	
64461	0074	00	4	74300		TSX	SPLAT,4	
64462	0	00014	0	00004		PZE	4,0,12	
64463	622523464524					BCD	4SECOND DIVIDE CHECK	
64464	602431653124							
64465	256023302523							
64466	426060606060							
64467	-0520	00	0	67640		NZT	FDC	
64470	0020	00	0	64477		TRA	**7	
64471	0074	00	4	74300		TSX	SPLAT,4	
64472	0	00014	0	00004		PZE	4,0,12	
64473	263151626360					BCD	4FIRST DIVIDE CHECK	
64474	243165312425							
64475	602330252342							
64476	606060606060							
64477	0774	00	1	00024	INIT	AXT	20,1	
64500	0774	00	2	00012		AXT	10,2	
64501	0600	00	1	67260		STZ	COM+20,1	
64502	0600	00	2	66664		STZ	TEMP+10,2	
64503	2	00001	2	64504		TIX	**1,2,1	
64504	2	00001	1	64501		TIX	*-3,1,1	
64505	0600	00	0	67640		STZ	FDC	CLEAR INDICATORS
64506	0600	00	0	67637		STZ	SDC	
64507	0760	00	0	00012		DCT		
64510	0761	00	0	00000		NOP		
64511	-0760	00	0	00141		SLT	1	
64512	0761	00	0	00000		NOP		
64513	0600	00	0	66436		STZ	ADJ	
64514	0760	00	0	00161		SWT	1	
64515	0020	00	0	64126		TRA	PROC	
64516	0534	00	1	67641		LXA	TSAVE,1	
64517	0020	00	0	64130		TRA	PROC+2	

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 933

64520 0074 00 4 00106 NEXT TSX OK,4
64521 0020 00 0 64117 TRA DFDPS

THIS ROUTINE CHECKS CONSECUTIVE DOUBLE PRECISION INSTRUCTIONS
USES DIFFERENT NUMBERS ON EACH PASS.

64522	455445614560		BCD	1N*N/N	
64523	0774 00 2 00310	DPR1	AXT	200,2	
64524	-0500 00 2 67573		CAL	TABLE+3,2	
64525	-0320 00 0 66522		ANA	ELIM7	
64526	0602 00 0 66652		SLW	TEMP	
64527	0500 00 0 66652		CLA	TEMP	
64530	0400 00 0 67635		ADD	TWOH	
64531	0300 00 0 67635		FAD	TWOH	
64532	0601 00 2 67573		STO	TABLE+3,2	
64533	2 00004 2 64524		TIX	*-7,2,4	
64534	0774 00 2 00310	DPR1A	AXT	200,2	
64535	0500 00 2 67573		CLA	TABLE+3,2	
64536	0560 00 2 67572		LDQ	TABLE+2,2	
64537	-0603 00 0 66652		DST	TEMP	STORE N FACTOR
64540	0301 00 0 66652		DFAD	TEMP	N+N
64541	0261 00 0 67106		DFMP	HALF	
64542	0261 00 0 66652		DFMP	TEMP	N*N EQUAL N2
64543	-0241 00 0 66652		DFDP	TEMP	N2/N EQUAL N
64544	-0303 00 0 66652		DUFS	TEMP	N-N EQUAL ZERO
64545	0765 00 0 00003		LRS	3	CORRECT FOR LOST
64546	0763 00 0 00003		LLS	3	PRECISION
64547	-0320 00 0 66445		ANA	ELIM5	CHECK HIGH ORDER
64550	-0100 00 0 64555		TNZ	*+5	
64551	0131 00 0 00000		XCA		
64552	-0320 00 0 66445		ANA	ELIM5	CHECK LO ORDER
64553	0100 00 0 64557		TZE	*+4	
64554	0131 00 0 00000		XCA		
64555	0074 00 4 00104		TSX	ERROR-1,4	PRINT ERROR
64556	0761 00 0 64523		NOP	DPR1	
64557	0760 00 0 00161		SWT	1	LOOP THIS VALUE
64560	0020 00 0 64562		TRA	*+2	
64561	0020 00 0 64535		TRA	DPR1A+1	
64562	2 00004 2 64535		TIX	DPR1A+1,2,4	
64563	0074 00 4 00106		TSX	OK,4	
64564	0020 00 0 64523		TRA	DPR1	

9M71B
2/1/63
PAGE 934

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

DOUBLE PRECISION SQUARE ROOT

THIS ROUTINE GENERATES NUMBERS FROM A TABLE , SQUARES THE
NUMBER , THEN FINDS THE SQUARE ROOT USING THE NEWTON ITERATION
METHOD AND CHECK IT AGAINST THE ORIGINAL. ERROR PRINT SHOWS
CORRECT ROOT IN THE SI AND THE ROOT FOUND IN THE ACC AND MQ
THE LOW ORDER OF THE ROOT SHOULD ALWAYS BE ZERO

64565	246250516360	BCD	1DSQRT	
64566	0774 00 1 00310	DPR2	AXT	200,1
64567	0560 00 1 67573	LDQ	TABLE+3,1	
64570	-0600 00 0 66460	STQ	N	
64571	0260 00 0 66460	FMP	N	SQUARE NUMBER
64572	0074 00 4 64620	TSX	DSQRT,4	FIND SQ ROOT
64573	0020 00 0 64605	TRA	**10	ERROR RADICAND MINUS
64574	-0603 00 0 66654	DST	TEMP+2	
64575	0131 00 0 00000	XCA		
64576	0767 00 0 00012	ALS	10	CORRECT FOR LOST
64577	0100 00 0 64603	TZE	**4	PRECISION
64600	0131 00 0 00000	XCA		
64601	0400 00 0 66476	ADD	ONE	
64602	0020 00 0 64604	TRA	**2	
64603	0131 00 0 00000	XCA		
64604	0340 00 0 66460	CAS	N	CHECK ROOT
64605	0020 00 0 64607	TRA	**2	
64606	0020 00 0 64613	TRA	**5	
64607	0441 00 0 66460	LDI	N	SET UP FOR PRINT
64610	0443 00 0 66654	DLD	TEMP+2	
64611	0074 00 4 00104	TSX	ERROR-1,4	
64612	0761 00 0 64566	NOP	DPR2	
64613	0760 00 0 00161	SWT	1	
64614	0020 00 0 64616	TRA	**2	
64615	0020 00 0 64567	TRA	DPR2+1	LOOP
64616	2 00004 1 64567	TIX	DPR2+1,1,4	STEP TO NEXT NUMBER
64617	0020 00 0 64641	TRA	DPR3-3	

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 935

64620	0634	00	2	66656	DSQRT	SXA	TEMP+4,2	
64621	-0120	00	4	00001		TMI	1,4	MINUS RADICAND
64622	0774	00	2	00010		AXT	8,2	
64623	-0603	00	0	66652		DST	TEMP	RADICAND EQU N
64624	0402	00	0	67635		SUB	TWOH	
64625	0771	00	0	00001		ARS	1	
64626	0402	00	0	66652		SUB	TEMP	
64627	-0501	00	0	66507		ORA	FRAC	
64630	0760	00	0	00003		SSP		
64631	-0603	00	0	66654		DST	TEMP+2	FIRST GUESS EQU X
64632	0443	00	0	66652		DLD	TEMP	N
64633	-0241	00	0	66654		DFDP	TEMP+2	N/X
64634	0301	00	0	66654		DFAD	TEMP+2	N/X+X
64635	0402	00	0	67206		SUB	HALPH	DIV BY 2
64636	2 00001	2		64631		TIX	*-5,2,1	REPEAT 32 TIMES
64637	0534	00	2	66656		LXA	TEMP+4,2	
64640	0020	00	4	00002		TRA	2,4	
64641	0074	00	4	00106		TSX	OK,4	
64642	0020	00	0	64566		TRA	DPR2	

QUADRATIC FORMULA-- MIXED SINGLE AND DOUBLE PRECISION

64643	506421246060				BCD	1QUAD	
64644	0774	00	1	00036	DPR3	AXT	30,1
64645	0020	00	0	64647		TRA	**2
64646	506421246060				BCD	1QUAD	
64647	0560	00	1	67630	LDQ	SAL,1	A
64650	0260	00	1	67632	FMP	SAL+2,1	AXC
64651	0361	00	0	67630	ACL	SAL	X4
64652	-0603	00	0	66652	DST	TEMP	
64653	0560	00	1	67631	LDQ	SAL+1,1	B
64654	0260	00	1	67631	FMP	SAL+1,1	B**2
64655	0303	00	0	66652	DFSB	TEMP	-4AC
64656	-0603	00	0	66654	DST	TEMP+2	B2-4AC
64657	0340	00	1	67634	CAS	SAL+4,1	CHECK AC PORTION OF RADICAND
64660	0020	00	0	64662	TRA	**2	
64661	0020	00	0	64665	TRA	**4	
64662	0560	00	1	67634	LDQ	SAL+4,1	CORRECT AC IN MQ
64663	0074	00	4	00104	TSX	ERROR-1,4	
64664	0020	00	0	64647	TRA	DPR3+3	
64665	0500	00	0	66655	CLA	TEMP+3	GET LO-ORDER
64666	0340	00	1	67635	CAS	SAL+5,1	CHECK MQ PORTION OF RADICAND
64667	0020	00	0	64671	TRA	**2	
64670	0020	00	0	64674	TRA	**4	
64671	0560	00	1	67635	LDQ	SAL+5,1	CORR MQ TO MQ
64672	0074	00	4	00104	TSX	ERROR-1,4	
64673	0020	00	0	64647	TRA	DPR3+3	
64674	0020	00	0	64676	TRA	**2	

9M71B
2/1/63
PAGE 936

SECTION FIVE
DOUBLE PRECISION RELIABILITY

64675	506421246060		BCD 1QUAD	
64676	0443 00 1 67634	SQTX	DLD SAL+4,1	
64677	0443 00 1 67634		DLD SAL+4,1	
64700	0074 00 4 64620		TSX DSQRT,4	GET SQ ROOT
64701	0020 00 0 64707		TRA **6	
64702	-0603 00 0 66654		DST TEMP+2	
64703	0340 00 1 67636		CAS SAL+6,1	CHECK HI-ORDER SQRT
64704	0020 00 0 64706		TRA **2	
64705	0020 00 0 64711		TRA **4	
64706	0560 00 1 67636		LDQ SAL+6,1	
64707	0074 00 4 00104		TSX ERROR-1,4	
64710	0020 00 0 64676		TRA SQTX	
64711	0500 00 0 66655		CLA TEMP+3	
64712	0340 00 1 67637		CAS SAL+7,1	CHECK LO-ORDER SQRT
64713	0020 00 0 64715		TRA **2	
64714	0020 00 0 64720		TRA **4	
64715	0560 00 1 67637		LDQ SAL+7,1	
64716	0074 00 4 00104		TSX ERROR-1,4	
64717	0020 00 0 64676		TRA SQTX	
64720	0020 00 0 64722		TRA **2	
64721	506421246060		BCD 1QUAD	
64722	0443 00 1 67636	DIV1	DLD SAL+6,1	GO ON WITH CORR SQRT
64723	0760 00 0 00012		DCT	TURN OFF DC TGR
64724	0761 00 0 00000		NOP	
64725	-0603 00 0 66652		DST TEMP	SAVE RESULT
64726	0560 00 1 67630		LDQ SAL,1	A
64727	0260 00 0 67631		FMP DTW	2A
64730	-0603 00 0 66654		DST TEMP+2	SAVE
64731	0560 00 0 66477		LDQ ZERO	CLEAR MQ
64732	0502 00 1 67631		CLS SAL+1,1	-B
64733	0301 00 0 66652		DFAD TEMP	-B+R
64734	-0241 00 0 66654		DFDP TEMP+2	-B+R/2A
64735	0760 00 0 00012		DCT	
64736	0020 00 0 64740		TRA **2	
64737	0020 00 0 64743		TRA **4	
64740	0441 00 1 67640		LDI SAL+8,1	
64741	0074 00 4 00104		TSX ERROR-1,4	DVD CHECK ERROR
64742	0020 00 0 64722		TRA DIV1	
64743	-0603 00 0 66656		DST TEMP+4	SAVE FIRST ROOT
64744	0340 00 1 67640		CAS SAL+8,1	
64745	0020 00 0 64747		TRA **2	
64746	0020 00 0 64752		TRA **4	
64747	0560 00 1 67640		LDQ SAL+8,1	
64750	0074 00 4 00104		TSX ERROR-1,4	
64751	0020 00 0 64722		TRA DIV1	
64752	0500 00 0 66657		CLA TEMP+5	CHECK MQ PORTION
64753	0767 00 0 00014		ALS 12	
64754	0100 00 0 64757		TZE **3	
64755	0074 00 4 00104		TSX ERROR-1,4	
64756	0020 00 0 64722		TRA DIV1	
64757	0020 00 0 64761		TRA **2	

S E C T I O N F I V E
DOUBLE PRECISION RELIABILITY

9M71B
2/1/63
PAGE 937

64760	506421246060		BCD 1QUAD	
64761	0560 00 0 66477	DIV2	LDQ ZERO	
64762	0502 00 1 67631		CLS SAL+1,1	-B
64763	0303 00 0 66652		DFSB TEMP	-B-R
64764	-0241 00 0 66654		DFDP TEMP+2	-B-R/2A
64765	0760 00 0 00012		DCT	
64766	0020 00 0 64770		TRA **2	
64767	0020 00 0 64773		TRA **4	
64770	0441 00 1 67641		LDI SAL+9,1	
64771	0074 00 4 00104		TSX ERROR-1,4	DVD CHECK ERROR
64772	0020 00 0 64761		TRA DIV2	
64773	-0603 00 0 66656		DST TEMP+4	
64774	0340 00 1 67641		CAS SAL+9,1	
64775	0020 00 0 64777		TRA **2	
64776	0020 00 0 65002		TRA **4	
64777	0560 00 1 67641		LDQ SAL+9,1	
65000	0074 00 4 00104		TSX ERROR-1,4	
65001	0020 00 0 64761		TRA DIV2	
65002	0500 00 0 66657		CLA TEMP+5	CHECK MQ
65003	0767 00 0 00014		ALS 12	
65004	0100 00 0 65007		TZE **3	
65005	0074 00 4 00104		TSX ERROR-1,4	
65006	0020 00 0 64761		TRA DIV2	
65007	2 00012 1 64645		TIX DPR3+1,1,10	
65010	0074 00 4 00106		TSX OK,4	
65011	0020 00 0 64644		TRA DPR3	
65012	0 00000 0 00005		PZE 5	
65013	0074 00 4 00111		TSX LOOP,4	

9M71B
2/1/63
PAGE 938

S E C T I O N F I V E
SECTION FIVE SUBROUTINES

THIS ROUTINE SIMULATES FAD OR DFAD IN FIXED POINT. IT CHECKS
FOR TRAPS AND SIMULATES FLAGS STORED AT LOCATION ZERO
65320 ORG 27344

65320	0634	00	4	65662	DOFIX	SXA	LVE,4	
65321	0600	00	0	66442		STZ	CARR	
65322	0600	00	0	66443		STZ	RECOM	
65323	0600	00	0	66501		STZ	OVER	
65324	0600	00	0	67255		STZ	COM+17	
65325	0500	00	0	67234		CLA	COM	A
65326	-0320	00	0	66444		ANA	ELIM4	DELETE FRACTION AND SIGN
65327	0601	00	0	66652		STO	TEMP	
65330	0500	00	0	67236		CLA	COM+2	C
65331	-0320	00	0	66444		ANA	ELIM4	DELETE FRAC
65332	0402	00	0	66652		SUB	TEMP	GET CHAR DIFF
65333	0771	00	0	00033		ARS	27	
65334	0601	00	0	65352		STO	FACT1	
65335	0100	00	0	65372		TZE	EQU	
65336	-0120	00	0	65342		TMI	EXCH	LARGER IN AC
65337	0402	00	0	66441		SUB	FFOR	CHAR DIFF LESS 54
65340	0120	00	0	65647		TPL	EAC	CHAR DIFF TOO BIG
65341	0020	00	0	65353		TRA	FACT1+1	
65342	0774	00	2	00002	EXCH	AXT	2,2	
65343	0500	00	2	67236		CLA	COM+2,2	EXCHANGE SIMULATED AC
65344	0601	00	2	67244		STO	COM+8,2	
65345	0500	00	2	67240		CLA	COM+4,2	AND MQ
65346	0601	00	2	67242		STO	COM+6,2	
65347	2 00001	2		65343		TIX	*-4,2,1	
65350	0500	00	0	65352		CLA	FACT1	
65351	0020	00	0	65337		TRA	EXCH-3	

SECTION FIVE
SECTION FIVE SUBROUTINES

9M71B
2/1/63
PAGE 939

65352	0 00000	0 00000	FACT1	PZE	**	CHAR DIFF
65353	0500	00 0 67240		CLA	COM+4	AC
65354	-0320	00 0 66445		ANA	ELIM5	DELETE CHAR+S
65355	0601	00 0 66652		STO	TEMP	
65356	0500	00 0 67241		CLA	COM+5	MQ
65357	-0320	00 0 66445		ANA	ELIM5	DELETE CHAR+S
65360	0765	00 0 00033		LRS	27	MOVE TO MQ
65361	0500	00 0 65352		CLA	FACT1	GET CHAR DIFF
65362	0621	00 0 65364		STA	*+2	INSERT IN SHIFT INST
65363	0500	00 0 66652		CLA	TEMP	LOAD AC
65364	0765	00 0 00000		LRS	**	SHIFT TO EQUALIZE CHARS
65365	0601	00 0 66652		STO	TEMP	SAVE AC FRAC
65366	-0754	00 0 00000		PXD	0,0	CLEAR AC
65367	0765	00 0 00010		LRS	8	POSITION MQ FRACTION
65370	-0600	00 0 66653		STQ	TEMP+1	SAVE MQ FRACTION
65371	0020	00 0 65400		TRA	FACT2	
65372	0500	00 0 67240	EQU	CLA	COM+4	SEPERATE FRACTIONS
65373	-0320	00 0 66445		ANA	ELIM5	FOR ADD
65374	0601	00 0 66652		STO	TEMP	
65375	0500	00 0 67241		CLA	COM+5	
65376	-0320	00 0 66445		ANA	ELIM5	
65377	0601	00 0 66653		STO	TEMP+1	
65400	0500	00 0 67242	FACT2	CLA	COM+6	SR
65401	-0320	00 0 66445		ANA	ELIM5	DELETE CHAR+S
65402	0601	00 0 66654		STO	TEMP+2	SAVE SR FRACTION
65403	0500	00 0 67243		CLA	COM+7	IBR
65404	-0320	00 0 66445		ANA	ELIM5	DELETE CHAR+S
65405	0601	00 0 66655		STO	TEMP+3	SAVE IBR FRACTION
65406	0500	00 0 67234		CLA	COM	A
65407	0120	00 0 65413		TPL	*+4	A IS PLUS
65410	0500	00 0 67236		CLA	COM+2	NO
65411	-0120	00 0 65425		TMI	STRA	SIGNS ALIKE
65412	0020	00 0 65415		TRA	*+3	A MINUS C PLUS
65413	0500	00 0 67236		CLA	COM+2	C
65414	0120	00 0 65425		TPL	STRA	BOTH PLUS
65415	0500	00 0 66653		CLA	TEMP+1	MQ
65416	-0340	00 0 66655		LAS	TEMP+3	IBR
65417	0020	00 0 65460		TRA	GR	MQ LARGEK IBR
65420	0020	00 0 65425		TRA	STRA	MQ=IBR
65421	0500	00 0 66652		CLA	TEMP	GET A -MQ LESS THAN IBR
65422	-0340	00 0 66654		LAS	TEMP+2	C
65423	0020	00 0 65471		TRA	SGR	AC SR
65424	0761	00 0 00000		NOP		AC=SR

9M71B
2/1/63
PAGE 940

SECTION FIVE
SECTION FIVE SUBROUTINES

65425	0500	00	0	67240	STRA	CLA	COM+4	
65426	0120	00	0	65432		TPL	**+4	
65427	-0500	00	0	67650		CAL	SIGN	
65430	-0602	00	0	66652		ORS	TEMP	
65431	-0602	00	0	66653		ORS	TEMP+1	
65432	0500	00	0	67242		CLA	COM+6	
65433	0120	00	0	65437		TPL	**+4	
65434	-0500	00	0	67650		CAL	SIGN	
65435	-0602	00	0	66654		ORS	TEMP+2	
65436	-0602	00	0	66655		ORS	TEMP+3	
65437	0500	00	0	66653		CLA	TEMP+1	
65440	0400	00	0	66655		ADD	TEMP+3	IBR
65441	0767	00	0	00010		ALS	8	
65442	-0760	00	0	00001		PBT		CHECK FOR OVERFLOW
65443	0020	00	0	65445		TRA	**+2	NO
65444	-0625	00	0	66442		STL	CARR	YES
65445	0771	00	0	00010		ARS	8	RESTORE AND
65446	-0320	00	0	66445		ANA	ELIMS	
65447	0601	00	0	66657		STO	TEMP+5	SAVE
65450	0520	00	0	66442		ZET	CARR	WAS THERE OVERFLOW
65451	0020	00	0	65473		TRA	CARD	YES -INJECT CARRY
65452	0500	00	0	66652		CLA	TEMP	AC
65453	0400	00	0	66654		ADD	TEMP+2	SR
65454	0601	00	0	66656		STO	TEMP+4	SAVE ANS
65455	0520	00	0	66443		ZET	RECOM	CHECK RECOMP MQ
65456	0020	00	0	65501		TRA	RECOP	YES
65457	0020	00	0	65512		TRA	FACT4	NO
65460	0500	00	0	66652	GR	CLA	TEMP	AC
65461	-0340	00	0	66654		LAS	TEMP+2	SR
65462	0020	00	0	65425		TRA	STRA	AC LARGER SR
65463	0020	00	0	65425		TRA	STRA	AC EQUAL SR
65464	0500	00	0	66652	GRA	CLA	TEMP	
65465	0400	00	0	66476		ADD	ONE	
65466	0601	00	0	66652		STO	TEMP	SAVE
65467	-0625	00	0	66443		STL	RECOM	MQ RECOMP NECESSARY
65470	0020	00	0	65425		TRA	STRA	
65471	0400	00	0	66511	SGR	ADD	MONE	
65472	0020	00	0	65466		TRA	GRA+2	
65473	0500	00	0	66652	CARD	CLA	TEMP	AC
65474	0120	00	0	65477		TPL	**+3	
65475	0400	00	0	66511		ADD	MONE	AC- ADD -1
65476	0020	00	0	65453		TRA	STRA+22	
65477	0400	00	0	66476		ADD	ONE	AC+ ADD +1
65500	0020	00	0	65453		TRA	STRA+22	
65501	0500	00	0	66657	RECOP	CLA	TEMP+5	
65502	0760	00	0	00006		COM		DO 2S RECOMP OF
65503	0120	00	0	65510		TPL	**+5	
65504	0400	00	0	66511		ADD	MONE	MQ
65505	-0320	00	0	66445		ANA	ELIMS	
65506	0601	00	0	66657		STO	TEMP+5	
65507	0020	00	0	65512		TRA	FACT4	
65510	0400	00	0	66476		ADD	ONE	
65511	0020	00	0	65505		TRA	**+4	

S E C T I O N F I V E
SECTION FIVE SUBROUTINES

9M71B
2/1/63
PAGE 941

65512	0520	00	0	66656	FACT4	ZET	TEMP+4	CHECK FOR ZERO RESULT
65513	0020	00	0	65527		TRA	**12	
65514	0520	00	0	66657		ZET	TEMP+5	
65515	0020	00	0	65527		TRA	**10	
65516	0600	00	0	67255		STZ	COM+17	
65517	0600	00	0	67250		STZ	COM+12	
65520	0600	00	0	67251		STZ	COM+13	
65521	0500	00	0	67240		CLA	COM+4	
65522	0120	00	0	65662		TPL	LVE	
65523	0500	00	0	67650		CLA	SIGN	
65524	0601	00	0	67250		STO	COM+12	
65525	0601	00	0	67251		STO	COM+13	
65526	0020	00	0	65662		TRA	LVE	
65527	0500	00	0	66656		CLA	TEMP+4	
65530	0120	00	0	65533		TPL	**3	
65531	0500	00	0	67650		CLA	SIGN	
65532	0601	00	0	67250		STO	COM+12	
65533	0500	00	0	66657		CLA	TEMP+5	
65534	0760	00	0	00003		SSP		
65535	0131	00	0	00000		XCA		
65536	0500	00	0	66656		CLA	TEMP+4	
65537	0760	00	0	00003		SSP		
65540	0767	00	0	00010		ALS	8	
65541	-0760	00	0	00001		PBT		CHECK FOR FRACTION OVERFLOW
65542	0020	00	0	65551		TRA	**7	NO
65543	-0625	00	0	66501		STL	OVER	YES
65544	0771	00	0	00010		ARS	8	
65545	-0773	00	0	00010		RQL	8	
65546	0765	00	0	00001		LRS	1	
65547	-0773	00	0	00034		RQL	28	
65550	0020	00	0	65562		TRA	FACT5	
65551	0534	00	2	00000		LXA	0,2	CLEAR XRB
65552	0771	00	0	00010		ARS	8	AC TO NORMAL
65553	-0773	00	0	00010		RQL	8	BIT 9 TO BIT 1 IN MQ
65554	0763	00	0	00010		LLS	8	BIT 9 TO BIT 1
65555	0763	00	0	00001		LLS	1	BIT ONE TO P BIT
65556	-0760	00	0	00001		PBT		
65557	1 00001	2		65555		TXI	*-2,2,1	STEP CTR

9M71B
2/1/63
PAGE 942

S E C T I O N F I V E
SECTION FIVE SUBROUTINES

65560	0765	00	0	00011	LRS	9	REPOSITION AC
65561	-0773	00	0	00034	RQL	28	REPOSITION MQ
65562	-0602	00	0	67250	FACT5 ORS	COM+12	SAVE FRACTIONSS
65563	-0130	00	0	00000	XCL		
65564	0601	00	0	67251	STO	COM+13	
65565	0500	00	0	67242	CLA	COM+6	SR
65566	-0320	00	0	66444	ANA	ELIM4	DELETE FRAC+S
65567	0771	00	0	00033	ARS	27	CHAR TO ADDR
65570	0601	00	0	66654	STO	TEMP+2	
65571	-0520	00	0	66501	NZT	OVER	CHECK FOR FRAC OVERFLOW
65572	0020	00	0	65603	TRA	++9	NO
65573	0500	00	0	66476	CLA	ONE	
65574	0400	00	0	66654	ADD	TEMP+2	UP CHAR
65575	0601	00	0	66654	STO	TEMP+2	SAVE
65576	0402	00	0	66452	SUB	FORH	SUBTRACT 400
65577	-0120	00	0	65602	TMI	++3	NO CHAR-OVERFLOW
65600	0500	00	0	67632	CLA	B1516	YES
65601	-0602	00	0	67255	ORS	COM+17	
65602	0020	00	0	65607	TRA	CONVF+1	
65603	0754	00	2	00000	PXA	0,2	NUMBER OF POST SHIFTS
65604	0402	00	0	66654	SUB	TEMP+2	SR CHAR
65605	0602	00	0	66654	SLW	TEMP+2	SAVE NEW AC CHAR
65606	0120	00	0	65627	CONVF TPL	ACU	AC UNDERFLOW
65607	0500	00	0	66654	CLA	TEMP+2	
65610	0402	00	0	66463	SUB	THTH	SUBTRACT 33 OCTAL
65611	0602	00	0	66655	SLW	TEMP+3	SAVE MQ CHAR
65612	-0120	00	0	65636	TMI	MQU	MQ CHAR-UNDERFLOW
65613	0500	00	0	66654	CLA	TEMP+2	AC CHAR
65614	0767	00	0	00035	ALS	29	TO PROPER POSITION
65615	0771	00	0	00002	ARS	2	
65616	-0602	00	0	67250	ORS	COM+12	INSERT IN AC ANS
65617	0500	00	0	67250	CLA	COM+12	
65620	-0120	00	0	65644	TMI	SADJ	IF MINUS
65621	0500	00	0	66655	CLA	TEMP+3	MQ CHAR
65622	0767	00	0	00033	ALS	27	
65623	-0602	00	0	67251	ORS	COM+13	INSRT CHAR MQ FRAC
65624	0020	00	0	65662	TRA	LVE	QUIT
65625	0500	00	0	67155	CLA	LAST	
65626	0601	00	0	00000	STO		

SECTION FIVE
SECTION FIVE SUBROUTINES

9M71B
2/1/63
PAGE 943

65627	0100	00	0	65607	ACU	TZE	CONVF+1	
65630	0500	00	0	67634		CLA	B1617	
65631	-0602	00	0	67255		ORS	COM+17	INSERT FLAG BITS
65632	0500	00	0	66452		CLA	FORH	FIND PROPER
65633	0402	00	0	66654		SUB	TEMP+2	CHAR
65634	0601	00	0	66654		STO	TEMP+2	FOR
65635	0020	00	0	65610		TRA	CONVF+2	AC
65636	0500	00	0	67633	MCU	CLA	B17	MQ UNDERFLOW
65637	-0602	00	0	67255		ORS	COM+17	SET FLAGS AND
65640	0500	00	0	66452		CLA	FORH	CORRECT CHAR
65641	0402	00	0	66655		SUB	TEMP+3	
65642	0601	00	0	66655		STO	TEMP+3	
65643	0020	00	0	65613		TRA	CONVF+5	
65644	0500	00	0	67650	SADJ	CAL	SIGN	MAKE MQ SIGN SAME
65645	-0602	00	0	67251		ORS	COM+13	AS AC
65646	0020	00	0	65621		TRA	ACU-6	
65647	0500	00	0	67242	EAC	CLA	COM+6	LOAD RESULTS ON EARLY
65650	-0320	00	0	66445		ANA	ELIM5	END OP
65651	0601	00	0	66656		STO	TEMP+4	
65652	0500	00	0	67243		CLA	COM+7	
65653	-0320	00	0	66445		ANA	ELIM5	
65654	0601	00	0	66657		STO	TEMP+5	
65655	0500	00	0	67242		CLA	COM+6	
65656	0120	00	0	65512		TPL	FACT4	
65657	-0500	00	0	67650		CAL	SIGN	
65660	-0602	00	0	66656		ORS	TEMP+4	
65661	0020	00	0	65512		TRA	FACT4	
65662	0774	00	4	00000	LVE	AXT	*,4	
65663	0020	00	4	00001		TRA	1,4	

THIS ROUTINE COMPARES THE SIMULATION AND MACHINE
ANSWERS AND RETURNS 1,4 WITH NO ERROR AND 2,4 ON
ERROR

65664	0500	00	0	67250	COMP	CLA	COM+12	COMPARE AC PORTION
65665	0340	00	0	67252		CAS	COM+14	OF ANSWER
65666	0020	00	4	00002		TRA	2,4	
65667	0020	00	0	65671		TRA	*,2	
65670	0020	00	4	00002		TRA	2,4	
65671	0500	00	0	67251		CLA	COM+13	COMPARE MQ PORTION
65672	0340	00	0	67253		CAS	COM+15	OF ANSWER
65673	0020	00	4	00002		TRA	2,4	
65674	0020	00	0	65676		TRA	*,2	
65675	0020	00	4	00002		TRA	2,4	
65676	0500	00	0	67255		CLA	COM+17	COMPARE TRAP FLAGS
65677	0340	00	0	67254		CAS	COM+16	
65700	0020	00	4	00002		TRA	2,4	
65701	0020	00	4	00001		TRA	1,4	
65702	0020	00	4	00002		TRA	2,4	

9M71B
2/1/63
PAGE 944

S E C T I O N F I V E
SECTION FIVE SUBROUTINES

65703	0634 00 4 66046	SEPR	SXA	GB,4	SET RETURN
65704	0500 00 0 67636		CLA	LOCT	
65705	0767 00 0 00022		ALS	18	INSERT TEST LOCATION
65706	0074 00 4 74302		TSX	PX,4	
65707	0601 00 0 65715		STO	**6	
65710	0074 02 4 74300		TSX	SPLAT,4,2	
65711	0 00004 0 00004		PZE	4,0,4	
65712	514664633145		BCD	4ROUTINE LOCATION	
65713	256043462321				
65714	633146456060				
65715	606060606060				

65716	0500 00 0 67234		CLA	COM	INSERT HIGH ORDER
65717	0074 00 4 74302		TSX	PX,4	OPERANDS IN PRINT
65720	0602 00 0 65733		SLW	ORIG+3	IMAGE
65721	-0600 00 0 65734		STQ	ORIG+4	AND
65722	0500 00 0 67236		CLA	COM+2	PRINT
65723	0074 00 4 74302		TSX	PX,4	SAME
65724	0602 00 0 65736		SLW	ORIG+6	
65725	-0600 00 0 65737		STQ	ORIG+7	
65726	0074 00 4 74300		TSX	SPLAT,4	
65727	0 00002 0 00010		PZE	8,0,2	
65730	606060262124	ORIG	BCD	6	FAD VALUES AC
65731	606521436425				
65732	626021236060				
65733	606060606060				
65734	606060606060				
65735	606062516060				
65736	606060606060				
65737	606060606060				

SR

65740	-0520 00 0 66475	NZT	DBL	CHECK FOR DP INSTRUCTION
65741	0020 00 0 65764	TRA	**19	
65742	0500 00 0 67235	CLA	COM+1	YES - INSERT LO ORDER
65743	0074 00 4 74302	TSX	PX,4	OPERANDS IN IMAGE AND
65744	0602 00 0 65757	SLW	**11	PRINT
65745	-0600 00 0 65760	STQ	**11	
65746	0500 00 0 67237	CLA	COM+3	
65747	0074 00 4 74302	TSX	PX,4	
65750	0602 00 0 65762	SLW	**10	
65751	-0600 00 0 65763	STQ	**10	
65752	0074 00 4 74300	TSX	SPLAT,4	
65753	0 00002 0 00010	PZE	8,0,2	
65754	606060606060	BCD	6	MQ
65755	606060606060			
65756	606044506060			
65757	606060606060			
65760	606060606060			
65761	606031225160			
65762	606060606060			
65763	606060606060			

IBR

BCD 2

SECTION FIVE
SECTION FIVE SUBROUTINES

9M71B
2/1/63
PAGE 945

65764	0500 00 0	67250	CLA	COM+12	INSERT SIMULATOR ANSWER
65765	0074 00 4	74302	TSX	PX,4	AND DECREMENT OF LOCATION
65766	0602 00 0	66005	SLW	SIMP+4	ZERO IN IMAGE AND PRINT
65767	0600 00 0	66006	STQ	SIMP+5	
65770	0500 00 0	67251	CLA	COM+13	
65771	0074 00 4	74302	TSX	PX,4	
65772	0602 00 0	66010	SLW	SIMP+7	
65773	0600 00 0	66011	STQ	SIMP+8	
65774	0500 00 0	67255	CLA	COM+17	
65775	0074 00 4	74302	TSX	PX,4	
65776	0601 00 0	66014	STO	SIMP+11	
65777	0074 00 4	74300	TSX	SPLAT,4	
66000	0 00001 0	00014	PZE	12,0,1	
66001	606060623144		SIMP	BCD 6	SIMULATE ANS AC
66002	644321632560				
66003	214562602123				
66004	606060606060				
66005	606060606060				
66006	606060606060				
66007	606044506060		BCD 6	MQ	TRAP FLAGS
66010	606060606060				
66011	606060606060				
66012	606351214760				
66013	264321276260				
66014	606060606060				
66015	0500 00 0	67252	CLA	COM+14	INSERT HARDWARE ANSWERS
66016	0074 00 4	74302	TSX	PX,4	IN IMAGE AND PRINT
66017	0602 00 0	66036	SLW	SMACP+4	
66020	0600 00 0	66037	STQ	SMACP+5	
66021	0500 00 0	67253	CLA	COM+15	
66022	0074 00 4	74302	TSX	PX,4	
66023	0602 00 0	66041	SLW	SMACP+7	
66024	0600 00 0	66042	STQ	SMACP+8	
66025	0500 00 0	67254	CLA	COM+16	
66026	0074 00 4	74302	TSX	PX,4	
66027	0601 00 0	66045	STO	SMACP+11	
66030	0074 00 4	74300	TSX	SPLAT,4	
66031	0 00001 0	00014	PZE	12,0,1	
66032	606060442123		SMACP	BCD 6	MACHINE ANS AC
66033	303145256060				
66034	214562602123				
66035	606060606060				
66036	606060606060				
66037	606060606060				
66040	606044506060		BCD 6	MQ	TRAP FLAGS
66041	606060606060				
66042	606060606060				
66043	606351214760				
66044	264321276260				
66045	606060606060				
66046	0774 00 4	00000	GB	AXT ** ,4	RETURN TO MAIN
66047	0020 00 4	00001		TRA 1,4	PROGRAM

9M71B
2/1/63
PAGE 946

SECTION FIVE
SECTION FIVE SUBROUTINES

EXIT FROM A FLOATING POINT TRAP CONDITION

66050	-0760	00 0	00007	LITE1 LTM	
66051	0760	00 0	00141	SLN 1	TURN ON SENSE LITE 1
66052	0535	00 4	00000	LAC 0,4	2-S COMPLEMENT OF ADR
					IN LOC ZERO TO XRC
66053	0020	00 4	00000	TRA 0,4	RETURN TO MAIN PROGRAM

EXIT FROM TRAP MODE TRAP TO LOCATION 00001

66054	-0760	00 0	00007	LITE2 LTM	EXIT TRAP MODE
66055	0760	00 0	00143	SLN 3	SENSE LITE 3 ON
66056	0535	00 4	00000	LAC 0,4	SET UP RETURN ADR
66057	0020	00 4	00001	TRA 1,4	TO MAIN PROGRAM

SUBROUTINE TO SAVE CONTENTS OF ACC, MQ, AND CONDITION OF ACC OVERFLOW INDICATOR. SUBROUTINE CHECKS ALL CONDITIONS FOR CORRECT EXECUTION OF THE FLOATING POINT INSTRUCTION. IF THERE IS AN ERROR, SAVED VALUES AND CONDITIONS ARE RESTORED TO CONDITION AFTER EXECUTION OF THE FLOATING POINT INSTRUCTION.

66060	-0600	00 0	66455	CHECK STQ MQ	SAVE MQ
66061	-0140	00 0	66064	TNO *+3	TRA IF ACC OVFLD IND OFF
66062	0560	00 0	66062	LDQ *	STORE INSTR TO INDICATE
66063	-0600	00 0	66456	STQ OVFLD	ACC OVERFLOW IND WAS ON
66064	0601	00 0	66453	STO ACC	SAVE ACC S,1-35
66065	0765	00 0	00043	LRS 35	MOVE Q AND P TO 34 AND 35
66066	0602	00 0	66454	SLW ACC+1	SAVE Q AND P
66067	0763	00 0	00043	LLS 35	RESTORE ACC
66070	0604	00 0	67144	STI INST	SAVE SI AND LOAD
66071	0441	00 2	00001	LDI 1,2	CODE WORD FOR CORRECT FP INSTRUCTION EXECUTION

CHECK ACCUMULATOR SIGN POSITION

66072	0120	00 0	66074	TPL *+2	TRA IF ACC SIGN PLUS
66073	-0051	00	400000	IIL 400000	SIGN MINUS-INVERT IND ZERO

CHECK ACCUMULATOR P POSITION

66074	-0760	00 0	00001	PBT	BIT IN P POSITION
66075	0020	00 0	66077	TRA *+2	NO-TRANSFER
66076	-0051	00	100000	IIL 100000	YES-INVERT IND 2

CHECK ACCUMULATOR Q POSITION

66077	0771	00 0	00001	ARS 1	SHIFT Q TO P
66100	-0760	00 0	00001	PBT	BIT IN Q POSITION
66101	0020	00 0	66103	TRA *+2	NO-TRANSFER
66102	-0051	00	200000	IIL 200000	YES-INVERT IND 1

SECTION FIVE
SECTION FIVE SUBROUTINES

9M71B
2/1/63
PAGE 947

CHECK ACCUMULATOR POSITIONS 1-35

66103	0754	00	0	00000	PXA	CLEAR ACC
66104	0401	00	0	66453	ADM ACC	L ACC 1-35
66105	0402	00	2	00002	SUB 2,2	CORRECT ACC 1-35
66106	0100	00	0	66110	TZE **2	ACC 1-35 OK IF ZERO
66107	-0051	00		040000	IIL 40000	ERROR IN ACC 1-35
						INVERT IND 3

CHECK MQ S, 1-35

66110	0500	00	0	66455	CLA MQ	L SAVED MQ S, 1-35
66111	0402	00	2	00003	SUB 3,2	CORRECT MQ S, 1-35
66112	0100	00	0	66114	TZE **2	MQ OK IF ZERO
66113	-0051	00		020000	IIL 20000	ERROR IN MQ
						INVERT IND 4

CHECK SI 0-35

66114	0500	00	0	67144	CLA INST
66115	0402	00	2	00004	SUB 4,2
66116	0100	00	0	66120	TZE **2
66117	0051	00		400000	IIR 400000

CHECK FLOATING POINT TRAP CONDITION

66120	-0760	00	0	00141	SLT 1	IS SENSE LIGHT 1 ON
66121	0020	00	0	66124	TRA **3	NO-TRANSFER
66122	0760	00	0	00141	SLN 1	YES-TURN ON SENSE LIGHT
66123	-0051	00		010000	IIL 10000	1 AND INVERT IND 5

CHECK CONTENTS OF LOCATION ZERO

66124	0754	00	0	00000	PXA	CLEAR ACC
66125	0765	00	0	00043	LRS 35	CLEAR MQ
66126	-0500	00	0	00000	CAL	L CONTENTS LOC ZERO
66127	0625	00	0	66457	STT TAG	SAVE TAG
66130	0765	00	0	00022	LRS 18	POS 17 LOC ZERO TO ACC 35
66131	0760	00	0	00001	LBT	BIT IN POS 17 LOC ZERO
66132	0020	00	0	66134	TRA **2	NO-TRANSFER
66133	-0051	00		000400	IIL 400	YES-INVERT IND 9
66134	0771	00	0	00001	ARS 1	POS 16 LOC ZERO TO ACC 35
66135	0760	00	0	00001	LBT	BIT IN POS 16 LOC ZERO
66136	0020	00	0	66140	TRA **2	NO-TRANSFER
66137	-0051	00		001000	IIL 1000	YES-INVERT IND 8
66140	0771	00	0	00001	ARS 1	POS 15 LOC ZERO TO ACC 35
66141	0760	00	0	00001	LBT	BIT IN POS 15 LOC ZERO
66142	0020	00	0	66144	TRA **2	NO-TRANSFER
66143	-0051	00		002000	IIL 2000	YES-INVERT IND 7
66144	0771	00	0	00001	ARS 1	POS 14 LOC ZERO TO ACC 35
66145	0760	00	0	00001	LBT	BIT IN POS 14 LOC ZERO
66146	0020	00	0	66150	TRA **2	NO-TRANSFER
66147	-0051	00		004000	IIL 4000	YES-INVERT IND 6

9M71B
2/1/63
PAGE 948

S E C T I O N F I V E
SECTION FIVE SUBROUTINES

66150 0771 00 0 00002
66151 0760 00 0 00001
66152 0020 00 0 66154
66153 -0051 00 000001

ARS 2
LBT
TRA **2
IIL 1

66154 0754 00 0 00000
66155 0763 00 0 00022
66156 0402 00 2 00005
66157 0100 00 0 66161
66160 -0051 00 000200

PXA
LLS 18
SUB 5,2
TZE **2
IIL 200

CLEAR ACCUMULATOR
ADR LOC ZERO TO ADR OF ACC
CORRECT ADR LOC ZERO
ADR IN LOC ZERO OK
ERROR IN ADR OF LOC ZERO
INVERT IND 10

CHECK TAG OF LOCATION ZERO

66161 -0520 00 0 66457
66162 0020 00 0 66164
66163 -0051 00 000040

NZT TAG
TRA **2
IIL 40

LOC ZERO TAG CLEAR
YES-TRANSFER
NO-INVERT IND 12

CHECK CONDITION OF ACC OVERFLOW INDICATOR

66164 -0520 00 0 66456
66165 0020 00 0 66167
66166 -0051 00 000020

NZT OVFL0
TRA **2
IIL 20

WAS ACC OVFL0 IND ON
NO-TRANSFER
YES-INVERT IND 13

CHECK FOR A TRAP TO LOCATION 00001

66167 -0760 00 0 00143
66170 0020 00 0 66173
66171 0760 00 0 00143
66172 -0051 00 000010

SLT 3
TRA **3
SLN 3
IIL 10

SENSE LITE 3 ON
NO
YES- SENSE LITE 3 ON
AND INVERT IND 14

CHECK CONDITION OF DIVIDE CHECK INDICATOR

66173 0760 00 0 00012
66174 0020 00 0 66176
66175 0020 00 0 66201
66176 -0051 00 000004
66177 -0500 00 0 66500
66200 0221 00 0 66476

DCT
TRA **2
TRA **4
IIL 4
CAL MZE
DVP ONE

IS DIV/CK IND ON
YES
NO
INVERT IND 15
FIXED PT. DIVIDE TO
TURN ON DCT LITE

CHECK MQ OVERFLOW INDICATOR

66201 0161 00 0 66203
66202 0020 00 0 66204
66203 -0051 00 000002

TQ0 **2
TRA **2
IIL 2

TRA IF MQ INDICATOR IS ON
MQ OVFL0 INDICATOR IS OFF
INVERT IND 16

SECTION FIVE
SECTION FIVE SUBROUTINES

9M71B
2/1/63
PAGE 949

IF FP OPERATION WAS EXECUTED CORRECTLY, INDICATORS POSITIONS
0-18 SHOULD BE OFF, CHECK IND POS 0-18

66204	0054	00	400000	RFT	400000	
66205	0020	00	0 66207	TRA	*+2	
66206	-0054	00	777777	LFT	777777	
66207	0020	00	0 66211	TRA	*+2	NO
66210	0020	00	2 00007	TRA	7,2	RETURN AT TSX OK , 4

RESTORE ORIGINAL ACC, MQ, SI, AND ACC OVERFLOW LIGHT

66211	-0520	00	0 66456	NZT	OVFLO	WAS THERE ACC OVERFLOW
66212	0020	00	0 66215	TRA	*+3	NO
66213	0500	00	0 66537	CLA	FPN+9	L BIT TO ACC P POS TO
66214	0767	00	0 00001	ALS	1	TURN ON ACC OVFLD IND
66215	-0754	00	0 00000	PXD		CLEAR ACCUMULATOR
66216	-0500	00	0 66454	CAL	ACC+1	L SAVED ACC POS Q AND P
66217	0560	00	0 66453	LDQ	ACC	L SAVED ACC S, 1-35
66220	0763	00	0 00043	LLS	35	RESTORE ORIGINAL ACC

IF SHIFT TURNED ON ACC OVFLD IND, TURN IT OFF IF IT SHOULD BE OFF

66221	-0520	00	0 66456	NZT	OVFLO	WAS ACC OVFLD LITE ON
66222	0140	00	0 66223	TOV	*+1	NO-TURN IT OFF
66223	0560	00	0 66455	LDQ	MQ	RESTORE ORIGINAL MQ
66224	0604	00	0 00102	STI	INDCW	
66225	0441	00	0 67144	LDI	INST	
66226	0020	00	2 00006	TRA	6,2	

66227	0760	00	0 00140	CLEAR	SLF	ALL SENSE LITES OFF
66230	0760	00	0 00144	SLN	4	FOR RESTART
66231	2 00001	4	66232	TIX	*+1,4,1	GET ADR FOR MAIN
66232	0636	00	4 66261	SCA	EXIT,4	PROGRAM RETURN
66233	-0760	00	0 00002	EFTM		TURN ON FP TRAP TGR
66234	0500	00	0 67155	CLA	LAST	
66235	0601	00	0 00000	STO		CLEAR LOCATION ZERO
66236	-0754	00	0 00000	PXD	0,0	
66237	0774	00	4 00024	AXT	20,4	
66240	0600	00	4 67260	STZ	COM+20,4	
66241	2 00001	4	66240	TIX	*-1,4,1	
66242	0560	00	0 66652	LDQ	TEMP	CLEAR MQ
66243	0044	00	0 00000	PAI		CLEAR INDICATORS
66244	0774	00	4 00006	AXT	6,4	L 6 IN XRC
66245	0601	00	4 66461	STO	ACC+6,4	CLEAR THESE
66246	0601	00	4 66660	STO	TEMP+6,4	
66247	2 00001	4	66245	TIX	*-2,4,1	
66250	0140	00	0 66251	TOV	*+1	ACC OVFLD LITE OFF
66251	0760	00	0 00012	DCT		DIV/CK LITE OFF
66252	0761	00	0 00000	NOP		
66253	0774	00	3 00000	AXT	0,3	
66254	0774	00	5 00000	AXT	0,5	
66255	0774	00	6 00000	AXT	0,6	
66256	0774	00	7 00000	AXT	0,7	
66257	0774	00	2 00000	AXT	0,2	
66260	0774	00	4 00000	AXT	0,4	
66261	0020	00	0 00000	EXIT	TRA	RETURN TO MAIN PROGRAM

9M718
2/1/63
PAGE 950

S E C T I O N F I V E
SECTION FIVE SUBROUTINES

66262	0774	00	1	00310	RAN	AXT	200,1
66263	0560	00	0	66517		LDQ	DATA
66264	0200	00	0	66521		MPY	DATC
66265	0361	00	0	66520		ACL	DATB
66266	0601	00	1	67570		STO	TABLE,1
66267	0602	00	0	66520		SLW	DATB
66270	0130	00	0	00000		XCL	
66271	0361	00	0	66517		ACL	DATA
66272	0602	00	0	66517		SLW	DATA
66273	2 00001	1		66263		TIX	*-8,1,1
66274	0500	00	0	66432		CLA	CT
66275	0760	00	0	00001		LBT	
66276	0020	00	0	66427		TRA	ROUT+5
66277	0774	00	2	00310		AXT	200,2
66300	0500	00	2	67570	EXAD	CLA	TABLE,2
66301	0771	00	0	00033		ARS	27
66302	0601	00	0	66652		STO	TEMP
66303	0560	00	2	67573		LDQ	TABLE+3,2
66304	-0754	00	0	00000		PXD	0,0
66305	0763	00	0	00003		LLS	3
66306	0400	00	0	66652		ADD	TEMP
66307	0760	00	0	00003		SSP	
66310	0601	00	0	66653		STO	TEMP+1
66311	-0754	00	0	00000		PXD	0,0
66312	0763	00	0	00003	B2	LLS	3
66313	0400	00	0	66653		ADD	TEMP+1
66314	0767	00	0	00035		ALS	29
66315	0771	00	0	00002		ARS	2
66316	0760	00	0	00003		SSP	
66317	0601	00	0	66652		STO	TEMP
66320	0500	00	0	66653		CLA	TEMP+1
66321	0767	00	0	00035		ALS	29
66322	0771	00	0	00002		ARS	2
66323	0601	00	0	66653		STO	TEMP+1
66324	-0500	00	2	67571		CAL	TABLE+1,2
66325	-0320	00	0	66447		ANA	ELIM6
66326	-0501	00	0	66652		ORA	TEMP
66327	0602	00	2	67571		SLW	TABLE+1,2
66330	-0500	00	2	67572		CAL	TABLE+2,2
66331	-0320	00	0	66447		ANA	ELIM6
66332	-0501	00	0	66653		ORA	TEMP+1
66333	0602	00	2	67572		SLW	TABLE+2,2
66334	2 00004	2		66300	B3	TIX	EXAD,2,4
66335	0774	00	2	00310		AXT	200,2
66336	0500	00	2	67570	TW00	CLA	TABLE,2
66337	-0320	00	0	66445		ANA	ELIM5
66340	0771	00	0	00033		ARS	27
66341	0601	00	0	66652		STO	TEMP
66342	0500	00	2	67572		CLA	TABLE+2,2
66343	-0320	00	0	66445		ANA	ELIM5
66344	0771	00	0	00033		ARS	27
66345	0402	00	0	66652		SUB	TEMP
66346	-0501	00	0	66512		ORA	TEN
66347	0400	00	0	66652		ADD	TEMP
66350	0767	00	0	00035		ALS	29
66351	0771	00	0	00002		ARS	2

SECTION FIVE
SECTION FIVE SUBROUTINES

9M71B
2/1/63
PAGE 951

66352	0760	00	0	00003		SSP	
66353	0601	00	0	66652		STO	TEMP
66354	-0500	00	2	67572		CAL	TABLE+2,2
66355	-0320	00	0	66447		ANA	ELIM6
66356	-0501	00	0	66652		ORA	TEMP
66357	0602	00	2	67572		SLW	TABLE+2,2
66360	2 00010	2	66336		TIX	TW00,2,8	
66361	0774	00	2	00310		AXT	200,2
66362	0500	00	2	67570	THREE	CLA	TABLE,2
66363	-0320	00	0	66445		ANA	ELIM5
66364	0771	00	0	00033		ARS	27
66365	0601	00	0	66652		STO	TEMP
66366	0500	00	2	67572		CLA	TABLE+2,2
66367	-0320	00	0	66445		ANA	ELIM5
66370	0771	00	0	00033		ARS	27
66371	0402	00	0	66652		SUB	TEMP
66372	0560	00	2	67573		LDQ	TABLE+3,2
66373	-0773	00	0	00004	B5	RQL	4
66374	0765	00	0	00000		LRS	0
66375	0763	00	0	00001		LLS	1
66376	0400	00	0	66652		ADD	TEMP
66377	0767	00	0	00035		ALS	29
66400	0771	00	0	00002		ARS	2
66401	0760	00	0	00003		SSP	
66402	0601	00	0	66652		STO	TEMP
66403	-0500	00	2	67572		CAL	TABLE+2,2
66404	-0320	00	0	66447		ANA	ELIM6
66405	-0501	00	0	66652		ORA	TEMP
66406	0602	00	2	67572		SLW	TABLE+2,2
66407	2 00020	2	66362	B4	TIX	THREE,2,16	
66410	-0534	00	1	66407		LXD	*-1,1
66411	0754	00	1	00000		PXA	0,1
66412	0767	00	0	00001		ALS	1
66413	0734	00	1	00000		PAX	0,1
66414	-0634	00	1	66407		SXD	*-5,1
66415	0500	00	0	66373		CLA	B5
66416	0400	00	0	66476		ADD	ONE
66417	0601	00	0	66373		STO	B5
66420	3 00100	1	66422		TXH	ROUT,1,64	
66421	0020	00	0	66361	ROUT	TRA	THREE-1
66422	0500	00	0	66450		CLA	TIX
66423	0601	00	0	66407		STO	B4
66424	0500	00	0	66451		CLA	RQL
66425	0601	00	0	66373		STO	B5
66426	0500	00	0	66432		CLA	CT
66427	0400	00	0	66476		ADD	ONE
66430	0601	00	0	66432		STO	CT
66431	0020	00	4	00001		TRA	1,4
66432	0 00000	0	00000	CT	PZE		
66433	+200000000000			Q1P	OCT	200000000000	
66434	+145000000000			Q2P	OCT	145000000000	
66435	+146000000000			Q2P1	OCT	146000000000	
66436	0 00000	0	00000	ADJ	PZE		
66437	0 00000	0	00000	OFL	PZE		
66440	+033000000000			E33	OCT	033000000000	
66441	+066000000000			FFOR	OCT	066000000000	

9M71B
2/1/63
PAGE 952

SECTION FIVE
CONSTANTS

66442	0 00000 0 00000	CARR	PZE	
66443	0 00000 0 00000	RECOM	PZE	
66444	-377000000000	ELIM4	OCT	777000000000
66445	+000777777777	ELIM5	OCT	000777777777
66446	0 00000 0 00000		PZE	
66447	-000777777777	ELIM6	OCT	400777777777
66450	2 00020 2 66362	TIX	TIX	THREE,2,16
66451	-0773 00 0 00004	RQL	RQL	4
66452	+000000000400	FORH	OCT	000000000400
66453	+000000000000	ACC	OCT	
66454	+000000000000		OCT	
66455	+000000000000	MQ	OCT	
66456	+000000000000	OVFLO	OCT	
66457	+000000000000	TAG	OCT	
66460	+000000000000	N	OCT	
66461	+000000000000	XRA	OCT	
66462	+000000000000	XRB	OCT	
66463	+000000000033	THTH	OCT	33
66464	-211777777777	PROG	OCT	611777777777
66465	-200777777777		OCT	600777777777
66466	+100333330000	FPNA	OCT	100333330000
66467	-100777770000		OCT	500777770000
66470	-1 77777 0 66460	IAWD	STR	N,0,32767
66471	-1 77777 2 67143		STR	QUO+27,2,32767
66472	-2 35146 4 66502	IAWD1	INX	IAC,4,14950
66473	0500 00 1 67203		CLA	LAST+22,1
66474	0241 00 1 67204	IAWD2	FDP	LAST+23,1
66475	0 00000 0 00000	DBL	PZE	
66476	+000000000001	ONE	OCT	1
66477	+000000000000	ZERO	OCT	0
66500	-000000000000	MZE	OCT	-0
66501	0 00000 0 00000	OVER	PZE	
66502	-235146436060	IAC	OCT	635146436060
66503	-204760474662		OCT	604760474662
66504	+377000000000	CHAR	OCT	377000000000
66505	-377000000000		OCT	777000000000
66506	-307000000000		OCT	707000000000
66507	+000400000000	FRAC	OCT	400000000
66510	+001700000000		OCT	1700000000
66511	-000000000001	MONE	OCT	400000000001
66512	+000000000010	TEN	OCT	10
66513	-377777777777	ONES	OCT	777777777777
66514	-177777777777		OCT	577777777777
66515	+377777777776		OCT	377777777776
66516	-233777777777		OCT	633777777777
66517	-021562620543	DATA	OCT	421562620543
66520	+257600162157	DATB	OCT	257600162157
66521	-304137253161	DATC	OCT	704137253161
66522	-037777777777	ELIM7	OCT	437777777777
66523	-222222222222	TWOS	OCT	622222222222
66524	+222444444444	FOURS	OCT	222444444444
66525	0761 00 0 00000		NOP	
66526	+377377777777	FPN	OCT	377377777777
66527	+344400000000		OCT	344400000000
66530	+001400000000		OCT	1400000000
66531	+145400000000		OCT	145400000000

SECTION FIVE CONSTANTS

9M71B
2/1/63
PAGE 953

66532 +201400000000	OCT 201400000000	FPN CONT.
66533 +001000000000	OCT 1000000000	
66534 -200777770000	OCT 600777770000	
66535 -200333330000	OCT 600333330000	
66536 -234400000000	OCT 634400000000	
66537 +200000000000	OCT 200000000000	
66540 +115777777777	OCT 115777777777	
66541 +316000777777	OCT 316000777777	
66542 +315000777777	OCT 315000777777	
66543 +032000000000	OCT 032000000000	
66544 +052000000001	OCT 052000000001	
66545 -125200000001	OCT 525200000001	
66546 +173516274051	OCT 173516274051	
66547 +176444444445	OCT 176444444445	
66550 +150760000000	OCT 150760000000	
66551 -352700000000	OCT 752700000000	
66552 +031400000000	OCT 031400000000	
66553 +232400000000	OCT 232400000000	
66554 -032404040404	OCT 432404040404	
66555 -344440404040	OCT 744440404040	
66556 +377070000000	OCT 377070000000	
66557 +177700000000	OCT 177700000000	
66560 +200212121212	OCT 200212121212	
66561 +200121212121	OCT 200121212121	
66562 -200121212121	OCT 600121212121	
66563 -204400000000	OCT 604400000000	
66564 +204740000000	OCT 204740000000	
66565 +204037777777	OCT 204037777777	
66566 +202400000000	OCT 202400000000	
66567 +203700000000	OCT 203700000000	
66570 +352111174240	OCT 352111174240	
66571 -317476713074	OCT 717476713074	
66572 +344000000001	OCT 344000000001	
66573 -201400000000	OCT 601400000000	
66574 -031777777777	OCT 431777777777	
66575 -031000000001	OCT 431000000001	
66576 +064000000000	OCT 640000000000	
66577 +344477777777	OCT 344477777777	
66600 -031007777777	OCT 431007777777	
66601 +001040000000	OCT 1040000000	
66602 -035007777777	OCT 435007777777	
66603 +200200000000	OCT 200200000000	
66604 +211100000000	OCT 211100000000	
66605 +200400000000	OCT 200400000000	
66606 +211400000000	OCT 211400000000	
66607 +300400000000	OCT 300400000000	
66610 +207400000000	OCT 207400000000	
66611 +200040000000	OCT 200040000000	
66612 +207040000000	OCT 207040000000	
66613 +207200000000	OCT 207200000000	
66614 +200477777777	OCT 200477777777	
66615 -207777777777	OCT 607777777777	
66616 +200400000001	OCT 200400000001	
66617 -206400000000	OCT 606400000000	
66620 +206200000000	OCT 206200000000	
66621 +200000000003	OCT 200000000003	

9M71B
2/1/63
PAGE 954

SECTION FIVE CONSTANTS

66622 +200000000004	OCT	200000000004
66623 -342525252524	OCT	742525252524
66624 -342525252525	OCT	742525252525
66625 +175002761547	OCT	175002761547
66626 -165715216356	OCT	565715216356
66627 -073125252525	OCT	473125252525
66630 -071525252523	OCT	471525252523
66631 +042557072700	OCT	042557072700
66632 0 00000 0 00000	PZE	
66633 0 00000 0 00000	PZE	
66634 -042562077674	OCT	442562077674
66635 +264704536653	OCT	264704536653
66636 -223702660034	OCT	623702660034
66637 -057447432622	OCT	457447432622
66640 +022544105263	OCT	022544105263
66641 +264400000000	OCT	264400000000
66642 -164542163421	OCT	564542163421
66643 +056000000000	OCT	056000000000
66644 -056000000104	OCT	456000000104
66645 +222000060000	OCT	222000060000
66646 -220000240003	OCT	620000240003
66647 -125377760000	OCT	525377760000
66650 -123000040000	OCT	523000040000
66651 +242457133471	FPCE OCT	242457133471

CONSTANTS FOR DP ROUTINES

	66652	TEMP	BSS	10
66664 -377777777777	ONEZ	OCT	777777777777	
66665 -377777777777		OCT	777777777777	
66666 +272525262525	AB	OCT	272525262525	
66667 +102030405060		OCT	102030405060	
66670 +100252525252	AD1	OCT	100252525252	
66671 +045323232323		OCT	045323232323	
66672 +100101010101	AD2	OCT	100101010101	
66673 +045141414141		OCT	045141414141	
66674 +077000777776	AD3	OCT	077000777776	
66675 +044000777776		OCT	044000777776	
66676 +100000000003	AD4	OCT	100000000003	
66677 +045000000003		OCT	045000000003	
66700 +100000000001	AD5	OCT	100000000001	
66701 +045007777777		OCT	045007777777	
66702 +077000000001	AD6	OCT	077000000001	
66703 +044000000001		OCT	044000000001	
66704 +165377777777	AD7	OCT	165377777777	
66705 +132777777777		OCT	132777777777	
66706 +100400000000	AD8	OCT	100400000000	
66707 +045000000000		OCT	045000000000	
66710 -177222222222	AD9	OCT	577222222222	
66711 -144111111111		OCT	544111111111	

SECTION FIVE CONSTANTS

9M71B
2/1/63
PAGE 955

66712 +17733333333	AD10	OCT	17733333333
66713 +14455555555		OCT	14455555555
66714 +00000000000	AD11	OCT	
66715 +00000000000		OCT	
66716 +00000000000	AD12	OCT	
66717 +00000000000		OCT	
66720 -17711111111	AD13	OCT	57711111111
66721 -14455555555		OCT	54455555555
66722 -17776666666	AD14	OCT	57776666666
66723 -14422222223		OCT	54422222223
66724 +13372525252	AD15	OCT	13372525252
66725 +10034343434		OCT	10034343434
66726 +13052525252	AD16	OCT	13052525252
66727 +07534343434		OCT	07534343434
66730 +20600466666	AD17	OCT	20600466666
66731 +15312345670		OCT	15312345670
66732 -20057777777	AD18	OCT	60057777777
66733 -14577777777		OCT	54577777777
66734 -20600466666	AD19	OCT	60600466666
66735 -15312345670		OCT	55312345670
66736 -27100000000	AD20	OCT	67100000000
66737 -23633333333		OCT	63633333333
66740 +24024444444	AD21	OCT	24024444444
66741 +20533333333		OCT	20533333333
66742 -07700000007	AM1	OCT	47700000007
66743 -04700000007		OCT	44700000007
66744 +035235416517	SM1	OCT	035235416517
66745 +002765234145		OCT	002765234145
66746 -035421366312	SM2	OCT	435421366312
66747 -002551713524		OCT	402551713524
66750 0 00000 0 00000	MP1	PZE	
66751 -032456721352		OCT	432456721352
66752 +21400000000	MP2	OCT	21400000000
66753 0 00000 0 00000		PZE	
66754 -064252525252	MP3	OCT	464252525252
66755 -031373737373		OCT	431373737373
66756 +220000000077	MP4	OCT	220000000077
66757 0 00000 0 00000		PZE	
66760 -0 00000 0 00000	MP5	MZE	
66761 -0 00000 0 00000		MZE	
66762 +263450000000	MP6	OCT	263450000000
66763 +230152000000		OCT	230152000000
66764 +235000000000	MP7	OCT	235000000000
66765 +202110000000		OCT	202110000000
66766 +235210000000	MP8	OCT	235210000000
66767 +202120000000		OCT	202120000000
66770 +200333330000	MP9	OCT	200333330000
66771 +145040000000		OCT	145040000000
66772 +200777770000	MP10	OCT	200777770000
66773 +145040000000		OCT	145040000000
66774 +200777770000	MP11	OCT	200777770000
66775 +145700000000		OCT	145700000000
66776 +200733330000	MP12	OCT	200733330000
66777 +145700000000		OCT	145700000000

S E C T I O N F I V E
C O N S T A N T S

67000 +2406600000007	MP13	OCT	2406600000007
67001 +2057000000000		OCT	2057000000000
67002 +1414400000007	MP14	OCT	1414400000007
67003 +1063000000000		OCT	1063000000000
67004 +2000000000000	MP15	OCT	2000000000000
67005 -3777777777777		OCT	7777777777777
67006 +2007777777777	MP16	OCT	2007777777777
67007 0 00000 0 00000		PZE	
67010 +0647777777777	DV	OCT	0647777777777
67011 +0312525252525		OCT	0312525252525
67012 -0640777777777	DV1	OCT	4640777777777
67013 -0313434343434		OCT	4313434343434
67014 +2020310000000	DV2	OCT	2020310000000
67015 0 00000 0 00000		PZE	
67016 +2020500000000	DV3	OCT	2020500000000
67017 +1477777777777		OCT	1477777777777
67020 +177256352122	DV4	OCT	177256352122
67021 0 00000 0 00000		PZE	
67022 +2025000000000	DV5	OCT	2025000000000
67023 +1470030000000		OCT	1470030000000
67024 +2001400000000	DV6	OCT	2001400000000
67025 0 00000 0 00000		PZE	
67026 +2002000000000	DV7	OCT	2002000000000
67027 +1454000000000		OCT	1454000000000
67030 +2003333333333	DV8	OCT	2003333333333
67031 +1453000000000		OCT	1453000000000
67032 -2004000000000	DV9	OCT	6004000000000
67033 -1452000000000		OCT	5452000000000
67034 0 00000 0 00000	DV10	PZE	
67035 0 00000 0 00000		PZE	
67036 -3770600000000	DV11	OCT	7770600000000
67037 -344001234567		OCT	744001234567
67040 +2000600000000	DV12	OCT	2000600000000
67041 +1454000000000		OCT	1454000000000
67042 -130530134466	DV13	OCT	530530134466
67043 -075202023736		OCT	475202023736
67044 -300713332366	DV14	OCT	700713332366
67045 -245577441743		OCT	645577441743
67046 -332415324200	DV15	OCT	732415324200
67047 -277714137104		OCT	677714137104
67050 +100773225522	DV16	OCT	100773225522
67051 +045417724256		OCT	045417724256
67052 -033070115777	DV17	OCT	433070115777
67053 -000220065144		OCT	400220065144
67054 +361376744133	DV18	OCT	361376744133
67055 +000160611624		OCT	000160611624
67056 +2334000000000	DV19	OCT	2334000000000
67057 +2000000000001		OCT	2000000000001
67060 +2334000000000	DV20	OCT	2334000000000
67061 +2000000000002		OCT	2000000000002
67062 -2004000000000	DV21	OCT	6004000000000
67063 +1450000000001		OCT	1450000000001
67064 +3464000000000	DV22	OCT	3464000000000
67065 +3130000000002		OCT	3130000000002
67066 +377214567244	TAD1	OCT	377214567244
67067 +344214567244		OCT	344214567244

SECTION FIVE CONSTANTS

9M71B
2/1/63
PAGE 957

67070	+377163210533	TAD2	OCT	377163210533
67071	+344163210533		OCT	344163210533
67072	+031222222222	TAD3	OCT	031222222222
67073	+000222222222		OCT	000222222222
67074	+031111111111	TAD4	OCT	031111111111
67075	+000111111111		OCT	000111111111
67076	+100700000000	TMP1	OCT	100700000000
67077	0 00000 0 00000		PZE	
67100	+077700000000	TMP2	OCT	077700000000
67101	0 00000 0 00000		PZE	
67102	+267200000000	TDV1	OCT	267200000000
67103	0 00000 0 00000		PZE	
67104	+033400000000	TDV2	OCT	033400000000
67105	+000000000000		OCT	000000000000
67106	+200400000000	HALF	OCT	200400000000
67107	+145000000000		OCT	145000000000
67110	-177777777776	QU0	OCT	577777777776
67111	-177777777775		OCT	577777777775
67112	-177777777773		OCT	577777777773
67113	-177777777767		OCT	577777777767
67114	-177777777757		OCT	577777777757
67115	-177777777737		OCT	577777777737
67116	-177777777677		OCT	577777777677
67117	-177777777577		OCT	577777777577
67120	-177777777377		OCT	577777777377
67121	-177777776777		OCT	577777776777
67122	-177777775777		OCT	577777775777
67123	-177777773777		OCT	577777773777
67124	-177777767777		OCT	577777767777
67125	-177777757777		OCT	577777757777
67126	-177777737777		OCT	577777737777
67127	-177777677777		OCT	577777677777
67130	-177777577777		OCT	577777577777
67131	-177777377777		OCT	577777377777
67132	-177776777777		OCT	577776777777
67133	-177775777777		OCT	577775777777
67134	-177773777777		OCT	577773777777
67135	-177767777777		OCT	577767777777
67136	-177757777777		OCT	577757777777
67137	-177737777777		OCT	577737777777
67140	-177677777777		OCT	577677777777
67141	-177577777777		OCT	577577777777
67142	-177377777777		OCT	577377777777
67143	-177000000001		OCT	577000000001
67144	0 00000 0 00000	INST	PZE	
67145	0021 00 0 66050	RIT10	TTR	LITE1
67146	0000 00 0 66503		HTR	IAC+1
67147	+000000000200	TRA	OCT	200
67150	-0056 00 400000	LNT	LNT	400000
67151	0021 00 0 66054	FROM1	TTR	LITE2
67152	0021 00 0 00103	CATCH	TTR	SEQR
67153	0500 00 1 66604		CLA	FPN+46,1
67154	0241 00 1 66605		FDP	FPN+47,1
67155	-1 00000 0 00000	LAST	STR	
67156	+202400000000	SQRA	DEC	2.0,8.0,7.0,15.0,12.0,25.0
67157	+204400000000			

9M71B
2/1/63
PAGE 958

S E C T I O N F I V E
C O N S T A N T S

67160	+203700000000				
67161	+204740000000				
67162	+204600000000				
67163	+205620000000				
67164	+206770000000	DEC	63.0,91.0,123.0,214.0		
67165	+207554000000				
67166	+207754000000				
67167	+210654000000				
67170	+203400000000	SQRN DEC	4.0,64.0,49.0,225.0,144.0,625.0		
67171	+207400000000				
67172	+206610000000				
67173	+210702000000				
67174	+210440000000				
67175	+212470400000				
67176	+214760100000	DEC	3969.0,8281.0,15129.0,45796.0		
67177	+216402620000				
67200	+216730620000				
67201	+220545620000				
67202	+202600000000	MIN3 OCT	202600000000		
67203	+201400000000	COEF DEC	1.0		
	67204	SALON BSS	2		
67206	+001000000000	HALPH OCT	001000000000		
67207	+000777777777	KK OCT	000777777777		
67210	+233000000000	FLOAT OCT	233000000000		
67211	+202400000000	DEC	2.0,3.0,5.0,7.0	PRIME NOS	
67212	+202600000000				
67213	+203500000000				
67214	+203700000000				
67215	+204540000000	DEC	11.0,13.0,17.0,19.0,23.0,29.0		
67216	+204640000000				
67217	+205420000000				
67220	+205460000000				
67221	+205560000000				
67222	+205720000000				
67223	+202600000000	PRIMS DEC	3.0,2.0,7.0,3.0,97.0,5.0		
67224	+202400000000				
67225	+203700000000				
67226	+202600000000				
67227	+207604000000				
67230	+203500000000				
67231	+212762400000	DEC	997.0,7.0		
67232	+203700000000				
67233	0000 00 0 00002	FERM HTR	2		

SECTION FIVE CONSTANTS

9M71B
2/1/63
PAGE 959

67234	COM	BSS	20
67570	TABLE	BES	200
67571	FL0T	OCT	263000000000
67572		OCT	230000000010
67573	QUADN	OCT	222444444000
67574		OCT	224444444000
67575		OCT	223666666000
67576	PZE		
67577	OCT		245516272615
67600	OCT		212040000000
67601	OCT		223444444000
67602	OCT		171000000000
67603	OCT		601400000000
67604	OCT		602600000000
67605	OCT		222555555000
67606	OCT		225422221600
67607	OCT		627711110200
67610	PZE		
67611	OCT		253617776340
67612	OCT		220000620000
67613	OCT		226477777300
67614	OCT		174000000000
67615	OCT		203400000000
67616	OCT		604500000000
67617	OCT		222612477000
67620	OCT		225755216600
67621	OCT		631673746700
67622	PZE		
67623	OCT		255621450610
67624	OCT		222004244000
67625	OCT		227500503140
67626	OCT		175000000000
67627	OCT		204400000000
67630	OCT		605440000000
67631	SAL	OCT	002000000000
67632	DTW	DEC	2.0
67633	B1516	OCT	000006000000
67634	B17	OCT	000001000000
67635	B1617	OCT	000003000000
67636	TWOH	OCT	200000000000
67637	LOCT	PZE	
67640	SDC	PZE	
67641	FDC	PZE	
67642	TSAVE	PZE	
67643	AT1	OCT	163000077000
67644		OCT	130000007700
67645	AT2	OCT	345000000000
67646		PZE	
67647	AT3	OCT	667252525252
67650		OCT	634373737373
	SIGN	MZE	