

R0001 WE ARE DEEPLY INDEBTED TO THE ONE, THE ONLY, THE GREAT JOHN SHAW FOR THE FOLLOWING STRONG MAGIC....
 R0003 *JSOCTL

0004 * SETLOC,2 SIZ PASS 1 B1

0005 * MASKGRP,3 S,1 F,1

R0006 THE SACO PART OF PASS 1 CONTAINS THE FOLLOWING DATA:

R0007 MAXIMUM LEGAL NUMERIC OPERATION CODE, GREATEST ADDRESS OF A MEMORY LOCATION, DITTO + 1, BLOCK SIZE - 1,
 R0009 SHIFT AMOUNTS FOR CONVERTING A BLOCK NUMBER TO AN ADDRESS AND FOR STORING A NUMERIC OPERATION CODE, A TABLE
 R0011 SHOWING WHICH LOCATIONS IN SACO ARE ERASABLE, FIXED, AND SPECIAL/NONEXISTENT, AND A TABLE OF SYMBOLIC OPERA-
 R0013 TION CODES, EACH WITH EITHER CODED BINARY INFORMATION (INSTRUCTION CODES) OR AN ADDRESS (CLERICAL CODES).
 R00142 IN SACO, THIS TABLE IS LOCATED IN BANK 5.

R0015 CODING IS ALSO PROVIDED HERE TO PROCESS (PARTLY) THE ADDRESS FIELD OF POLISH OPERATOR CARDS.

R0017 *QUANTITIES FILLED IN FOR REFERENCE BY GENERAL PASS 1.

0018 SC OP THRS SPEC OP THRS

0019 SC MAX NOP FXBIN 7

0020 SC MAX LOC OCT - 17777

0021 SC ADJ LIM OCT - 20000

0022 SC BLK 1S OCT -377

0023 SC SHIFTS OCT 0000 0044 24

0024 SC TYP TAB CAC COUNT STA 1024 SACO MEMO -

00241 SC SUB LOC EQUALS SC TYP TAB

00242 SC COJNSP EQUALS SC TYP TAB

0025 *SC SPCIAL TS C,+1 OP FOUND SEG TEST

0026 * TS SACO MXR Z,MXR POLISH Q

00261 SC ELEFT P CAC 6149 GOT ELEFP

00262 SC FLEFT P CAC 6165 1024 SC FLEFTO -

0027 SACO MEMO OCT -1000 0057

0028 OCT -4000 1777

0029 OCT -2001 7777

0030 DEC BB00 FFFF

00301 *SEG MEMO OCT -1001 7777

0031 * RESERVE 23

00312 *SEG TEST EX SWITCH BIT 7 SEG TEST

00314 * LA SEG TEST ZERO POST SPEC

00316 * TS SEG MEMO SACO MEMO +2 POST SPEC

EXIT IF NOT IN A SEGMENT ASSEMBLY.
 CHANGE FIXED TO SPEC/NON AND EXIT.

B238994

P0032 FIELD AND SHIFT MASKS FOR THE SACO PART OF PASS 1.

00329	B,VMASKM	OCT	0
0033	B,C1T6M	OCT	7777 7777 7777
0034	B,ONESM	OCT	7777 7777 7777 7777
0035	B,B18T24M	OCT	0000 0177
0036	B,B22T25M	OCT	0000 0007 4
0037	B,B22T32M	OCT	0000 0007 776
0038	B,B25T31M	OCT	-7740 0000
0039	B,BIT29M	OCT	-0200 0000
0040	B,C7T3M	OCT	-7777
0041	B,B37348M	OCT	-4001
0042	B,B41T45M	OCT	-370
0043	B,TWOM	OCT	-2
0044	B,ONEM	OCT	-1
0045	B,CHAR7M	OCT	-7700
0046	B,CHAR8M	OCT	-77

R0048 CONSTANTS.

00481	B36T38M	OCT	-16000
00482	OCT 2000	OCT	-2000
00483	OCT 5777	OCT	-5777
0049	SACO MXR	MASKBASE	S,1 F,1
0050	SPECOND 7	OCT	-70
0051	SPECONI 12	OCT	-120
0052	2 POLDP 7	OCT	-0340 0000
0053	2 POLDP 17	OCT	-0740 0000
0054	2 POLDP 27	OCT	-1340 0000

R00541 SPECIAL ROUTINE IN PASS 1 FOR SACO TO ALLOCATE LEFTOVER INSTRUCTIONS AND CONSTANTS TO FIXED BANKS.

00542	SC FLEFTO	LA	LOC CTR	OCT 5777	FF OR ERAS	
005422		LA	ONES	LOC CTR	FF OR ERAS +1	IF BAD LOC CTR, ANYWHERE IN FIXED IS OK.
00543		SS	LOC CTR	B36T38M	C,+2	IF LOC CTR IS IN A BANK, SO IS LEFTOVER.
00544		TS	C,+1	COMMON +2	GOT FLEFP	
00545		CAC		6149	-	
00546	FF OR ERAS	LA	OCT 2000	LOC CTR	GOT FLEFP	IF FIXED FIXED, ORIG. PARAMETER WAS OK.
00547		TS	C,+1	COMMON +2	GOT FLEFP	IF ERASABLE, ANYWHERE IN FIXED IS OK.
00548		CAC		6245	1024	-

P0055	SPECIAL ROUTINE IN PASS 1 FOR SACO TO RESPOND TO THE FINDING OF AN INSTRUCTION OPERATION CODE. IF					
R0057	THE CODE IS A POLISH OR STORE ADDRESS CONSTANT, RESETS THE BEGINNING-OF-EQUATION INDICATOR (BIT 29 OF SWITCH)					
R0059	AND RETURNS TO THE GENERAL INSTRUCTION-PROCESSING PROCEDURE. IF THE CODE IS A POLISH OPERATOR, THE SEVEN-BIT					
R0061	EQUIVALENT IS PLACED IN BITS 18-24 OF HEALTH AND THE BEGINNING-OF-EQUATION INDICATOR IS EXAMINED. IF IT IS					
R0063	RESET (AS IS TRUE INITIALLY), IT IS NOW SET AND 07 IS SUPPLIED AS THE SECOND OPERATOR, TO INDICATE THAT PASS 2					
R0065	IS TO DECODE AN OPERATOR WORD COUNT FROM THERE. OTHERWISE, THE ADDRESS FIELD IS INTERPRETED AS FOLLOWS...					
R0067	BLANK: OPERATOR 00, NUMERIC: OPERATOR 07 (ASSUME NEW EQUATION), SYMBOLIC WITH MODIFIER: OPERATOR 17 (ILLEGAL					
R0069	FORMAT), SYMBOLIC: VALUE FROM OPERATION CODE TABLE IF POLISH OPERATOR, OR OPERATOR 27 OTHERWISE.					
0071	POLISH Q	NA, ONEM	4,0	ZERO	POLISH OP	
0072		SWS, B22T32M	N,X4	16,L	HEALTH	SEND BITS AS USUAL IF NOT POLISH.
0074		NA, TWOM	4,0	ZERO	SC P1 EXIT	EXIT IF AN IMPLIED-ADDRESS CODE.
0076		LA, B41T45M	4,0	SPECOND 7	SC P1 EXIT	
0077		LA, B41T45M	SPECON 12	4,0	SC P1 EXIT	BRANCH IF NOT A POLISH OR STORE ADDRESS.
0079		TS, BIT29M	ZERO	SWITCH	SC P1 EXIT	RESET INDICATOR, EXIT.
0081	POLISH OP	SWS, B18T24M	N,X4	21,L	HEALTH	SEND EQUIVALENT OF LEFT OPERATOR.
0083		SM	HEALTH	BIT 32	HEALTH	INDICATE POLISH OPERATOR WORD.
0085		NA, BIT29M	SWITCH	ZERO	TWO POLES	BRANCH IF NOT BEGINNING OF EQUATION.
0087		SM	HEALTH	2 POLOP 7	HEALTH	SEND INDICATION TO PASS 2.
0089		TS, BIT29M	ONES	SWITCH	SC P1 EXIT	SET INDICATOR AND EXIT.
0091	TWO POLES	TX	P1 MASKS	-	Z,MXR	
0092		TS	Z,SC	Z,X4	ADR FIELD	DECODE ADDRESS FIELD.
0094		LA	FIELD COD	ZERO	INSTRUCT	FAST EXIT FOR BLANK (VACUOUS) OPERATOR.
0096		TX	SACO MXR	-	Z,MXR	
0097		NA	FIELD COD	BIT 1	POLISH OP +3	BRANCH IF ADDRESS FIELD IS NOT SYMBOLIC.
0099		LA	FIELD COD +1	ZERO	C,+2	BRANCH IF NO MODIFIER.
0101		TS, B25T31M	2 POLOP 17	HEALTH	SC P1 EXIT	INDICATE IMPROPER ADDRESS FIELD, EXIT.
0103		NA, CHAR8M	ADR WD	ASTRISKS	C,+3	BRANCH IF NO DETACHED ASTERISK.
0105		NA, CHAR7M	ADR WD	BLANKS	POLE FAIL	BRANCH IF OPERATOR SYMBOL TOO LONG.
0107		TS, CHAR8M	BLANKS	ADR WD	POLE SEEK	BLANK OUT ASTERISK, LOOK UP CODE.
0109		NA, C7T8M	ADR WD	BLANKS	POLE FAIL	BRANCH IF MORE THAN SIX CHARACTERS.
0111		TS	N L CHAR 6	Z,X4	C,+2	REVERSE BASE FOR SET OF CHARACTER MASKS.
0113		NA, VMASKM	ADR WD	BLANKS	C,+2	SCAN TO LEFT UNTIL A CHARACTER IS FOUND.
0115		TS	N,X4,1	N,MXR	C,-1	
0116		NA, VMASKM	ADR WD	ASTRISKS	POLE SEEK	PROCEED WITH SEARCH IF NO ASTERISK.
0118		SS	BLANKS	N,MXR	ADR WD	BLANK OUT ATTACHED ASTERISK.
0120	POLE SEEK	TX	SC OP THRS	-	Z,X4	
0121		SWS, B22T25M	ADR WD	17	C,+1	
0122		SWE, ONESM	4,0	0	Z,X4	SELECT SECTION OF OP CODE LIST.
0124		TX	Z,SC,1	-	-	
0125		LA	N,X4,1	ZERO	POLE FAIL	BRANCH IF OP CODE NOT FOUND.
0127		NA, C1T6M	ADR WD	4,0	C,-1	SEARCH THROUGH SELECTED SUBLIST.
0129		LA, B37B48M	ONES	4,0	C,+2	BRANCH IF POLISH OPERATOR FOUND.
0131	POLE FAIL	TS, B25T31M	2 POLOP 27	HEALTH	SC P1 EXIT	INDICATE FAILURE AND EXIT.
0133		SWS, B25T31M	N,X4	14,L	HEALTH	SEND EQUIVALENT OF RIGHT OPERATOR.
0135	SC P1 EXIT	TS	P1 MASKS	Z,MXR	INSTRUCT	

P01352 SPECIAL PROCESSING FOR COUNT* CODE.

01354 MASKGRP S,0 F,0

01356 COUNT STA NA, CHAR1 ADR WD DOLLARS ILL COUNT C
 01358 SWS, CHAR1 LOC CTR 16 ADR WD S REPLACE DOLLAR SIGN WITH BANK NUMBER.

R0136 OPERATION CODE THREADS AND TABLES FOR SACO, USED IN PASS 1.

01362 SETLOC,3 0 B5

01364 SETLOC,4 15 B5

0137	OP THRS	CAC	CODES 01	BAD CODE
0138		CAC	CODES 11	CODES 10
0139		CAC	CODES 21	CODES 20
0140		CAC	CODES 31	CODES 30
0141		CAC	CODES 41	BAD CODE
0142		CAC	CODES 51	CODES 50
0143		CAC	CODES 61	CODES 60
0144		CAC	CODES 71	CODES 70

R01444 SACO OPERATION CODE TABLES. PLEASE IGNORE THE BANK ERRORS.

0145	CODES 01	M,A,MA	A,SK	A,	B,7400
0146		M,A,DE	A,C	A,	DECIMAL
0147		M,A,DA	A,D	A,	B,4341
0148		M,A,DD	A,V	A,	B,4641
0149		M,A,HE	A,AD	A,	HEAD TAIL
0150		M,A,ME	A,MO	A,RY	LATE MEM
0151	BAD CODE	OCT	0		
0152	CODES 11	M,A,DV	A,	A,	B,6600
0153		M,A,MS	A,K	A,	B,7400
0154		M,A,DS	A,U	A,	B,4441
0155		M,A,DS	A,Q	A,	B,5331
0156		M,A,MX	A,V	A,	B,5241
0157		OCT	0		
0158	CODES 10	M,A,MP	A,	A,	B,6200
0159		M,A,DM	A,P	A,	B,4541
0160		M,A,DM	A,PR	A,	B,5101
0161		M,A,DO	A,T	A,	B,5641
0162		M,A,UN	A,IT	A,	B,4231
0163		M,A,DM	A,QV	A,E	B,5531
0164		M,A,DO	A,UB	A,LE	B,7002
0165		OCT	0		

P0166 SACO OPERATION CODE TABLES CONTINUED. PLEASE IGNORE THE BANK ERRORS.

0167	CODES 21	M,A,AD	A,	A,	B,7000
0168		M,A,ND	A,X	A,	B,5040
0169		M,A,VA	A,D	A,	B,5341
0170		M,A,AC	A,OS	A,	B,4731
0171		M,A,AB	A,S	A,	B,4531
0172		M,A,AB	A,VA	A,L	B,4331
0173		M,A,VD	A,EF	A,	B,5731
0174		M,A,AD	A,RE	A,S	B,4060
0175		M,A,RE	A,TU	A,RV	B,4006
0176		M,A,NE	A,XT	A,	B,5711
0177		M,A,RE	A,LI	A,NI	B,5016
0178		M,A,RE	A,SU	A,ME	B,5026
0179		OCT	0		

0180	CODES 20	M,A,	A,	A,	B,4100
0181		OCT	0		

0182	CODES 31	M,A,IS	A,	A,	IS EQUALS
0183		M,A,EX	A,TE	A,ND	B,5132
01831		M,A,EV	A,EN	A,	EVEN
0184		M,A,IT	A,C	A,	B,4041
0185		M,A,IT	A,CQ	A,	B,5751
0186		M,A,VX	A,M	A,	B,5301
0187		M,A,VS	A,U	A,	B,4141
0188		M,A,VS	A,RT	A,	B,5501
0189		M,A,VS	A,LT	A,	B,5541
0190		M,A,VX	A,SC	A,	B,4101
0191		M,A,VX	A,V	A,	B,5701
0192		M,A,EX	A,IT	A,	B,4011
0193		M,A,RT	A,B	A,	B,4051
0194		M,A,AX	A,T,	A,1	B,4111
0195		M,A,AX	A,T,	A,2	B,4151
0196		M,A,AX	A,C,	A,1	B,5211
0197		M,A,AX	A,C,	A,2	B,5251
0198		M,A,VS	A,Q	A,	B,4431
0199		M,A,AS	A,T,	A,1	B,5111
0200		M,A,AS	A,T,	A,2	B,5151
0201		M,A,AS	A,IN	A,	B,4631
0202		M,A,IT	A,A	A,	B,5511
0203		M,A,IT	A,CI	A,	B,5551
0204		OCT	0		

P02041 SACO OPERATION CODE TABLES CONTINUED. PLEASE IGNORE THE BANK ERRORS.

0205	CODES 30	M,A,IN	A,DE	A,X	B,5040
0206		M,A,EQ	A,UA	A,L5	IS EQUALS
0207		M,A,ER	A,AS	A,E	ERASE
0208		M,A,NO	A,LO	A,D	B,5411
0209		M,A,NO	A,LO	A,AD	B,5411
0210		M,A,RO	A,UN	A,D	B,5451
0211		M,A,VM	A,OV	A,E	B,4131
0212		M,A,IN	A,CR	A,,1	B,4611
0213		M,A,IN	A,CR	A,,2	B,4651
0214		M,A,VP	A,RO	A,J	B,5741
0215		M,A,NO	A,OP	A,	B,5402
0216		M,A,IN	A,HI	A,NT	B,5022
0217		OCT	0		
0219	CODES 41	M,A,OC	A,T	A,	OCTAL
0220		M,A,OC	A,TA	A,L	OCTAL
0221		M,A,2D	A,EC	A,	2DECIMAL
0222		M,A,SE	A,TL	A,OC	SETLOC
0223		M,A,BH	A,IZ	A,	B,4401
0224		M,A,BD	A,SU	A,	B,4501
0225		M,A,BD	A,DV	A,	B,4701
0226		M,A,SI	A,GN	A,	B,5201
0227		M,A,SI	A,N	A,	B,5031
0228		M,A,SG	A,N	A,	B,5201
02281 *		M,A,SE	A,GN	A,UM	LATE MEM
0229		OCT	0		
0230	CODES 51	M,A,SU	A,	A,	B,7200
0231		M,A,ST	A,OR	A,E	B,4110
0232		M,A,OV	A,SK	A,	B,6402
0233		M,A,SW	A,IT	A,CH	B,5651
0234		M,A,BZ	A,E	A,	B,5401
0235		M,A,ST	A,Z	A,	B,4241
0236		M,A,BV	A,SU	A,	B,5441
0237		M,A,SX	A,A,	A,1	B,4411
0238		M,A,SX	A,A,	A,2	B,4451
0239		M,A,SU	A,BR	A,0	SJBRO
0240		OCT	0		
0241	CODES 50	M,A,BL	A,OC	A,K	BLOCK
0242		M,A,BP	A,L	A,	B,5601
0243		M,A,BM	A,N	A,	B,4201
0244		M,A,BO	A,V	A,	B,4301
0245		M,A,SQ	A,RT	A,	B,5231
0246		M,A,SM	A,OV	A,E	B,5631
0247		M,A,20	A,CT	A,	2OCTAL
0248		M,A,20	A,CT	A,AL	2OCTAL
0249		M,A,SQ	A,UA	A,RE	B,6202
0250		OCT	0		

P0251 SACO OPERATION CODE TABLES CONCLUDED. PLEASE IGNORE THE BANK ERRORS.

0252	CODES 61	M,A,TC	A,	A,	B,4000
0253		M,A,XC	A,H	A,	B,5400
0254		M,A,CC	A,S	A,	B,4400
0255		M,A,CA	A,F	A,	B,5410
0256		M,A,TE	A,ST	A,	B,5611
0257		M,A,XC	A,HX	A,,1	B,4511
0258		M,A,XC	A,HX	A,,2	B,4551
0259		M,A,XA	A,D,	A,1	B,4711
0260		M,A,XA	A,D,	A,2	B,4751
0261		M,A,TI	A,X,	A,1	B,5311
0262		M,A,TI	A,X,	A,2	B,5351
0263		M,A,TA	A,D	A,	B,4741
0264		M,A,TC	A,R	A,	B,4000
0265		M,A,TC	A,AA	A,	B,6412
0266		M,A,XA	A,Q	A,	B,4002
0267		M,A,CA	A,DR	A,	B,4070
0268		M,A,XC	A,AD	A,R	B,4120
0269		M,A,TA	A,IL	A,	HEAD TAIL
0270		OCT	0		
0271	CODES 60	M,A,=	A,	A,	IS EQUALS
0272		M,A,P	A,	A,	B,4100
0273		OCT	0		
0274	CODES 71	M,A,CS	A,	A,	B,6000
0275		M,A,TS	A,	A,	B,6450
02751		M,A,TS	A,F	A,	B,6400
0276		M,A,TS	A,U	A,	B,5141
0277		M,A,TS	A,RT	A,	B,5041
0278		M,A,TS	A,LT	A,	B,4601
0279		M,A,TS	A,LC	A,	B,5001
0280		M,A,LX	A,A,	A,1	B,4211
0281		M,A,LX	A,A,	A,2	B,4251
0282		M,A,LX	A,C,	A,1	B,4311
0283		M,A,LX	A,C,	A,2	B,4351
0284		M,A,XS	A,U,	A,1	B,5011
0285		M,A,XS	A,U,	A,2	B,5051
0286		OCT	0		
0287	CODES 70	M,A,CO	A,M	A,	B,6002
0288		M,A,LO	A,C	A,	SETLCC
0289		M,A,LO	A,DO	A,N	B,5711
0290		M,A,TM	A,OV	A,E	B,4031
0291		M,A,TP	A,	A,	B,4031
0292		M,A,CO	A,MP	A,	B,5431
0293		M,A,CO	A,S	A,	B,5131
02935		M,A,CO	A,UN	A,T	COUNT
02936		M,A,=P	A,LU	A,S	EQU PLUS
02937		M,A,=M	A,IN	A,US	EQU MINUS
0294		OCT	0		