

LOC	OBJECT CODE	ADDR1	ADDR2	STMT
				2 **** 3 * BC ILC 4 **** 5 * 6 * This program verifies proper handling of the 370 BC mode PSW 7 * ILC field. The ILC field in a 370 BC mode PSW is in the high- 8 * order 2 bits of the second word of the PSW (bits 32 and 33). 9 * An ILC value of 00 (binary) indicates an ILC of 0 (zero). An 10 * ILC value of 01 indicates an ILC of 2 (two). An ILC value of 11 * 10 indicates an ILC of 4 (four). An ILC value of 11 indicates 12 * an ILC of 6 (six). 13 * 14 * The technique used is to force a program check interruption 15 * on instructions of different lengths (a 2 byte instruction, 16 * a 4 byte instruction and a 6 byte instruction), copying the 17 * high-order byte of the second word of the resulting Program 18 * Old PSW from the Program Check, and then comparing it with 19 * our expected value. For ILC 0, we use a LPSW of an invalid 20 * EC mode PSW, thus causing an early Specification exception. 21 * For ILCs 2, 4 and 6 we use a CLCL, CLI and MVC instruction 22 * with a base register value causing an Addressing Exception. 23 * 24 ****
				26 **** 27 * LOW CORE 28 ****
00000000	00000000 00000303	00000000	00000000	30 TEST START 0 31 USING TEST,0 Use absolute addressing
00000000	00000000 00000200	00000000	00000000	33 ORG TEST+X'00' 34 DC XL4'00000000',A(BEGIN) S/370 Restart New PSW
00000008	00000000 00000000	00000008	00000028	36 ORG TEST+X'28' 37 PGMOLD DC XL4'00000000',A(0) S/370 Program Old PSW
00000030	00000000 00000000	00000030	00000068	39 ORG TEST+X'68' 40 PGMNEW DC XL4'00000000',A(0) S/370 Program New PSW
00000070	00000000	00000070	00000090	42 ORG TEST+X'90' 43 TEA_DXC DC XL4'00000000' S/370 TEA (*not* 390/zArch DXC!)

LOC	OBJECT CODE	ADDR1	ADDR2	STMT			
				45 ****			
				46 *		MAINLINE	
				47 ****			
00000094		00000094	00000200	49	ORG	TEST+X'200'	Start of test program
00000200	45E0 0228		00000228	51 BEGIN	BAL	R14,ILC0TEST	
00000204	45E0 024A		0000024A	52	BAL	R14,ILC2TEST	
00000208	45E0 0270		00000270	53	BAL	R14,ILC4TEST	
0000020C	45E0 0296		00000296	54	BAL	R14,ILC6TEST	
00000210	8200 0218		00000218	56	LPSW	GOODPSW	
00000214	8200 0220		00000220	57 FAIL	LPSW	FAILPSW	
00000218	00020000 00000000			59 GOODPSW	DC	0D'0',XL4'00020000',A(0)	
00000220	00020000 00000BAD			60 FAILPSW	DC	0D'0',XL4'00020000',A(X'BAD')	

LOC	OBJECT CODE	ADDR1	ADDR2	STMT			
				62 ****	*****	*****	*****
				63 *	ILC 0		
				64 ****	*****	*****	*****
00000228	4100 0234		00000234	66 ILC0TEST LA R0,ILC0CONT	R0 --> continue		
0000022C	BE07 006D		0000006D	67 STCM R0,B'0111',PGMNEW+4+1	Program New --> continue		
00000230	8200 02C8		000002C8	69 LPSW BADECPSW	Specification Exception!		
00000234	D200 0300 002C	00000300	0000002C	71 ILC0CONT MVC ILC0ACT,PGMOLD+4	Save Program Old ILC byte		
0000023A	94C0 0300		00000300	72 NI ILC0ACT,B'11000000'	Discard unwanted bits		
0000023E	D500 0300 02D0	00000300	000002D0	73 CLC ILC0ACT,ILC0EXP	Actual = Expected?		
00000244	078E			74 BER R14	Yes, return		
00000246	8200 0220		00000220	75 LPSW FAILPSW	No?! FAIL!		

LOC	OBJECT CODE	ADDR1	ADDR2	STMT	
				77 ****	*****
				78 *	ILC 2
				79 ****	*****
0000024A	4100 025A	0000025A	81	ILC2TEST LA R0,ILC2CONT	R0 --> continue
0000024E	BE07 006D	0000006D	82	STCM R0,B'0111',PGMNEW+4+1	Program New --> continue
00000252	58C0 02CC	000002CC	83	L R12,MAXADDR	R12 <= X'00FFFFFF'
00000256	18DC		84	LR R13,R12	R13 <= X'00FFFFFF'
00000258	0FCC		86	CLCL R12,R12	Addressing Exception!
0000025A	D200 0301 002C	00000301	0000002C	88 ILC2CONT MVC ILC2ACT,PGMOLD+4	Save Program Old ILC byte
00000260	94C0 0301	00000301	89	NI ILC2ACT,B'11000000'	Discard unwanted bits
00000264	D500 0301 02D1	00000301	000002D1	90 CLC ILC2ACT,ILC2EXP	Actual = Expected?
0000026A	078E		91	BER R14	Yes, return
0000026C	8200 0220	00000220	92	LPSW FAILPSW	No?! FAIL!

LOC	OBJECT CODE	ADDR1	ADDR2	STMT		
				94 ****	*****	*****
				95 *	ILC 4	*****
				96 ****	*****	*****
00000270	4100 0280	00000280	98	ILC4TEST LA R0,ILC4CONT	R0 --> continue	
00000274	BE07 006D	0000006D	99	STCM R0,B'0111',PGMNEW+4+1	Program New --> continue	
00000278	58C0 02CC	000002CC	100	L R12,MAXADDR	R12 <= X'00FFFFFF'	
0000027C	9500 C000	00000000	102	CLI 0(R12),0	Addressing Exception!	
00000280	D200 0302 002C	00000302	0000002C	104 ILC4CONT MVC ILC4ACT,PGMOLD+4	Save Program Old ILC byte	
00000286	94C0 0302	00000302	105	NI ILC4ACT,B'11000000'	Discard unwanted bits	
0000028A	D500 0302 02D2	00000302	000002D2	106 CLC ILC4ACT,ILC4EXP	Actual = Expected?	
00000290	078E		107	BER R14	Yes, return	
00000292	8200 0220		00000220	108 LPSW FAILPSW	No?! FAIL!	

LOC	OBJECT CODE	ADDR1	ADDR2	STMT		
				110 ****	*****	*****
				111 *	ILC 6	*****
				112 ****	*****	*****
00000296	4100 02A8	000002A8	114	ILC6TEST LA R0,ILC6CONT	R0 --> continue	
0000029A	BE07 006D	0000006D	115	STCM R0,B'0111',PGMNEW+4+1	Program New --> continue	
0000029E	58C0 02CC	000002CC	116	L R12,MAXADDR	R12 <= X'00FFFFFF'	
000002A2	F922 02CD 02CD	000002CD	000002CD	118 CP BADPACK,BADPACK	Data Exception!	
000002A8	D200 0303 002C	00000303	0000002C	120 ILC6CONT MVC ILC6ACT,PGMOLD+4	Save Program Old ILC byte	
000002AE	94C0 0303	00000303	00000303	121 NI ILC6ACT,B'11000000'	Discard unwanted bits	
000002B2	D500 0303 02D3	00000303	000002D3	122 CLC ILC6ACT,ILC6EXP	Actual = Expected?	
000002B8	4770 0214		00000214	123 BNE FAIL	No?! FAIL!	
000002BC	5570 0090		00000090	124 CL R7,TEA_DXC	TEA should still be zero	
000002C0	078E			125 BER R14	Yes, return	
000002C2	8200 0220		00000220	126 LPSW FAILPSW	No?! FAIL!	

LOC	OBJECT CODE	ADDR1	ADDR2	STMT
				128 **** 129 * Working storage 130 ****
				132 * Invalid EC mode PSW... (bits 24-31 s/b zero but they're not!)
000002C8	000800FF 00FFFFFF			134 BADECPSW DC 0D'0',XL4'000800FF',XL4'00FFFFFF'
				136 * Invalid storage address...
		000002CC	00000004	138 MAXADDR EQU BADECPSW+4,4
				140 * Invalid packed data...
		000002CD	00000003	142 BADPACK EQU MAXADDR+1,3
				144 * Expected values...
000002D0	00			146 ILC0EXP DC X'00'
000002D1	40			147 ILC2EXP DC X'40'
000002D2	80			148 ILC4EXP DC X'80'
000002D3	C0			149 ILC6EXP DC X'C0'
				151 * Actual values...
000002D4		000002D4	00000300	152 ORG TEST+X'300'
00000300	FF			154 ILC0ACT DC X'FF'
00000301	FF			155 ILC2ACT DC X'FF'
00000302	FF			156 ILC4ACT DC X'FF'
00000303	FF			157 ILC6ACT DC X'FF'

LOC	OBJECT CODE	ADDR1	ADDR2	STMT
				159 **** Register equates ****
				160 *
				161 ****
		00000000 00000001	163 R0	EQU 0
		00000001 00000001	164 R1	EQU 1
		00000002 00000001	165 R2	EQU 2
		00000003 00000001	166 R3	EQU 3
		00000004 00000001	167 R4	EQU 4
		00000005 00000001	168 R5	EQU 5
		00000006 00000001	169 R6	EQU 6
		00000007 00000001	170 R7	EQU 7
		00000008 00000001	171 R8	EQU 8
		00000009 00000001	172 R9	EQU 9
		0000000A 00000001	173 R10	EQU 10
		0000000B 00000001	174 R11	EQU 11
		0000000C 00000001	175 R12	EQU 12
		0000000D 00000001	176 R13	EQU 13
		0000000E 00000001	177 R14	EQU 14
		0000000F 00000001	178 R15	EQU 15
		00000000 180	END	TEST



## MACRO DEFN REFERENCES

No defined macros

DESC	SYMBOL	SIZE	POS	ADDR
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Entry: 0

Image	IMAGE	772	000-303	000-303
Region		772	000-303	000-303
CSECT	TEST	772	000-303	000-303

STMT

FILE NAME

1 c:\Users\Fish\Documents\Visual Studio 2008\Projects\MyProjects\ASMA-0\bc-ilc\bc-ilc.asm

\*\* NO ERRORS FOUND \*\*