2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00 04 04 04 08 08 08 08 0c 0c 0c 10 10 10 14 14 14 14 18	0 addi 20020005 addi 20020005 addi 20020005 addi 20020005 addi 20030000 addi 20030000 addi 20030000 addi 20030000 addi 20030000 addi 20067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824 and 00642824	0 1 9 10 0 1 1 9 10 0 1 1 9 10 0 1 1 9 10 0 1 1 9 10 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1	00 04 00 x 04 08 00 x 08 0c 0c x 0c 10 03 x 10 14	04 x 05 x 04 x 06 x 0c x 0c x -9 x 10 x 05 x	04 x 05 x 08 x 0c x 0c x 10 x 11	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0420 0800 5010
3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	04 04 04 08 08 08 00 0c 0c 0c 10 10 10 14 14 14 18	addi 20020005 addi 20020005 addi 20020005 addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2007fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	9 10 0 1 9 10 0 1 9 10 0 1 1 9 10 0 1 1 9	00 x 04 08 00 x 08 0c 0c x 0c 10 03 x 10	05 x 04 x 0c x 0c x 10 x -9 x 10 x 05 x	05 x 08 x 0c x 0c x 01 x 02 x 03 x 10 x 07 x	0 0 0 0 0 0 0 0 0 0 0 0	0420 0800 5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0420 0800 5010
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	04 04 08 08 08 08 0c 0c 0c 10 10 10 14 14 14 18	addi 20020005 addi 20020005 addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	10 0 1 9 10 0 1 1 9 10 0 1 1 6 7	x 04 08 00 x 08 0c 0c x 0c 10 03 x 10	x 04 x 0c x 0c x -9 x 10 x 05 x	x 08 x 0c x 0c x 03 x 10 x	0 0 0 0 0 0 0 0 0 0	0800 5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0402 0840 5010
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	04 08 08 08 00 0c 0c 0c 10 10 10 14 14 14 14	addi 20020005 addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	0 1 9 10 0 1 9 10 0 1 0 1 6 7	04 08 00 x 08 0c 0c x 0c 10 03 x 10	04 x 0c x 0c x -9 x 10 x 05 x 04	08 x 0c x 0c x 0c x 100 x 100 x	0 0 0 0 0 0 0 0 0 0	5010 0030 0420 0800 5010 0030 0420 0800 5010 0030 0402 0840 5010
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	08 08 08 08 0c 0c 0c 10 10 10 14 14 14 14	addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2007ffff7 addi 2067ffff7 addi 2067ffff7 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	1 9 10 0 1 9 10 0 1 6 7 0 1 6	08 00 x 08 0c 0c x 0c 10 03 x	x 0c x 0c x -9 x 10 x 05 x	x 0c x 0c x 03 x 10 x	0 0 0 0 0 0 0 0 0	0030 0420 0800 5010 0030 0420 0800 5010 0030 0402 0840 5010
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0 0 0	08 08 08 0c 0c 0c 10 10 10 14 14 14 14	addi 2003000c addi 2003000c addi 2003000c addi 2003000c addi 2067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	9 10 0 1 9 10 0 1 1 6 7 0 1 6	00 x 08 0c 0c x 0c 10 03 x 10	0c x 0c x -9 x 10 x 05 x	0c x 0c x 03 x 10 x 07 x	0 0 0 0 0 0 0 0	0420 0800 5010 0030 0420 0800 5010 0030 0402 0840 5010
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0 0 0	08 08 0c 0c 0c 10 10 10 14 14 14 14	addi 2003000c addi 2003000c addi 2067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	10 0 1 9 10 0 1 6 7 0 1 6	x 08 0c 0c x 0c 10 03 x	x 0c x -9 x 10 x 05 x	x 0c x 03 x 10 x	0 0 0 0 0 0 0	0800 5010 0030 0420 0800 5010 0030 0402 0840 5010
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0 0	08 0c 0c 0c 10 10 10 14 14 14 14 18	addi 2003000c addi 2067fff7 addi 2067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	0 1 9 10 0 1 6 7 0 1 6	08 0c 0c x 0c 10 03 x	0c x -9 x 10 x 05 x	0c x 03 x 10 x 07	0 0 0 0 0 0	5010 0030 0420 0800 5010 0030 0402 0840 5010
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0 0	0c 0c 0c 10 10 10 14 14 14 14 14	addi 2067fff7 addi 2067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824	1 9 10 0 1 6 7 0 1 6	0c 0c x 0c 10 03 x 10	x -9 x 10 x 05 x 04	x 03 x 10 x 07 x	0 0 0 0 0	0030 0420 0800 5010 0030 0402 0840 5010
11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0	0c 0c 10 10 14 14 14 14 18	addi 2067fff7 addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824	9 10 0 1 6 7 0 1 6	0c x 0c 10 03 x 10	-9 x 10 x 05 x 04	03 x 10 x 07 x	0 0 0 0 0	0420 0800 5010 0030 0402 0840 5010
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0	0c 0c 10 10 10 10 14 14 14 14	addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824	10 0 1 6 7 0 1 6	x 0c 10 03 x 10	x 10 x 05 x 04	x 10 x 07 x	0 0 0 0 0	0800 5010 0030 0402 0840 5010
12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0 0	0c 0c 10 10 10 10 14 14 14 14	addi 2067fff7 addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824	10 0 1 6 7 0 1 6	x 0c 10 03 x 10	x 10 x 05 x 04	x 10 x 07 x	0 0 0 0 0	0800 5010 0030 0402 0840 5010
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0	0c 10 10 10 10 14 14 14 14 18	addi 2067fff7 or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824	0 1 6 7 0 1	0c 10 03 x 10	10 x 05 x 04	10 x 07 x	0 0 0	5010 0030 0402 0840 5010
14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0	10 10 10 10 14 14 14 14 14	or 00e22025 or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824	1 6 7 0 1	10 03 x 10	x 05 x 04	x 07 x	0 0 0	0030 0402 0840 5010
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0 0 0	10 10 10 14 14 14 14 14	or 00e22025 or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824	6 7 0 1 6	03 x 10	05 x 04	07 x	0	0402 0840 5010
16 17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0 0	10 10 14 14 14 14 18	or 00e22025 or 00e22025 and 00642824 and 00642824 and 00642824	7 0 1 6	x 10	x 04	X	0	0840 5010
17 18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0 0	10 14 14 14 14 14	or 00e22025 and 00642824 and 00642824 and 00642824	0 1 6	10	04			5010
18 19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0	14 14 14 14 18	and 00642824 and 00642824 and 00642824	1 6			14	U	
19 20 21 22 23 24 25 26 27 28 29	0 0 0 0 0	14 14 14 18	and 00642824 and 00642824	6	14		l	0	0030
20 21 22 23 24 25 26 27 28 29	0 0 0 0	14 14 18	and 00642824	1	0 ~		X		0030
21 22 23 24 25 26 27 28 29	0 0 0 0	14 18		7	0c	07	04	0	0402
22 23 24 25 26 27 28 29	0 0 0	18	ana 00642824	7	X 1.4	X	X 1.0		0840
23 24 25 26 27 28 29	0			0	14	04	18	0	5010
24 25 26 27 28 29	0	1,50	add 00a42820	1	18	X	X	0	0030
25 26 27 28 29		_	add 00a42820	6	04	07	0b	0	0402
26 27 28 29	0	18	add 00a42820	7	X	X	X	0	0840
27 28 29	0	18	add 00a42820	0	18	04	1c	0	5010
28 29	0	44	Beq 10a7000a	1	1c	28	44	0	0030
29	0	1c	Beq 10a7000a	8	0b	03	08	0	0605
	0	1c	Beq 10a7000a	0	1c	04	20	0	5010
	0	20	Slt 0064202a	1	20	Х	X	0	0030
30	0	20	Slt 0064202a	6	0c	07	00	0	0402
31	0	20	Slt 0064202a	7	Х	Х	X	0	0840
32	0	20	Slt 0064202a	0	20	24	24	0	5010
33	0	24	Beg 10800001	1	24	04	28	1	0030
34	0	28	Beq 10800001	8	0.0	0.0	07	1	0605
35	0	28	Beg 10800001	0	28	0.4	2c	1	5010
36	0	2c	Slt 00e2202a	1	2c	X	x	0	0030
	0	2c	Slt 00e2202a	6	2c	05	31	0	0402
_	0			7					
38	· .	2c	Slt 00e2202a		Х	X	х	0	0840
39	0	2c	Slt 00e2202a	0	2c	04	30	0	5010
40	0	30	add 00853820	1	30	Х	X	0	0030
41	0	30	add 00853820	6	01	0b	0c	0	0402
42	0	30	add 00853820	7	Х	Х	X	0	0840
43	0	30	add 00853820	0	30	04	34	0	5010
	0	34	sub 00e23822	1	34	Х	X	0	0030
45	0	34	sub 00e23822	6	0c	05	07	0	0402
46	0	34	sub 00e23822	7	Х	Х	Х	0	0840
47	0	34	sub 00e23822	0	34	04	38	0	5010
	0	38	sw ac670044	1	38	Х	Х	0	0030
	0	38	sw ac670044	2	0c	44	50	0	0420
50	0	38	sw ac670044	5	Х	Х	Х	0	2100
51	0	38	sw ac670044	0	38	04	3c	0	5010
52	0	3с	lw 8c020050	1	3с	Х	Х	0	0030
53	0	3с	lw 8c020050	2	0.0	50	50	0	0420
	0	3с	lw 8c020050	3	Х	Х	Х	0	0100
55	0	3с	lw 8c020050	4	Х	Х	Х	0	0880
56	0	3с	lw 8c020050	0	3с	04	40	0	5010
57	0	40	J 08000011	1	40	44	84	0	0030
58	0	40	J 08000011	b	Х	Х	Х	0	4008
59	0	40	J 08000011	0	40	48	48	0	5010
60	0	44	Sw ac020054	1	48	150	198	0	0030
	0	44	Sw ac020054	2	00	54	54	0	0420
62	0	44	Sw ac020054	5	x	X	X	0	2100

Table 1. Expected Instruction Trace