Bally On-Board ROM Subroutines

Subroutines are called by executing a RST 38H instruction which is followed by one or more parameters. The first parameter will be a byte defining which subroutine to execute, whether or not additional parameters for that subroutine follow this parameter and an indicator bit used for calling user defined subroutines.

EXAMPLE

```
0000    FF   RST  38H
0001    51   DB   81
0002    1E   DB   30
```

Example is broken down as follows:

```
0000        1111 1111  RST 38H instruction.

0001        0 101000 1
```

        0 =   no parameters follow.

        1 =   parameters follow in subsequent bytes, depending on requirements of particular subroutine.

Subroutine number ($50_{16} = 80_{10}$.)

0 =   Standard subroutine.

1 =   User defined subroutine. (See Subroutine list for further information.)

```
0002        0001 1110
```

The meaning of this and subsequent bytes are dependent upon the particular subroutine being invoked.

This example specifically causes a delay in program execution of 0.5 seconds, since it requests a delay of 30 interrupts and there are 59.94 interrupts per second.

If bit 7 of a Subroutine number is set, this call is to a user-defined subroutine. User must set up as follows:

Location 4FFB/4FFC = (Base address of register load specifications)-40H.

Location 4FFD/4FFE = (Base address of Subroutine jump table)-80H.

Call is made as follows:

Bit 7 = 1

Bits 6-1 = Subroutine number

Bit 0 = 0, no register load

= 1, register load follows.

00   007B   none
Initiates multiple subroutine calls.

02   0279   none
Performs an ending function for multiple subroutine calls.

04   0634   L,H
Jumps immediately to location specified by HL.

06   007D   L,H
"CALL" for subroutines. Nests a multiple subroutine call. HL specifies data location.

08   0B79   none
"RET" for subroutines. Performs a POP AF and POP HL. (Aborts a nest.)

10   0ACA   L,H
"JP" for subroutines. A logical nested subroutine jump. Execution of subroutines starts over at location HL.

12   00A4   B
Performs a SACRED register load according to B with data following in this order:

B,4 = IXl
      IXh
B,0 = E
B,1 = D
B,2 = C
B,3 = B
B,5 = A
B,6 = L
B,7 = H

14   018B   none
Interrupt Service Routine. Executes SR16 on 4FD5 - 4FD8 and SR0200 every interrupt.

16   0480   C

Checks locations 4FD5-4FDC according to bits of C (Bit 0 = 4FD5). If checked location is already 0, that location is skipped. If checked location is not 0, it is decremented decimally. If decrementing causes a location to go to 0, a bit is set in 4FDD corresponding to location reaching 0. (Bit 0 = 4FD5).

18   050A   IXl,IXh,A,L,H

SOUND GENERATOR. Enter with IX pointing to a work area, HL pointing to parameter string. Sound parameters are in sets.

If first byte of a set is positive, that byte is the note length in 1/60th second increments. Bits set in input A register control action as follows:

(All outputs are to Port 18.)

Bit 0 (HL) output to Port (B)+10 with B = 8. HL = HL+1.

Bit 1 (HL) output to Port (B)+10 with B = 5. HL = HL+1.

Bits 2 & 3 (B = 4)

      00   HL = HL, B = B-1.

      01   (HL) output to Port (B)+10. HL = HL, B = B-1.

      10   HL = HL+1, B = B-1.

      11   (HL) output to Port (B)+10. HL = HL+1, B = B-1.

Bits 4 & 5 Same as 2 & 3. (B = 03)

Bits 6 & 7 Same as 2 & 3. (B = 02)

Output contents of 4FD2 to Port 16.

Output contents of 4FD3 to Port 15.

Save HL at 4FCE/4FCF and IX at 4FD0/4FD1 for Subroutine 0516 calls.

If first byte of a set is negative, this set performs some function as follows:

80-87	Lower 3 bits are lower 3 bits of Port number 1x. (HL+1) is output to indicated port.
88-8F	Next 8 bytes are output to Port 18.
90	Next byte replaces original input A.
91-AF	Save lower 4 bits+1 on work stack for use by C0.
B0-BF	Next 2 bytes are to be used for future Ports 16 and 15 outputs respectively.
C0	Next 2 bytes are JP address if byte on top of working stack is not 0 after being decremented. (See 91-AF)
C9	Performs a RET for sound specs.
C1-C3	Next 2 bytes are JP address.
C4-C8, CA-CF	Next 2 bytes indicate address to CALL.
D0-DF	Performs a relative CALL, incrementing current data pointer by lower 4 bits.
E0	Toggles bit 7 of (4FF9). This bit is initialized to zero upon entry to SR18, and indicates whether notes are to be distinct (0) or merged together (1).
E1-EF, F1-FF	Next byte is length of pause in sound output.
F0	Stops all sound output.

20   05FE   none

STOPS ALL SOUND OUTPUT. Sets (4FEA) to 00. (Sound generator note length)

Sets (4FF9) to 00.

Outputs 00 to port 18, 8 times.

22   03CF   D,B,A
Outputs D to Port 0A. Number of vertical lines X 2 to be used for screen update.
Outputs B to Port 09. Bits 0 - 6 are number of Bytes of horizontal data comprising left screen. Bits 7 - 8 represent border color.
Outputs A to port 0E. Always 8 in Cassettes.

24   01DB   L,H
OUTPUT COLOR SPECS. Saves HL at 4FE8. Outputs (HL) thru (HL+7) to port 0B. Returns with A = 0. Color specs are in 8 bytes, each byte containing chroma (bits 3-7) and luminance (bits 0-2). Bytes 0-3 are colors 3-0 for left screen (see SR22), bytes 4-7 are colors 3-0 for right screen.

26   0AF4   E,D,C,B,A
Stores A in BC bytes starting at location DE.

28   06B4   E,D,C,B,A
Display Solid Color in 4000 area. DE = starting V/H dot number, C = number of H dots, B = number of V dots, A = data to store (4 bit-pairs).

30   0704   IXl,IXh,L,H
Load A with (IX+00), D with (IX+0B), E with (IX+06), set bit 6 in (IX+01) and execute SR32, 34, 36 and 38.

32   0711   E,D,A,L,H
Enter with HL pointing to first of four bytes of data. Increment E (Horizontal dot number) by (HL) and increment D (Vertical dot number) by (HL+1). Execute SR34, 36 and 38 with HL incremented by 2.

34   071B   E,D,A,L,H
Pick up C (number of bytes/horizontal line) from (HL) and B (number of Horizontal lines) from (HL+1). Execute SR36 and 38 with HL incremented by 2.

36   071F   E,D,C,B,A,L,H
Calculate CRT index from V/H dot number in DE by executing SR56. Index (0000 area) returned in DE. Execute SR38.

38   0722   E,D,C,B,A,L,H
Move CRT data. Moves C bytes of data from location HL to location DE. Set last byte in receiving area to 00 or 0000. Increment starting DE by 28H and repeat B times. Receiving area double/single and increment/decrement controlled by A as follows:
A,3   Single/double. 0 = single byte receiving increments, 1 = double byte receiving increments.
A,6   Increment/decrement. 0 = increment receiving area counter before moving next byte, 1 = decrement receiving area counter before moving next byte.

40   0783   IXl,IXh,E,D

42   07A4   E,D,B,L,H
Display solid color. E = # bytes/line, D = # of lines, B = data to store,
HL = address at which to start.

44   03B9   E,D,C,B,L,H
Move CRT Data. Moves C bytes of data from HL to DE+2. ((DE)
contains BC). Increments HL by 28H and repeats B times. HL is forced
to 4000 area of memory.

46   07B3   E,D,L,H
Move data to CRT. Loads BC from location (DE). Moves C bytes from
location DE+2 to location HL. Increments HL by 28H and repeats B
times. HL forced to 4000 area.

48   026A   E,D,C,B,L,H
Block moves. Moves C bytes from (HL+DE) to (HL). Increments HL by
DE and repeats B times.

50   07E7   E,D,C,A
Character Display Subroutine. See Routine 52.

52   07CA   E,D,C,L,H
String display routine.
Call with E = Horizontal position (0-159D).
       D = Vertical position (0-99D).
       C = Character display parameters. (See Appendix A.)
       HL = Address of character string to display.
CHARACTER STRING:
       Bit 7   0 = use standard ASCII characters defined in Character
       table.
             1 = Use non-standard display. IX must contain address of
             specification table.
       If bit 7 = 0, bits 6-0 00 = end of string.
             01-1F = Number of Character spaces to skip.
             20-64 = Standard character to display.
             65-7F = Input parameter setup.
                 Bit 0 = E (Horizontal position)
                 Bit 1 = D (Vertical position)
                 Bit 2 = C (Character display parameters. See
                 Appendix A.)
                 Bit 4 = IX (Address of display spec table)
       If Bit 7 = 1, Bits 6-0 00-7F = Non-standard character to display.

CHARACTER SPECIFICATION TABLE

       7 Byte table as follows:

Byte		
0	20	Amount to subtract from character so result becomes table entry number.
1	8	Horizontal Character allotment
2	8	Vertical Character allotment.
3	1	Number of bytes per table entry. (Number of bytes/Horizontal line.)
4	7	No. of table entries per character.
5	EA	Address of Character table.
6	08	" " " "

54   0BF1   E,D,C,B,L,H
Display BCD numbers at location HL as follows:
E = Horizontal position. D = Vertical position. C = Character display
parameters. (See Appendix A.) B Bit 7 = 1 = blank leading zero. = 0 =
no blank of leading zeroes.
Bit 6 = 1 = Use non-standard character definitions: IX contains address
of specification table. = 0 = use standard 5 X 7 ASCII specifications.
Bits 5-0 = number of digits to display.

56   0AFC   A
Same as 58 except DE is <u>not</u> forced to 4000 area and resultant A is
output to Port 0C.

58   0B01   A
Calculate display buffer address. DE = V/H dot # on entry. On exit,
DE = location in RAM of that CRT position (forced to 4000 area). If, on
entry, bit 6 of A = 1, Horizontal dot position is assumed counting from
right. On exit, 2 LSB of A = 2 LSB of Horizontal dot number, 6 MSB of
A = 6 MSB of entry A.

60   0658   IXl,IXh,C,L,H

62   0635   IXl,IXh,L,H

64   0ACF   none
Gets ASCII calculator key-code to A. (Table at 0ADB). Expects raw
key number in B on entry.

66   01AC   E,D
Gets player inputs. DE points to 4 byte calculator key mask table. Exit
with input value in B and Device number in A. Device numbers are
reported by SR66 as follows:

1	Bit number of 16 bit quantity at location 4FDD that was set. 1 =	
.	4FDD,0; 10 = 4FDE,7. Multiple bits set report highest device	
.	number first.	
.	" " " "	
.	" " " "	
.	" " " "	
10	" " " "	
11	One second marker.	
12	Calculator key release.	
13	Calculator key depression.	(4FE3), 0-6
14	Player 1 Trigger.	(4FE4), 4
15	Player 1 Joystick.	(4FE4), 0-3
16	Player 2 Trigger.	(4FE5), 4
17	Player 2 Joystick.	(4FE5), 0-3
18	Player 3 Trigger.	(4FE6), 4
19	Player 3 Joystick.	(4FE6), 0-3
1A	Player 4 Trigger.	(4FE7), 4
1B	Player 4 Joystick.	(4FE7), 0-3
1C	Player 1 knob.	(4FDF)
1D	Player 2 knob.	(4FE0)
1D	Player 3 knob.	(4FE1)
1F	Player 4 knob.	(4FE2)

68   060E   L,H

Jump Table. Used for input devices. Expects device number in A on entry. HL points to table. Entries are in 3's; last entry denoted by word 0 greater than or equal to C0.

Word 0, bits 5-0 = Device number.

Bit 7 = 1, Initiate multiple SR call using data at address pointed to by words 1 & 2.

Bit 7 = 0, bit 6 = 1, Execute subroutine pointed to by words 1 & 2. Upon return of user subroutine, finish execution of SR68.

Bit 7 = 0, bit 6 = 0, Finish execution of SR68 and jump to address contained in words 1 & 2. Note that if SR68 is executed as a subroutine within a multiple call, words 1 & 2 will point to continuation of multiple call. If SR68 is executed singly, words 1 & 2 will point to executable code.

Words 1 & 2 = Address of Routine to execute on a match.

Enter with device number in A.

70   060D   L,H

Same routine as 68, but uses B -- normally Device input value.

72   01BA   none

Blank TV Screen. Wait for any switch input and re-enable TV Screen.

74   0C9C   E,D,L,H

Menu display routine. DE = address of message for top of screen (e.g. SELECT GAME). HL points to first linked list of menu specifications;

HL   Address of next menu specifications. 0218 = start on-board specifications, 0000 = last specification.

+2   Address of text to display in menu.

+4   Address to jump to if this option is selected.

76   0D00   C,B,A,L,H

Option selection routine. DE = address of OPTION (usually name of game) to be displayed at top of screen. Routine displays ENTER followed by users message pointed to by BC, then calls SR78 for input of number of digits specified by A. Digits are stored at HL.

78   0D36   E,D,C,B,L,H

Get OPTION/MENU selection user inputs.

80   001B   B

Waits for B interrupts then returns.

82   0BD2   E,D,C

Display time at 4FEE and 4FED in 3 X 5 characters as follows: (2MSD:2LSD)

E = Horizontal position. D = Vertical position. C = Character display parameters. (See Appendix A.)

84   0C1B   L,H

UP-TIMER. Increments a users 6 digit BCD number pointed to by HL. Location 4FF8 is a control/flag byte such that if (4FF8) bit 1 is not zero, 6 digit users number is compared to 6 digit number at locations 4FF4, 4FF5, and 4FF6. If users number is less than preset number, routine exits. If users number is greater than or equal to preset number, bit 7 of (4FF8) is set and routine exits.

86   0B7C   L,H

Gets BCD digit C from string starting at location HL and places it in A. Digit 0 is LSD of location HL.

88   0B96   L,H

Replace BCD digit C in number starting at location HL with contents of 4 LSB of A. LSD of location HL is LSD of number and is accessed with C = 0.

90   0BB2   L,H

JUMP TABLE INDEX. Gets contents of HL+A*2 to DE. Saves DE & HL in Sacred DE and HL.

92   0BC3   L,H

DATA TABLE INDEX. Increments HL by A. Gets (HL) to SACRED A and HL to SACRED HL.

94   0B51   E,D,C,B,L,H

Performs an LDIR.
(HL) to (DE)
DE+1 to DE
HL+1 to HL
BC-1 to BC
Continue until BC = 0.

96   0DAE   B,L,H

Insert BCD digit in A at LSD of location HL. Ripple left B locations. (If B is odd, it is forced to next higher even no., 62D max.)

98   0321   E,D,B,L,H

ADD. DE = address of Addend, HL = address of Augend, B = number of locations to add. Sum is left at (DE).

100   031F   E,D,B,L,H

SUBTRACT. DE = address of Minuend, HL = address of Subtrahend, B = number of locations to subtract. Difference is left at (DE).

102   02DE   E,D,B,L,H

MULTIPLY. DE = address of Multiplicand, HL = address of Multiplier, B = number of locations to multiply. Product is left at (DE).

104   0284   E,D,B,L,H

DIVIDE. DE = address of Divisor, HL = address of Dividend, B = number of locations in number. Quotient left at - - - - - - - - - - -.

106   0364   B,L,H

Toggles bit 7 of location (HL+B-1)

108   0341   E,D,B

Perform 10s complement on BCD string if string is negative. Checks bit 7 of location (DE+B-1). If not set, returns. If set, clears location (DE+B-1) and calls subroutine 116 to perform 10s complement on data.

110   036E   E,D,B,L,H

Performs a BCD addition of B locations adding HL locations to DE locations. Returns with SACRED F carry set if last digit was 99. Sum is left at location (DE).

112   0329   E,D,B

Checks location (DE+B-1). If less than 50H, returns. If greater than or equal to 50H, performs 10s complement of B locations long number starting at DE. Leaves bit 7 = 1 in location (DE+B-1).

114   0356   E,D,B

Checks bit 7 of location (DE+B-1); if clear, returns. If set, loads location (DE+B-1) with 00 and increments SACRED C.

116   034C   B,L,H

Performs a 10s complement conversion of B bytes of BCD data starting at location HL.

118   037F   A

Random number generator. Input A = maximum number to generate. (A = 0 means accept any result.) Return with A = random number less than input A and A' = random 8 bit number.

120   0C46   none
GAME OVER

122   036C   A,L,H
Performs a LD (HL),A.

124   0023   E,D,L,H
Executes a LD (HL),DE.

126   0240   E,D,C,L,H

Joystick manipulation. Enter with HL = CRT increment for down movement, DE = CRT increment for right movement, B = Joystick bits (Bit 0 = up, bit 1 = down, bit 2 = left, bit 3 = right). C bit 6 = 1 for right Joystick movement = DE minus. C bit 6 = 0 for right Joystick movement = DE plus (normal).

Perform no operation, 2s complement or enter zeroes into DE and HL according to B and C as follows:

HL = 0000 if B,0 and B,1 = 00.

HL = HL if B,0 and B,1 = 10. (Down joystick)

HL = $\overline{HL}$+1 if B,0 and B,1 = 01 or 11. (Up or Up & Down joystick)

DE = 0000 if B,2 and B,3 = 00 or (if C,6 = 1 and B,2 and B,3 = 11)

DE = DE if (C,6 = 1 and B,2 and B,3 = 01 - left) or (C,6 = 0 and B,2 and B,3 = 10 - right).

DE = $\overline{DE}$+1 if (C,6 = 0 and B,2 and B,3 = 01 - left) or (C,6 = 0 and B,2 and B,3 = 11 - left & right) or (C,6 = 1 and B,2 and B,3 = 10 - right).

0200   Timer subroutine. Executed every interrupt by SR14. If user has interrupts and does not call SR14 during interrupts, he should call 0200 during his interrupt service routine.

a)   allows Sound generator to continue keeping time.

b)   Sets bit 7 of 4FE3 every second so a properly scanned Player Input Routine (SR66) may report 1PPS as device 11.

c)   Decrements a user minute/second timer at 4FED/4FEE and reports this timer reaching 0 as follows:

         4FF8,0   0 = no report

                   1 = report by setting 4FF8,7.

0203   Decrements location specified by HL. Returns if (HL) not yet 0. If (HL) reaches 0, loads (HL) with B and executes SR16 with contents of C.

Subroutines 50, 52, 54 and 82 use the C register to pass display parameters (character size and type of character display, character and background color) as follows:

Bits 7-6   Character size. 0-3 = multiplication factors 1, 2, 4 and 8 respectively.

Bits 5-4   0 = Obliterate character field with background color specified by bits 0 and 1.

1 = Only characters will obliterate existing display; data not actually in conflict with character will remain intact.

2 = Characters displayed in such a manner as to leave existing display legible. Existing display in conflict with character area will change to a contrasting color. Alternate requests to display the same character in the same area will result in the characters alternately appearing and disappearing.

3 = A combination of 1 and 2 resulting in the area of the CRT required for character display being blanked with no character displayed.

Bits 3-2   Color port (0B) index to be used for characters.

Bits 1-0   Color port (0B) index to be used for character area background.

NOTE: SR82 uses bits 6 and 7 for different purposes:

Bit 7   0 = display only minutes (4FED).

1 = Display both minutes and seconds (4FED/4FEE) separated by a colon.

Bit 6   Character size.   0-1 = multiplication factor 1 and 2 respectively.

APPENDIX B

STANDARD (5X7) ASCII CHARACTERS (SR50/52)

20	spc	30	0	40	@	50	P	60	down arrow
21	!	31	1	41	A	51	Q	61	right arrow
22	"	32	2	42	B	52	R	62	x (multiply sign)
23	#	33	3	43	C	53	S	63	divide sign
24	$	34	4	44	D	54	T	64	space
25	%	35	5	45	E	55	U		
26	&	36	6	46	F	56	V		
27	'	37	7	47	G	57	W		
28	(	38	8	48	H	58	X		
29	)	39	9	49	I	59	Y		
2A	*	3A	:	4A	J	5A	Z		
2B	+	3B	;	4B	K	5B	left bracket		
2C	,	3C	lt	4C	L	5C	back slash		
2D	-	3D	=	4D	M	5D	right bracket		
2E	.	3E	gt	4E	N	5E	up arrow		
2F	/	3F	?	4F	O	5F	left arrow		

NON-STANDARD (3X5) CHARACTERS

B0	0	B6	6
B1	1	B7	7
B2	2	B8	8
B3	3	B9	9
B4	4	BA	:
B5	5	BB	bullet

APPENDIX C

CASSETTE MEMORY STRUCTURE

LOCATION	CONTENTS	or	CONTENTS
2000	55		C3
2001,2	*Adrs of next menu table		RST0 or RESET jumps to
2003,4	Adrs of this menu literal		2000 immediately after
2005,6	Adrs to jump to if selected		DI and output 00 to port 08.

2007	RST 8 jumps here
200A	RST 10H jumps here
200D	RST 18H jumps here.
2010	RST 20H jumps here.
2013	RST 28H jumps here.
2016	RST 30H jumps here.
2019	Player input routine (SR66) jumps here if location 4FFA contains 0AAH.

*0218 = First on-board menu, 0000 = last menu.

OUTPUT PORTS

00	Color 0 for right screen. See also Port 0B.
01	Color 1 for right screen. See also Port 0B.
02	Color 2 for right screen. See also Port 0B.
03	Color 3 for right screen. See also Port 0B.
04	Color 0 for left screen. See also Port 0B.
05	Color 1 for left screen. See also Port 0B.
06	Color 2 for left screen. See also Port 0B.
07	Color 3 for left screen. See also Port 0B.
08	RESET causes 00 to be output.
09	Bits 0 - 6 are number of bytes of horizontal data (4 horizontal dots per byte) comprising left screen. Bits 6 - 7 are color to display in border using same indexing scheme as Port 0B.
0A	Number of Vertical lines X 2 to be used for screen update.
0B	LUMINANCE AND CHROMINANCE SPECS

8 bytes of data, output by using OUTI or OTIR. Each byte constructed as follows:

3 LSB = Luminance.	0	Black.
5 MSB = Chrominance.	00	none.
	01	Blue
	.	Purple
	.	Red
	.	Brown/Yellow
	.	Green
	1F	Blue

Byte 0	Color 3 for left screen.	(Port 07)
Byte 1	Color 2 for left screen.	(Port 06)
Byte 2	Color 1 for left screen.	(Port 05)
Byte 3	Color 0 for left screen.	(Port 04)
Byte 4	Color 3 for right screen.	(Port 03)
Byte 5	Color 2 for right screen.	(Port 02)
Byte 6	Color 1 for right screen.	(Port 01)
Byte 7	Color 0 for right screen.	(Port 00)

Pure white	07
Green	A5
Red	5B
Blue	08
Orange	76

0C	Seems to be used in conjunction with Port 19. Outputs occur at SR28, 0888, 08E1, 0B11, 17F8, 1BF4.
0D	8 bits of vector to be returned by interrupting device upon receipt of INTAK from Z80.
0E	always 8 in Cassettes.
0F	SR14 outputs C8 (200D) every interrupt. Also output to by 1B63, 1C4B.
10	Sound Master Divider.

11	Sound.
12	Sound. Tone 3 frequency. SR18, A bits 6 & 7, Port 16 bits 0-3.
13	Sound. Tone 2 frequency. SR18, A bits 4 & 5, Port 16 bits 4-7.
14	Sound. Tone 1 frequency. SR18, A bits 2 & 3, Port 15, bits 0-3.
15	Sound. Bits 0-3 = Port 12 volume; bits 4-7 = Port 13 volume.
16	Sound. Bits 0-3 = Port 14 volume; bits 4-7 = noise port volume.
17	Sound.
18	Sound. Seems to be Ports 10-17 combined.
19	Seems to be used in conjunction with Port 0C. Output to by 0884, 08BB, 198E, 19BE, 1AA4.

NOTE: Subroutine 22 is used to output to ports 09, 0A and 0E.
Subroutine 18 is used to output to Ports 10-18.
Subroutine 24 is used to output to Port 0B.

BALLY DATA BASE LOCATIONS

4FCE	SOUND. Used by SR0516 during interrupts to get next tone to output if applicable.
4FCF	SOUND. Used by SR0516 during interrupts to get next tone to output if applicable.
4FD0	SOUND. SR18 Input IXl storage
4FD1	SOUND. SR18 Input IXh storage
4FD2	SOUND. Out to Port 16 by SR18
4FD3	SOUND. Out to Port 15 by SR18
4FD4	SOUND. SR18 Input A storage
4FD5	8 2-digit BCD numbers decremented by SR16 according to bits in C or by CALL 0203 under certain conditions. (Lower 4 locations checked and decremented each interrupt by SR14.)
4FD6	"
4FD7	"
4FD8	"
4FD9	"
4FDA	"
4FDB	"
4FDC	"
4FDD	Bits set by SR16 according to digits above reading 0. 4FDD and 4FDE are scanned by player input routine (SR66).
4FDE	See 4FDD, second sentence
4FDF	Player 1 last knob input value.
4FE0	Player 2 last knob input value
4FE1	Player 3 last knob input value.
4FE2	Player 4 last knob input value.
4FE3	Last Calculator input. ((Bits 0-1 = columns 0-3; Bits 2-5 = rows 0-5)+1) Bit 7 = 1PPS marker occurred.
4FE4	Player 1 last joystick/trigger status. Bits 0-3 = joystick (Bit 0 = Up, Bit 1 = Down, Bit 2 = Left, Bit 3 = Right); Bit 4 = trigger.
4FE5	Player 2 last Joystick/trigger status.
4FE6	Player 3 last Joystick/trigger status.
4FE7	Player 4 last Joystick/trigger status.
4FE8	Contains Address of 8 byte Port 0B (Chrominance and luminance specifications) data. Set by SR24
4FE9	" " " " "
4FEA	Sound Generator Tone length stored by SR18, decremented by SR14/CALL 0200.
4FEB	Used by SR04A2 (Call 0200/SR14) to count interrupts between 1 second marks.
4FEC	Reset to FF every switch input. Decremented every Interrupt. 4 min 15 sec TV timeout.
4FED	MINUTES/SECONDS DOWN TIMER. User set. See 4FF8 bits 0 & 7 and SR82 for use. Automatically decremented every second if non-zero.
4FEE	" minutes.
4FEF	SR118 L
4FF0	SR118 H
4FF1	SR118 L
4FF2	SR118 H

4FF3	SCRIBBLING - Number of players.
4FF4	User-set 6 digit BCD number used by SR84 for comparison to users 6 digit number if bit 1 of 4FF8 = 1.
4FF5	" " " "
4FF6	" " " "
4FF7	
4FF8	Bit 0 0 = Dont inform

Bit 0   1 = Inform user when minutes/seconds in 4FEE/4FED reaches 0 by setting bit 7 of 4FF8.

Bit 1   0 = Don't check.

Bit 1   1 = Cause SR84 to check user supplied 6 digit number at 4FF4-4FF6 against current user up-counter. If Up-counter equals or exceeds user supplied number, set bit 7 of 4FF8.

Bit 7   0 = No timeout has occurred.

Bit 7   1 = Timeout has occurred. See 4FF8, bits 0 and 1, SR82 and SR84.

4FF9	Bit 1 indicates SR04A2 (called by SR14/Call 0200) is in use.

Bit 7   1 = no check.

Bit 7   0 = If tone time (4FEA) is now 2, output 00 to Ports 15 and 16.

4FFA	If contains AA, SR66 jumps to location 2019.
4FFB	Used in setup for User defined subroutines using RST 38H. See RST 38H section.
4FFC	" " " " "
4FFD	" " " " "
4FFE	" " " " "
4FFF	Subr 06E8

```
:M 8000
8000 00 00
8001 F3@
:D 8000 8FFF          location 0000 → 0FFF

8000   00 F3 AF D3 08 C3 66 0C C3 07 20 1C 3C 1C 20 FF   ......F.... . .<. .
8010   C3 0A 20 06 FB 07 52 FF C3 0D 20 FB 76 10 FD C9   .. ...R.. .. .v...
8020   C3 10 20 73 23 72 C9 FF C3 13 20 21 00 00 C9 FF   .. S#R.... .!....
8030   C3 16 20 75 8B 01 00 FF E3 F5 C5 D5 DD E5 FD E5   .. U.............
8040   FD 21 00 00 FD 39 7E 23 11 7A 02 1F 38 36 E5 D5   .!...9.#.z..86..
8050   21 CB 00 07 5F 16 00 17 30 03 2A FD 4F 19 5E 23   !..._...0.*.O.^#
8060   56 D5 FD 66 0B FD 6E 0A FD 56 03 FD 5E 02 D5 DD   V..f..n..V..^...
8070   E1 FD 7E 09 FD 56 05 FD 5E 04 C9 D1 E1 7E 23 CB   ..~..V..^....~#.
8080   3F 11 7C 00 D5 4F 30 12 EB 06 00 21 4B 01 CB 77   ?.|..O0....!K..w
8090   28 03 2A FB 4F 09 46 CD A8 00 D1 79 FD 46 07 FD   (.*.O.F....y.F..
80A0   4E 06 18 AA E1 D1 23 E5 CB 60 28 0A 1A 13 FD 77   N.....#..`(....w
80B0   02 1A 13 FD 77 03 FD E5 E1 23 23 23 CB A0 CB      ....w...###....
80C0   38 30 03 1A 13 77 23 20 F6 EB C9 7B 00 79 02 34   80...w# ...{.y.4
80D0   06 7D 00 79 0B CA 0A A4 00 8B 01 80 04 0A 05 FE   .}.y...........
80E0   05 CF 03 DB 01 F4 0A B4 06 04 07 11 07 1B 07 1F   ................
80F0   07 22 07 83 07 A4 07 B9 03 B3 07 6A 02 E7 07 CA   ."........j.....
8100   07 F1 0B FC 0A 01 0B 58 06 35 06 CF 0A AC 01 0E   .......X.5......
8110   06 0D 06 BA 01 9C 0C 00 0D 36 0D 1B 00 D2 0B 1B   .........6......
8120   0C 7C 0B 96 0B B2 0B C3 0B 51 0B AE 0D 21 03 1F   .|.......Q...!..
8130   03 DE 02 84 02 64 03 41 03 6E 03 29 03 56 03 4C   .....D.A.N.).V.L
8140   03 7F 03 46 0C 6C 03 23 00 40 02 00 00 C0 C0 00   ...F.L.#.@......
8150   C0 08 00 04 F0 00 2A C0 2F 2F D0 E3 E3 EF EF 13   ......*.//......
8160   CB CF C3 CF 27 C7 CF 20 20 D4 D0 00 03 C0 C0 00   ....'.. ..`....
8170   C3 EC CF 08 07 C0 C0 C0 C0 C0 CF C8 CB CB CB CB   ...............
8180   C8 0B CB 0B 0B C8 20 00 E0 C3 C7 F3 F5 C5 D5 E5   .... ..........
8190   ED 5E 3E 00 ED 47 3E C8 D3 0F 3E 34 D3 0D CD A2   .^>..G>...>4....
81A0   04 0E 0F CD 80 04 E1 D1 C1 F1 FB C9 3A FA 4F FE   ............:.O.
81B0   AA CA 19 20 3A EC 4F B7 20 2B AF F3 D3 15 D3 16   ... :.O. +......
81C0   01 0B 08 ED 79 10 FC 11 14 02 CD F9 0C CD E5 01   ....y..........
81D0   3C 20 E7 FD 36 09 00 FB 2A E8 4F 22 E8 4F 01 0B   < ..6...*.O".O..
81E0   08 ED B3 AF C9 CD EC 03 FD 77 09 FD 70 07 FE 13   .........W..P...
81F0   D8 FE 1C D0 3E FF 32 EC 4F C9 C8 0D E1 0D 20 10   ....>.2.O.... .
8200   C3 A2 04 C3 7D 04 20 08 08 01 07 EA 08 A0 04 06   ....].
8210   01 05 C5 0A 3F 3F 3F 3F C2 0D CE 0D DE 17 4D 41   ....????......MF
8220   58 20 53 43 4F 52 45 00 23 20 4F 46 20 50 4C 41   X SCORE.# OF PLA
8230   59 45 52 53 00 23 20 4F 46 20 47 41 4D 45 53 00   YERS.# OF GAMES.
8240   CD 56 02 EB CB 71 28 07 78 E6 03 28 01 2F 47 CD   .V...q(.x..(./G.
8250   56 02 EB C3 BE 0B CB 08 30 0A 7D 2F 6F 7C 2F 67   V.......0.}/o|/g
8260   23 CB 08 C9 CB 08 D8 C3 2B 00 AF C5 D5 47 EB 19   #.......+....G..
8270   E5 ED B0 E1 D1 C1 10 F3 C9 E1 E1 FD E1 DD E1 D1   ...............
8280   C1 F1 E3 C9 CD C0 02 E3 C5 06 00 79 CB 39 09 4F   ...........Y.9.O
8290   EB ED B0 C1 D1 2B E3 C5 06 00 09 C1 0D EB 1B 1B   .....+.........
82A0   AF FF 74 FF 6E 38 0A 3C 27 20 F8 E1 36 FF C1 18   ..T.N8.<' ..6...
82B0   6A FF 74 FF 6E E3 2B 77 E3 0D 20 E3 E1 C1 18 55   J.T.N.+w.. ....U
82C0   DD E1 AF 4F FF 72 EB FF 72 EB 67 6F 78 E5 10 FD   ..O.R..R.GOX...
82D0   47 39 C5 E5 E5 FD 66 0B FD 6E 0A 48 DD E9 CD C0   G9....F..N.H....
82E0   02 7E 23 E3 A7 28 09 EB FF 6E A7 3D 27 20 F9 EB   .~#..(...N.='..
82F0   23 E3 0D 20 EC E1 E1 C1 D5 C5 48 06 00 CB 39 09   #.. ......H...9.
8300   CB 21 ED B0 C1 C5 CB 38 AF B6 23 10 FC A7 28 03   .!.....8..#...(.
8310   3E FF 12 C1 E1 CB 41 28 02 FF 6A E1 10 FD C9 FF   >.....A(..j.....
8320   6A FF 6C EB FF 6C EB FF 6E 68 2D 26 00 19 7E FE   J.L..L..NH-&..~.
8330   50 D8 EB 3E 00 9E 27 77 23 10 F8 2B 7E F6 80 77   P..>..'w#..+~..w
8340   C9 68 2D 26 00 19 CB 7E C8 36 00 EB AF 3E 00 9E   .H-&...~.6...>.
8350   27 77 23 10 F8 C9 68 26 00 2D 19 CB 7E C8 36 00   'w#...h&.-..~.6.
8360   FD 34 06 C9 48 06 00 0D 09 7E EE 80 77 C9 AF 1A   .4..H....~..w...
8370   8E 27 12 13 23 10 F8 FE 99 17 2F FD 77 08 C9 F5   .'..#...../.w...
```

                                                    |

```
8380   2A EF 4F CD AC 03 01 17 00 09 8A 22 EF 4F 2A F1   *.O.........".O*.
8390   4F 5F CD AC 03 19 22 F1 4F 5A EB F1 A7 4F 7A 28   O_...."OZ..OZ<
83A0   08 AF 19 30 01 3C 0D 20 F9 C3 D7 0A 44 4D AF 16   ...0.<. ....DM..
83B0   07 29 17 15 20 FB 09 8A C9 EB 71 23 70 23 AF EB   .).. .....Q#p#..
83C0   CB F4 C5 E5 47 ED B0 E1 0E 28 09 C1 10 F4 C9 0E   ....G....(......
83D0   09 ED 41 0C ED 51 D3 0E C9 5E 01 01 08 79 0F 4F   ..A..Q...^...y.O
83E0   A3 20 03 10 F8 C9 AB 77 78 82 E1 C9 28 25 21 DD   . ....wx...(%!.
83F0   4F 16 00 CD D9 03 16 08 23 CD D9 03 01 1C 04 23   O.......#......#
8400   ED 78 5E 93 38 05 D6 04 38 06 3C 83 77 47 79 C9   .x^.8...8.<.wGY.
8410   0C 10 EC 21 E3 4F 7E CB 7F 28 06 CB BF 77 3E 11   ...!.O~..(...w>.
8420   C9 E5 FD 66 05 FD 6E 04 01 17 04 11 00 FF ED 78   ...f..n........x
8430   A6 20 0A 0D 1C 23 10 F6 78 1E 12 18 0B 14 0F 30   . ...#..x......0
8440   FC 7A 07 07 83 3C 1E 13 E1 AE E6 7F 28 07 AE 77   .z...<......(..w
8450   E6 7F 47 7B C9 01 10 04 23 ED 78 AE 20 05 0C 10   ..G{....#.x. ...
8460   F7 78 C9 CB 67 28 0C E6 10 AE 77 E6 10 47 79 07   .x..g(....w..Gy.
8470   D6 0C C9 AE 77 E6 0F 47 79 07 D6 0B C9 35 C0 70   ....w..Gy....5.p
8480   06 08 21 D5 4F 16 00 CB 39 30 0A 7E B7 28 06 3D   ..!.O...90.~.(.=
8490   27 20 01 37 77 23 CB 1A 10 ED 3A DD 4F B2 32 DD   ' .7w#....:.O.2.
84A0   4F C9 21 F9 4F CB 4E C0 CB CE EB 21 EA 4F 7E B7   O.!.O.N....!.O~.
84B0   28 1C 35 20 0B E5 DD E5 CD 16 05 DD E1 E1 18 0E   (.5 ............
84C0   EB CB 7E EB 20 08 3D 3D 20 04 D3 16 D3 15 23 35   ..~. .== .....#5
84D0   F2 04 05 36 3B 23 EB 21 E3 4F CB FE EB 7E B7 28   ...6;#.!.O...~.(
84E0   01 35 23 7E 23 B6 28 13 2B 7E B7 20 09 36 59 23   .5#.#.(.+~. .6Y#
84F0   7E 3D 27 77 18 0E 3D 27 77 18 09 21 F8 4F CB 46   .='w..='w..!.O.F
8500   28 02 CB FE 21 F9 4F CB 8E C9 32 D4 4F DD 22 D0   (...!.O...2.O.".
8510   4F CD FE 05 18 03 2A CE 4F DD 2A D0 4F 7E 23 B7   O.....*.O.*.O~#.
8520   FA 5D 05 32 EA 4F 3A D4 4F 01 18 08 CB 3F 30 02   .].2.O:.O....?0.
8530   ED A3 06 05 CB 3F 30 02 ED A3 06 04 CB 3F 30 09   .....?0......?0.
8540   ED A3 CB 3F 38 07 2B 18 04 05 23 18 F5 B7 20 EC   ...?8.+...#... .
8550   3A D2 4F D3 16 3A D3 4F D3 15 C3 F6 05 FE 90 30   :.O..:.O.......0
8560   15 CB 5F 28 08 78 01 18 08 ED B3 18 B0 E6 07 F6   .._(.x..........
8570   10 4F ED A3 18 A7 20 07 7E 23 32 D4 4F 18 9E FE   .O.... .~#2.O...
8580   B0 30 06 E6 0F 5F 1C 18 3E FE C0 30 09 11 D2 4F   .0..._..>..0...O
8590   ED A0 ED A0 18 87 20 0B DD 35 00 20 0A DD 23 23   ...... ..5. ..##
85A0   23 18 F1 FE D0 30 27 E6 0F FE 09 20 0C DD 6E 00   #....0'.... ..n.
85B0   DD 23 DD 66 00 DD 23 18 DB 5E 23 56 23 EB FE 04   .#.F..#..^#V#...
85C0   38 D2 DD 2B DD 72 00 DD 2B DD 73 00 18 C6 FE E0   8..+.r..+.s.....
85D0   30 0A E6 0F 06 00 4F 54 5D 09 18 E6 20 0A 3A F9   0.....OT]... .:.
85E0   4F EE 80 32 F9 4F 18 AC FE F0 28 12 7E 32 EA 4F   O..2.O....(.~2.O
85F0   23 AF D3 16 D3 15 22 CE 4F DD 22 D0 4F C9 AF 32   #.....".O.".O..2
8600   EA 4F 32 F9 4F 01 18 08 ED 79 10 FC C9 78 D5 57   .O2.O....y...x.W
8610   7E 4F FE C0 38 02 D1 C9 23 E6 3F BA 28 04 23 23   ~O..8...#.?.(.##
8620   18 EE D1 5E 23 56 EB CB 79 C2 7D 00 CB 71 20 04   ...^#V..y.}..q .
8630   D1 F1 E5 EB E9 FD CB 08 F6 DD CB 01 7E DD 4E 02   ............~.N.
8640   DD 36 02 00 FD 71 06 C8 79 A7 C8 11 03 00 DD 19   .6...q..y.......
8650   CD 58 06 11 05 00 DD 19 E5 DD 56 01 DD 5E 00 DD   .X........V..^..
8660   66 03 DD 6E 02 7C 41 19 10 FD BC 28 04 FD CB 08   F..n.|A....(....
8670   B6 DD CB 04 46 28 31 7C E3 46 23 FE CF 30 07 B8   ....F(1|.F#..0..
8680   38 04 46 B8 38 20 23 DD 70 03 DD 36 02 00 DD CB   8.F.8 #.p..6....
8690   04 DE F1 DD CB 04 4E C8 7A 2F 57 7B 2F 5F 13 DD   ......N.z/W{/_..
86A0   73 00 DD 72 01 C9 23 E3 DD 75 02 DD 74 03 E1 DD   S..R..#..U..T...
86B0   CB 04 9E C9 AF CD 54 0B EB CB F4 D3 0C AF 32 FF   ......T.......2.
86C0   0F FD 5E 09 79 0F 0F E6 3F 3C 57 15 28 07 3E FF   ..^.y...?<W.(.>.
86D0   CD E8 06 18 F6 79 E6 03 3C 4F AF 0D 28 06 0F 0F   .....y..<O..(...
86E0   C6 C0 18 F7 CD E8 06 AF E5 C5 32 FF 0F 3A FF 4F   ..........2..:.O
86F0   4F 7B AE A1 AE 77 7D C6 28 6F 7C CE 00 67 10 F1   O{...w}.(o|..g..
8700   C1 E1 23 C9 DD 7E 00 DD 56 0B DD 5E 06 DD CB 01   ..#..~..V..^....
8710   F6 F5 7E 23 83 5F 7E 23 82 57 F1 4E 23 46 23 CD   ..~#._~#.W.N#F#.
8720   FC 0A CB 77 20 2C CB 5F 20 11 AF C5 D5 47 ED B0   ...w ,._ ....G..
8730   12 D1 EB 0E 28 09 EB C1 10 F1 C9 EB C5 E5 41 1A   ....(.........A.
```

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8740   13 77 23 77 23 10 F8 70 23 70 E1 0E 28 09 C1 10   .W#W#...P#P...<...
8750   EB C9 CB 5F 20 16 AF C5 D5 47 ED A0 1B 1B EA 5A   ..._ ....G.....Z
8760   07 12 D1 EB 0E 28 09 EB C1 10 EC C9 EB C5 E5 41   .....(.........A
8770   1A 13 77 2B 77 2B 10 F8 70 2B 70 E1 0E 28 09 C1   ..W+W+..p+p..(..
8780   10 EB C9 DD CB 01 76 C8 DD CB 01 B6 DD 66 0E DD   ......v......f..
8790   6E 0D DD CB 00 76 28 08 7B ED 44 3C 4F 06 FF 09   N....v(.{.D<O...
87A0   CB F4 06 00 3E 28 93 4F 78 43 77 23 10 FC 09 15   ....>(.OxCw#....
87B0   20 F7 C9 EB 4E 23 46 23 CB F2 AF C5 D5 47 ED B0    ...N#F#.....G.
87C0   EB E1 0E 28 09 EB C1 10 F2 C9 7E A7 C8 FA D4 07   ...(......~.....
87D0   FE 64 30 06 CD E7 07 23 18 F0 E6 17 47 23 EB CD   .d0....#....G#..
87E0   A8 00 CD 68 00 18 E3 C5 E5 DD E5 A7 FA F3 07 DD   ...h...........
87F0   21 06 02 FE 20 30 0D F5 CD 54 08 CD F9 0C F1 3D   !... 0...T.....=
8800   20 F5 18 3B DD 96 00 5F 16 00 21 00 00 DD 4E 03    ..;..._..!...N.
8810   DD 46 04 19 10 FD 0D 20 F7 DD 56 06 DD 5E 05 19   .F..... ..V..^.
8820   CD 54 08 D5 DD 46 04 C5 E5 CD 72 08 E1 DD 4E 03   .T...F....r...N.
8830   09 C1 FD 7E 05 81 FD 77 05 10 EC D1 CD F9 0C DD   ...~...w........
8840   E1 E1 C1 C9 FD 7E 06 07 07 E6 03 3C 47 AF 37 8F   ...~.......<G.7.
8850   10 FD 47 C9 CD 44 08 48 FD 56 05 FD 7E 04 DD 86   ..G..D.H.V..~...
8860   01 10 FB FE A0 38 09 7A 41 DD 86 02 10 FB 57 AF   .....8.zA.....W.
8870   5F C9 DD 4E 03 06 00 DD E5 DD 21 00 00 DD 39 DD   _..N......!...9.
8880   E5 D1 3E 0C D3 19 3E 08 D3 0C FD 7E 06 E6 C0 28   ..>...>....~...(
8890   21 07 07 EB A7 ED 42 ED 42 F9 CB B4 F5 41 1A 13   !.....B.B....A..
88A0   77 23 77 23 10 F8 CB 21 F1 21 00 00 39 54 5D 3D   W#W#...!.!..9T]=
88B0   20 E1 CD 44 08 CD 74 00 FD 7E 06 D3 19 E6 30 F6    ..D..T...~....0.
88C0   08 CD 0E 0B EB F5 C5 D5 E5 41 1A 13 77 23 77 23   .........A..W#W#
88D0   10 F8 FD 7E 04 E6 03 28 01 70 E1 0E 28 09 D1 C1   ...~...(.p..(..
88E0   F1 D3 0C 10 E0 DD F9 DD E1 C9 00 00 00 00 00 00   ...............
88F0   00 20 20 20 20 20 00 20 50 50 50 00 00 00 00 48   .     . PPP....H
8900   48 FC 48 FC 48 48 20 78 80 70 08 F0 20 C0 C8 10   H.H.HH x.p.. ...
8910   20 40 98 18 60 90 A0 40 A8 90 68 60 60 60 00 00    @..`..@..h```..
8920   00 00 10 20 20 20 20 10 40 20 20 20 20 20 40 98   ...    .@     @.
8930   00 A8 70 D8 70 A8 00 00 20 20 F8 20 20 00 00 00   ..P.P... .. ...
8940   00 60 60 20 40 00 00 00 F8 00 00 00 00 00 00 00   .@@ @...........
8950   00 60 60 00 08 10 20 40 80 00 70 88 88 88 88 88   .@@... @..@. P
8960   70 20 60 20 20 20 20 70 70 88 08 70 80 80 F8 70   P @    PP..P...P
8970   88 08 30 08 88 70 10 30 50 90 F8 10 10 F8 80 F0   ..0..P.0P......
8980   08 08 88 70 30 40 80 F0 88 88 70 F8 08 10 20 40   ...P0@.....P...
8990   40 40 70 88 88 70 88 88 70 70 88 88 78 08 10 60   @@P..P.PP..X..@
89A0   00 60 60 00 60 60 00 60 60 00 60 60 20 40 10 20   .@@.@@.@@.@@.
89B0   40 80 40 20 10 00 00 F8 00 F8 00 00 40 20 10 08   @.@ ........@ .
89C0   10 20 40 70 88 08 10 20 00 20 70 88 B8 A8 B8 80   . @P... .P.....
89D0   78 70 88 88 F8 98 88 88 F0 88 88 F0 88 88 F0 70   XP............P
89E0   38 80 80 80 88 70 F0 88 88 88 88 88 F0 F8 80 80   8....P......P.
89F0   E0 80 80 F8 F8 80 80 E0 80 80 80 70 88 80 80 98   ...........P.
8A00   88 78 88 88 88 F8 88 88 88 70 20 20 20 20 20 70   .X...........P
8A10   08 08 08 08 08 88 70 88 90 A0 C0 A0 90 88 80 80   .X....P.....P
8A20   80 80 80 80 F8 88 D8 A8 A8 88 88 88 88 C8 A8 98   ...............
8A30   88 88 88 F8 88 88 88 88 88 F8 F0 88 88 F0 80 80   .P....H.....P
8A40   80 70 88 88 88 A8 90 68 F0 88 88 F0 A0 90 88 70   .P....H.....P
8A50   88 80 70 08 88 70 F8 20 20 20 20 20 20 88 88 88   ..P..P. .....
8A60   88 88 88 70 88 88 88 50 50 20 20 88 88 88 A8 A8   ...P...PP.....
8A70   D8 88 88 88 50 20 50 88 88 88 88 50 20 20 20 20   ....P P....P
8A80   F8 08 10 20 40 80 F8 70 40 40 40 40 40 70 00 80   ... @..P@@@@@P.
8A90   40 20 10 08 00 70 10 10 10 10 10 70 20 70 A8 20   @...P.....P. P P.
8AA0   20 20 20 00 20 40 F8 40 20 00 20 20 20 20 A8 70    .@.@ .    .@.@ .P
8AB0   20 00 20 10 F8 10 20 00 00 88 50 20 50 88 00 00    . ... ...P P..P P.
8AC0   20 00 F8 00 20 00 00 00 00 00 DD E1 E3 DD E9 48    ...............H
8AD0   06 00 21 DB 0A 09 7E FD 77 09 C9 20 43 5E 5C 25   ..!...~.w.. C^\%
8AE0   52 53 3B 2F 37 38 39 2A 34 35 36 2D 31 32 33 2B   RS;/789*456-123+
8AF0   26 30 2E 3D EB 77 ED A1 EA F5 0A C9 CD 0E 0B 18   &0.=.w..........
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3

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8B00   05 CD 54 0B CB F2 FD 73 04 FD 72 05 18 C9 CD 54   . . T . . . . S . . R . . . . T
8B10   0B D3 0C C9 B6 E0 A0 A0 A0 E0 40 40 40 40 40 E0   . . . . . . . . . . @@@@@.
8B20   20 E0 80 E0 E0 20 60 20 E0 A0 A0 E0 20 20 E0 80   . . . . . . @ . . . . . . . .
8B30   E0 20 E0 E0 80 E0 A0 E0 E0 20 20 20 20 E0 A0 E0   . . . . . . . . . . . . . . . .
8B40   A0 E0 E0 A0 E0 20 E0 00 40 00 40 00 40 E0 E0 E0   . . . . . . . . @. @. @.
8B50   E0 ED B0 C9 E5 E6 FC 6F 7B E6 03 B5 F5 E6 40 7B   . . . . . . . O[ . . . . . @[
8B60   28 03 2F C6 A0 6A 26 00 29 29 29 54 5D 29 29 19   (. /. J&. )))T])>.
8B70   CB 3F CB 3F 5F 16 00 19 EB F1 E1 C9 CD 81 0B 18   . ?. ?_. . . . . . . .
8B80   8B E5 C5 06 00 CB 39 09 7E C1 CB 41 28 04 0F 0F   . . . . . . 9. . . . A<. . .
8B90   0F 0F E6 0F E1 C9 E5 C5 06 00 CB 39 09 C1 CB 41   . . . . . . . . . . 9. . . A
8BA0   28 09 07 07 07 07 AE E6 F0 18 03 AE E6 0F AE 77   (. . . . . . . . . . . . . . W
8BB0   E1 C9 5F 16 00 CB 23 CB 12 19 5E 23 56 2B CD F9   . . _. . . #. . . ^#V+. . .
8BC0   0C 18 08 5F 16 00 19 7E FD 77 09 FD 74 0B FD 75   . . . _. . . . . W. T. U
8BD0   0A C9 DD 21 0D 02 06 42 21 EE 4F C5 FD CB 06 BE   . . . !. . . B!. O. . . . .
8BE0   CD F1 0B C1 CB 79 C8 3E BA CD E7 07 06 42 21 ED   . . . . . Y. >. . . . . B!.
8BF0   4F 78 E6 3F 3D F8 4F CD 81 0B 20 07 CB 78 28 03   OX. ?=. O. . . . . X<.
8C00   B1 20 14 CB B8 C6 06 E6 0F C6 2A CB 70 28 02 F6   . . . . . . . . . . *. P<.
8C10   80 CD E7 07 79 18 DD 3E 20 18 F0 06 03 E5 7E 3C   . . . . Y. . > . . . . . . <
8C20   27 77 20 03 23 10 F7 E1 23 23 3A F8 4F CB 4F C8   'W . #. . . ##: . O. O.
8C30   11 F6 4F 06 03 1A BE 28 07 D0 21 F8 4F CB FE C9   . . O. . . . <. . !. O. . .
8C40   1B 2B 10 F1 18 F4 FF 35 30 18 4C 5C 0C FF 0E FF   . +. . . . . 50. L\. . . .
8C50   43 14 02 FE 14 28 04 FE 13 20 F4 C7 47 41 4D 45   C. . . . <. . . . . . GAME
8C60   06 4F 56 45 52 00 3A 00 20 FE C3 CA 00 20 31 CE   . OVER. :. . . . . . . 1.
8C70   4F FF 1B 00 40 40 00 00 32 FF 0F 3D 32 EC 4F FF   O. . . @@. . 2. . =2. O.
8C80   00 15 17 BF 29 08 19 13 00 0F 02 11 F7 0D 21 00   . . . . ). . . . . . . . . !.
8C90   20 7E 23 FE 55 28 03 21 18 02 FF 4A E5 E5 CD 1E   . #. U<. !. . . . J.
8CA0   0D 11 10 0C 01 09 01 DD E1 78 C6 30 FF 32 3E 2D   . . . . . . . . . X. 0. 2>-
8CB0   FF 32 DD 66 03 DD 6E 02 FF 34 3E 08 82 57 1E 10   . 2. F. . N. . 4>. . W. .
8CC0   04 DD 66 01 DD 6E 00 E5 7C B5 20 DB 39 C5 01 01   . . F. . N. . . . 9. . .
8CD0   01 11 10 4D FF 4E C1 7E A7 28 03 B8 38 06 3E 3F   . . . M. N. . . (. . 8. >?
8CE0   FF 32 18 E9 E1 D1 47 EB 5E 23 56 10 FA 23 5E 23   . 2. . . . G. ^#V. . #^#
8CF0   56 23 4E 23 46 E1 F1 C5 E5 FD 73 04 FD 72 05 C9   V#N#F. . . . . . S. . R. .
8D00   F5 E5 C5 CD 1E 0D FF 35 08 20 09 BB 0D E1 FF 34   . . . . . . . 5. . . . . . 4
8D10   E1 F1 47 CB F1 11 30 30 FF 4E FF 51 0F C9 D5 FF   . . G. . . . 5. . . . . . . 4
8D20   1B 00 40 B8 01 00 FF 1B B8 41 48 0D 55 E1 11 18   . . G. . . 00. N. O. . . .
8D30   00 0E 04 FF 34 C9 D9 CD 9E 0D 4F FD 7E 07 A9 E6   . . @. . . . AH. U. . .
8D40   3F C8 21 3B 0D E5 FF 76 FF 43 0B 00 FF 45 51 0D   ?. !. . . V. C. . EQ.
8D50   C9 13 84 0D 14 5A 0D 1C 66 0D CB 60 C8 79 3C 28   . . . . . Z. F. . @. Y<<
8D60   3A CB 79 C0 0E FF 79 3C C0 D9 78 D9 FE 01 06 0A   :. Y. . . Y<. . X. . . . .
8D70   28 02 06 64 DB 1C 57 AF 5F 67 19 CE 00 27 10 FA   (. . D. . W. _G. . . '.
8D80   D9 77 18 14 0C 20 04 CD 9E 0D 0C CB F9 FF 40 FE   . W. . . . . . . . . . . @.
8D90   3D 28 08 E6 0F D9 FF 60 D5 FF 36 D1 D9 C9 C5 D9   =<. . . . . @. . 6. . . .
8DA0   E5 78 3C E6 3E D9 4F AF 47 D1 FF 1A C1 C9 F5 78   . X<. >. O. G. . . . . . . X
8DB0   3C E6 3E 47 F1 ED 6F 23 10 FB C9 45 4E 54 45 52   <. >G. . O#. . . ENTER
8DC0   20 00 FA 01 D7 0D 28 13 00 00 EC 0D 19 0E 47 55   . . . . . . . <. . . . GU
8DD0   4E 46 49 47 48 54 00 43 48 45 43 4B 4D 41 54 45   NFIGHT. CHECKMATE
8DE0   00 43 41 4C 43 55 4C 41 54 4F 52 00 53 43 52 49   . CALCULATOR. SCRI
8DF0   42 42 4C 49 4E 47 00 53 45 4C 45 43 54 20 47 41   BBLING. SELECT GA
8E00   4D 45 67 08 58 0D 28 43 29 20 42 41 4C 4C 59 20   MEg. X. <C) BALLY
8E10   4D 46 47 20 31 39 37 37 00 FF 4D 28 02 01 F3 4F   MFG 1977. . M<. . . O
8E20   31 E8 4E FF 00 1B 00 40 60 0E 00 1B F0 4E 78 00   1. N. . . . @@. . NX.
8E30   00 17 B8 28 08 5F E8 4E 08 00 0C 10 19 E8 4E 7D   . . . <. _ N. . . . . N]
8E40   46 24 0A 4F 7D 53 24 28 4F 7D 46 30 46 4F 7D 53   F$. OJS$<OJFOFOJS
8E50   30 64 4F 7B 04 D5 4F 02 21 58 0E E5 FF 43 65 0E   0DOE. O. !X. . . CE.
8E60   FF 45 A1 0E C9 2F 0F 0F 0F 05 0E 03 78 FE 14 28   . E. . . /. . . . . . X. . <
8E70   AF 0F 0F A1 FF 5D 29 0F EB 78 A1 67 79 94 FF 5D   . . . . . J). . X. GY. . ]
8E80   E8 4E 1A 86 CB 58 28 04 AE E6 07 AE 77 23 23 23   . N. . XC. . . . . W###
8E90   23 77 FF 19 E8 4E 3E 14 32 D6 4F C9 AF 32 E3 4F   #W. . N>. 2. O. . 2. O
8EA0   C9 01 D3 0F 02 9C 0E 13 69 0E DD 21 F0 4E 3A F3   . . . . . . . . . . . I. . !. N:.
8EB0   4F 47 4F C5 E5 11 BA 0E D5 E9 11 1E 00 DD 19 E1   OGO. . . . . . . . . . . . . . .
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4

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8EC0   C1 10 F0 C9 79 90 FF 5D E4 4F E6 0F CD 01 10 DD   ....Y..].O......
8ED0   7E 1A 82 FE 98 30 03 DD 77 1A DD 7E 1B 84 FE 55   .....0..W..~...U
8EE0   D0 DD 77 1B C9 DD E5 D1 1A A7 C8 DD 66 1D DD 6E   ..W........f..N
8EF0   1C FF 2E AF 12 C9 79 90 FF 5D E4 4F E6 10 C8 2B   ......Y..].O...+
8F00   2B 2B 2B 2B 7E 07 07 4F E6 03 FF 5D 26 0F DD 56   ++++...O...]&..V
8F10   1B DD 5E 1A 47 79 07 07 E6 03 FF 5D 22 0F 48 FF   ..^.GY.....]".H.
8F20   1C C9 00 55 AA FF 01 02 04 08 F8 01 FF 78 FF 5D   ...U.........x.]
8F30   E3 4F E6 10 C0 E5 DD 56 1B DD 5E 1A FF 3A DD 72   .O.....V..^..:.r
8F40   1D DD 73 1C EB DD E5 D1 01 03 08 FF 2C E1 18 AF   ..s.........,...
8F50   21 F0 4E 11 F3 4E 35 F2 69 0F FF 77 30 FE 08 38   !.N..N5.I..W0..8
8F60   02 E6 03 3C 12 FF 77 78 77 23 13 35 F2 77 0F FF   ...<..WXW#.5.W..
8F70   77 04 12 FF 77 78 77 23 13 35 F2 93 0F 11 F5 4E   W...WXW#.5.....N
8F80   FF 77 0A 3C FE 03 28 F5 FE 07 28 F1 12 FF 77 28   .W.<..(...(...W(

8F90   32 F2 4E 1A CD 01 10 01 0A 4F 0A 82 FE 50 30 DD   2.N......O...P0.
8FA0   02 5F 03 0A 84 FE 2E 30 D4 02 57 21 F3 4E 46 23   ._.....0..W!.NF#
8FB0   7E CD 1A 0F 67 D5 3E 5C 90 92 57 7C FF 1C 3E A0   ....G.>\..W\..>.
8FC0   91 93 5F 7C FF 1C E1 54 FF 1C 3E FF 32 EC 4F 3E   .._\...T..>.2.O>
8FD0   01 18 2A 3A F3 4F 3D FE 04 D2 50 0F 21 C4 0E CD   ..*:.O=...P.!...
8FE0   AA 0E 21 E5 0E CD AA 0E 21 F6 0E CD AA 0E 41 11   ..!.....!.....A.

8FF0   E2 FF DD 19 C5 CD 2D 0F C1 10 F4 3E 04 32 D5 4F   ......-....>.2.O
```

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@
:M 8000
8000 C9 01?
:D 8000 8FFF          location 1000 → 1FFF

8000  C9 C5 47 FF 7F 00 01 00 00 01 C1 C9 08 5B A5 07   ..G...........[..
8010  08 5B A5 07 FF FF FF FF FF FF FF FF FF FF FF FF   .[..............
8020  31 C0 4E FF 00 1B 00 40 60 0E 00 1D 08 52 70 09   1.N....@`....RP.
8030  FF 17 B8 1F 08 19 1C 13 1B C0 4E 94 00 00 0F 03   ..........N.....
8040  CD 86 11 21 43 10 E5 FF 43 14 02 FE 13 C0 78 FF   ...!C...C.....X.
8050  5D 9F 10 E6 0F 4F AE 0F 0F 0F 0F 5F 21 C2 4E 7E   ]....O....._!.N~
8060  A7 28 32 7B A7 C0 57 79 FE 0E C8 23 71 34 5F 2B   .(2{..Wy...#q4_+
8070  7E 0F 38 07 CD CA 10 ED B0 18 09 CD 0A 12 CD CA   ~.8.............
8080  10 EB ED B0 21 00 00 22 DA 4E 21 DD 4E E5 CD C7   ....!..".N!.N...
8090  12 E1 C3 DE 11 7B FF 5B B8 10 D5 21 C1 4E 7E C9   .....{.[...!.N~.
80A0  80 60 61 31 51 52 40 14 07 08 09 13 04 05 06 12   .`a1QR@.........
80B0  01 02 03 11 70 00 0E 20 8A 11 E8 10 11 11 23 11   ....p.. ......#.
80C0  DE 10 D8 10 38 12 AF 11 20 10 21 E6 4E 06 0B 48   ....8... .!.N..H
80D0  19 10 FD EB 21 CF 4E C9 21 C2 4E 71 18 42 CD 0A   ....!.N.!.Nq.B..
80E0  12 FF 6B 0B CF 4E 18 38 FE 02 20 04 36 01 18 1B   ..k..N.8.. .6...
80F0  FE 00 08 79 08 20 0F 36 01 CD 16 12 FF 5F C4 4E   ...y. .6....._.N
8100  0B 00 CF 4E 18 03 CD 46 11 08 4F 79 32 C0 4E 18   ...N...F..Oy2.N.
8110  0F 3D C0 36 02 CD 46 11 3E 05 32 C0 4E CD 16 12   .=.6..F.>.2.N...
8120  C3 84 10 A9 C0 FF 5F CF 4E 09 00 D0 4E 32 D8 4E   ...._.N...N2.N
8130  21 C4 4E 06 0B 3A CE 4E FF 66 32 CE 4E EB 01 0B   !.N..:.N.f2.N...
8140  00 CD 75 11 18 DA CD 16 12 3A C0 4E FF 5B 58 11   ..u......:.N.[X.
8150  D5 21 CF 4E 11 C4 4E 06 0B C9 62 11 65 11 68 11   .!.N..N...b.e.h.
8160  6B 11 FF 62 01 FF 64 01 FF 66 01 FF 68 FF 5F CF   k..b..d..f..h._.
8170  4E 0B 00 C4 4E 09 2B 7E E6 0F C8 3E 01 77 3C 32   N...N.+~...>.W<2
8180  C1 4E CD 16 12 E1 0E 00 18 25 CD 0A 12 21 DA 4E   .N.......%...!.N
8190  11 CF 4E 7E FE 0A C8 23 7E A7 28 0F B9 C8 79 23   ..N~...#~.(...y#
81A0  4E 35 EB FF 58 4F EB 2B 2B 18 2A 2B B6 20 12 CD   N5..XO.++.*+.. .
81B0  0A 12 C5 FF 1B CF 4E 15 00 00 21 DA 4E C1 B1 28   ......N...!.N..(
81C0  1C 79 FE 0E 20 07 23 77 23 36 09 18 09 13 13 13   .y.. .#w#6......
81D0  13 13 CD 0F 13 34 79 11 DD 4E CD 0F 13 EB 11 08   .....4y..N......
81E0  53 0E 07 E5 21 C2 4E 7E A7 28 02 C6 31 C6 20 FF   S...!.N~.(..1. .
81F0  32 23 7E A7 28 07 C6 0F 36 00 2B 36 00 C6 20 FF   2#~.(...6.+6.. .
8200  32 E1 3A C0 4E 0E 03 C3 8A 12 21 C1 4E 7E FE 02   2.:.N.....!.N~..
8210  C0 AF 77 2B 77 C9 FF 31 28 00 08 5C 20 40 21 58   ..w+w..1(..\ @!X
8220  4E CD C7 12 21 E4 4E 7E FE 5C 28 01 34 23 7E A7   N...!.N~.\(.4#~.
8230  28 19 FE 52 28 15 34 C9 AF 32 E3 4F 21 E4 4E 7E   (..R(.4..2.O!.N~
8240  CB 41 20 1A A7 C8 23 7E A7 C8 35 3E 08 FF 31 28   .A ...#...5>..1(
8250  00 20 4F 28 40 3D 20 F5 3C 11 18 49 18 18 23 96   . O(@= .<..I..#.
8260  FE 0B D8 34 3E 08 FF 31 D8 FF 20 50 80 4C 3D 20   ...4>..1.. P.L= 
8270  F5 3E 0A 11 18 01 21 E5 4E 86 21 80 4E 01 D8 FF   .>....!.N.!.N...
8280  09 3D 20 FC 0E 0D FF 56 0E 00 F5 41 0E 0C FF 56   .= ....V...A...V
8290  CB 4F 20 16 CB 47 3E 04 28 02 3E 08 B0 4F 06 8B   .O ..G>.(.>..O..
82A0  FF 36 F1 FF 5D C1 12 FF 32 C9 48 CB D9 21 B4 12   .6..].. 2.H..!..
82B0  FF 34 F1 C9 20 2A 4F 56 45 52 46 4C 4F 57 2A 20   .4.. *OVERFLOW* 
82C0  00 20 2B 2D 62 63 3D 11 CF 4E 3A C0 4E 0E 0D FF   . +-bc=..N:.N...
82D0  58 3A D9 4E 07 0D FF 58 EB 01 06 00 AF FF 1A 0E   X:.N...X........
82E0  13 FF 56 CD 0F 13 20 0D 0D 79 FE 09 20 F3 3E 0E   ..V... ..y.. .>.
82F0  CD 0F 13 28 EC EB 7E E6 0F 20 05 CD 03 13 18 F6   ...(..~.. ......
8300  FE 0E C0 01 06 00 09 A7 41 2B ED 67 10 FB C9 06   ........A+.g....
8310  05 EB E5 ED 6F 23 10 FB 77 E1 EB C9 76 5C 00 07   ....o#..w...v\..      start
8320  07 07 07 07 FF 85 FF FF (31) 96 4F FF 4D 35 02 82  ...........1.O.M5.  CHECK
8330  DC 4F FF 4D 28 02 01 F3 4F FF 1B 96 4F 0C 00 00   .O..M(..O...O...    MATE
8340  F3 31 96 4F FF 00 19 A9 17 15 1B E4 4F 04 00 00   .1.O........O...
8350  1B A2 4F 22 00 00 17 BE 40 08 1D 00 00 A0 0B 55   ..O"....@......U
8360  1D 80 00 20 09 00 1D 58 00 20 09 00 1D 28 00 20   ... ...X. ...(. 
8370  09 00 1D 00 00 20 09 00 0E 02 21 28 33 22 AC 4F   ..... ....!(3".O
8380  21 78 33 22 B3 4F 21 50 1F 22 BA 4F 21 50 47 22   !x3".O!P."O!PG"
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6

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8390  C1 4F CD B3 14 DD 21 0D 02 FF 37 4C 02 24 42 DC   .O....!...7L.$B.
83A0  4F 3A F3 4F FE 05 38 02 3E 04 32 A4 4F FE 02 38   O:.O..8.>.2.O..8
83B0  04 FE 05 38 02 3E 04 32 A2 4F 3A A4 4F 47 3A A2   ...8.>.2.O:.OG:.
83C0  4F 4F 16 00 7A CD 5B 16 C5 D5 7A C6 31 DD 5E 04   OO..Z.[...Z.1.^.
83D0  DD 56 05 1D 1D FD 4E 06 FF 32 FD 5E 07 FD 56 08   .V....N..2.^..V.

83E0  D5 FF 32 D1 7B C6 06 5F 14 14 01 01 04 FD 66 05   ..2.[.._......F.
83F0  FD 6E 04 3E 10 FF 24 D1 D5 DD E5 7A 06 00 4A 21   .N.>.$.....Z..J!
8400  96 4F 09 09 09 CD E2 15 DD E1 D1 C1 AF B0 28 09   .O...........(.
8410  3E C0 DD 77 06 05 18 06 00 3E 80 DD 77 06 14 0D   >..W.....>..W...
8420  AF B1 20 A0 3E 03 F5 FF 51 05 32 A3 4F CD 90 14   .. .>..Q.2.O...
8430  F1 F5 C6 30 11 4C 2F 0E 44 FF 32 FF 51 28 FF 14   ...0.L/.D.2.Q(..
8440  F1 3D 20 E2 CD B3 14 CD 49 16 AF 32 DD 4F FF 43   .= ....I..2.O.C
8450  14 02 FF 45 58 14 18 F6 41 6B 14 55 83 14 57 83   ...EX...AK.U.W.
8460  14 59 83 14 5B 83 14 53 8A 14 C0 CD 49 16 3A A3   .Y..[..S....I.:
8470  4F 3C E6 03 32 A3 4F CD 5B 16 DD CB 06 7E 28 EE   O<..2.O.[....~(.
8480  C3 BB 14 D6 15 CB 3F C3 1D 16 CD 49 16 FF 48 C9   ......?....I..H.
8490  3A A3 4F CD 5B 16 DD 7E 03 06 03 0F 38 02 10 FB   :.O.[..~....8...
84A0  48 06 00 FD 09 FD 7E 00 D3 13 3E 09 D3 15 3E 11   H.....~...>...>.
84B0  D3 10 C9 FF 1B B8 41 20 0D 00 C9 DD 4E 00 DD 46   ......A ....N..F
84C0  02 DD CB 06 76 20 03 AF 47 4F 78 B7 20 01 41 DD   ....v..GOx. .A.
84D0  70 00 78 B7 20 05 0E 00 CD 7E 16 DD 7E 01 CD AB   p.x. ....~..~...
84E0  16 28 13 CD A9 16 28 0E 41 CD A9 16 28 08 DD 46   .(....(.A...(..F
84F0  01 CD A9 16 20 3C DD 77 01 DD 77 03 DD 56 05 DD   .... <.W..W..V..
8500  5E 04 CD 24 15 FD 66 05 FD 6E 04 01 01 04 3E 10   ^..$..F..N....>.
8510  FF (24) 3A A5 4F DD (77) 04 3A A6 4F DD 77 05 CD FF   .$:.O.W.:.O.W...
8520  (15) C3 90 14 D5 FF (3B) 00 EB 06 00 11 01 04 FF (2A)   ....;........*
8530  D1 C9 01 6C 17 11 80 17 3E 05 21 B1 17 F5 C5 D5   ...L....>.!.....
8540  E5 1A D3 00 C5 DD 56 05 DD 5E 04 CD 24 15 E1 3E   ....V..^..$..>
8550  10 01 01 04 FF (24) FF (51) 07 E1 01 18 08 ED B3 D1   .....$...Q......
8560  C1 F1 3D 28 07 13 03 03 03 03 18 D1 FD 56 05 FD   ..=(.........V..
8570  5E 04 FD 21 00 00 FD 19 11 00 04 FD 7E 00 21 B8   ^..!........~.!.
8580  41 01 20  0D ED B1 20 05 03 28 73 18 F7 FD 23 15 A   A. .....+S...#.
8590  20 E9 DD CB 06 76 28 04 21 A4 4F 35 DD CB 06 BE   .....v(.!.O5....
85A0  0E 04 0D 79 CD 5B 16 DD CB 06 7E 28 18 06 00 C5   ...Y.[....~(....
85B0  79 21 96 4F 09 09 09 37 CD E2 15 C1 FF (54) 79 C5   Y!.O...7.....TY.
85C0  B7 CD E2 15 C1 FF (51) 1E 79 B7 20 D6 21 A2 4F 35   ......Q.y. .!.O5
85D0  35 28 02 34 C9 3A DC 4F 3D 27 32 DC 4F C2 40 13   5(.4.:.O='2.O.@.
85E0  FF (78) FD 4E 09 30 04 CB A1 CB E9 FD 5E 07 FD 56   .X.N.0......^..V
85F0  08 3E 0C 83 5F 14 06 43 DD 21 0D 02 FF (36) C9 DD   .>.._..C.!...6..
8600  CB 06 7E C8 DD 7E 03 CD 2E 17 DD 56 05 DD 5E 04   ..~..~....V..^
8610  E5 CD 24 15 E1 01 01 04 3E 10 FF 24 C9 CD 5B 16   .$....>..$..[.
8620  AF B0 20 03 DD 7E 02 DD 77 02 DD AE 01 28 12 EE   .. ..~..W....(..
8630  0C 28 0E EE 0C EE 03 28 08 EE 03 DD CB 06 76 20   .(....(....v
8640  03 DD 7E 01 DD 77 03 18 B6 3A A4 4F B7 3E 02 28   ..~..W...:.O.>.(
8650  06 21 A2 4F 3E (08) 96 32 D5 4F C9 D5 E5 FF (5B) 6E   .!.O>.2.O....[N
8660  16 D5 FD E1 FF (5B) 76 16 D5 DD E1 E1 D1 C9 44 17   ....[v....D.
8670  4E 17 58 17 62 17 A8 4F AF 4F B6 4F BD 4F FF (77)   N.X.B.O.O.O.O.W
8680  20 B7 28 08 DD 46 01 78 CD AB 16 C8 FF (77) 04 47    .(..F.x....W.G
8690  04 3E 80 07 10 FD 47 3E 08 CD AB 16 20 02 47 C9   .>....G>.... .G.
86A0  06 0F 3E 08 CD AB 16 47 C9 3E 08 D5 16 08 0F 5F   ..>....G.>....._
86B0  A0 CD BF 16 7B 28 06 15 20 F4 37 CB 12 D1 C9 C5   ....[<.. .7.....
86C0  D5 E5 F5 DD 56 04 DD 5E 05 CB 57 28 0A 7A FE 00   ....V..^..W(.z..
86D0  28 2F D6 04 57 18 30 CB 5F 28 0A 7A FE 9C 30 21   (/..W.0._(.z..0!
86E0  C6 04 57 18 22 CB 47 28 0A 7B FE 0B 28 13 D6 04   ..W.".G(.[..(...
86F0  5F 18 14 CB 4F 28 0A 7B FE 5B 28 05 C6 04 5F 18   _...O(.[.[(..._.
8700  06 F1 37 CB 12 18 23 D5 D5 C1 51 58 FF (3B) 00 E1   ..7...#...QX.;..
8710  EB 7E B7 20 EC 01 28 00 09 7E B7 20 E4 7A 32 A5   .~. ..(..~. .z2.
8720  4F 7B 32 A6 4F F1 16 00 CB 3A E1 D1 C1 C9 21 89   O{2.O..:....!.
8730  17 CB 47 C0 21 91 17 CB 4F C0 21 8D 17 CB 5F C0   ..G.!...O.!..._.
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8740   21 95 17 C9 FD EE E1 D4 99 17 18 04 01 18 C8 BD   !...............
8750   B2 A8 9D 17 1C 85 01 1C 9F 96 8D 85 A1 17 1C 2D   ...............-
8760   01 1C 7E 77 70 6A A5 17 18 5D 01 18 00 14 14 00   ..~wpj...]......
8770   00 45 51 00 05 40 01 50 11 40 01 44 00 00 00 00   .EQ..@.P.@.D....
8780   07 03 07 03 77 04 00 01 80 14 55 41 00 14 05 05   ....w.....UA....
8790   14 00 41 55 14 14 50 50 14 08 A8 2A 20 FF C3 C3   ..AU..PP...* ...
87A0   FF ⓪Ⓒ FC 3F 30 AA 82 82 AA F8 F8 F8 F8 B5 52 F8   ...?0........R.
87B0   77 EF FF 3F 00 FF FD F5 F5 8F EE 3E 00 FF FD F5   W..?.......>....
87C0   F5 4E 88 38 00 FF FD F5 F5 48 44 34 00 FF FD F5   .N.8.....HD4....   sta.b
87D0   F5 00 00 00 00 00 00 00 00 FF FF FF FF FF Ⓒ③ E8   ...............
87E0   19 F3 FF 11 80 DD 21 0D 02 3A DC 4F B7 28 08 FF   ......!..:.O.(..   GUNFIG1 T
87F0   37 4C 02 0B 42 DC 4F AF D3 0C 32 FF 0F FB C9 FF   7L..B.O...2.....
8800   0D DC 61 4F DA 4F 19 4F 18 09 FF 0D DC 78 4F DB   ..aO.O.O.....xO.
8810   4F 3D 4F FD 7E 07 B7 C8 0A B7 C8 7E B7 28 09 11   O=O.~......~.(..
8820   12 00 19 7E B7 28 01 C9 0A 3D 02 20 0D 3A DC 4F   ...~.(...=. .:.O
8830   B7 3E 10 28 02 3E 02 32 DC 4F E5 DD E5 0A 6F 26   .>.(.>.2.O....o&
8840   00 29 29 11 68 02 DD CB 00 76 3E 40 28 01 AF 19   .)).h....v>@(...
8850   EB FF 3A EB 06 05 11 28 00 36 FF 19 10 FB 16 00   ..:....(.6......
8860   DD 5E 0F 62 6B 29 19 11 8F 1D 19 EB C1 E1 E5 23   .^.bk).........#
8870   36 01 23 03 03 03 CD D3 19 03 03 23 36 01 23 CD   6.#........#6.#.
8880   D3 19 E1 36 80 FF 13 12 4F 01 D7 1F C9 48 09 DD   ...6....O....H..
8890   21 61 4F 18 04 DD 21 78 4F DD 4E 00 11 80 00 21   !aO...!xO.N....!
88A0   80 00 FF 7E DD 74 09 DD 75 08 DD 72 04 DD 73 03   ...~.t..u..r..s.
88B0   C9 DD 21 78 4F 78 2F 18 05 DD 21 61 4F 78 E6 E0   ..!xOx/...!aOx..
88C0   0F 0F 0F 0F FE 0E 20 02 3E 0C DD 77 0F C9 DD 7E   ...... .>..w...~
88D0   01 E6 60 FE 20 28 0F D0 DD CB 07 5E C8 DD 36 01   ..`. (.....^..6.
88E0   00 DD 36 07 01 C9 DD 7E 06 FE 48 30 0E DD 36 02   ..6....~..H0..6.
88F0   02 DD 36 01 80 21 8B 1D FF 3E C9 DD 36 01 00 FE   ..6..!...>..6...
8900   58 30 1D 3A 90 4F B7 C0 1E 4C DD 56 0B 15 FF 3B   X0.:.O...L.V...;
8910   00 EB 11 D7 FF 06 00 7E 70 23 B6 70 19 20 F8 C9   .......~p#.p. ..
8920   FE 60 30 0C 1E 40 DD CB 00 76 20 DE 1E 58 18 DA   .`0..@...v .X..
8930   DD CB 00 76 28 0C FF 0D DD 61 4F 08 AD 1F A6 4F   ...v(....aO....O
8940   18 0A FF 0D DD 78 4F 64 BD 1F A2 4F DD 36 11 06   .....xOd...O.6..
8950   DD 36 12 80 DD 36 01 68 DD 7E 0B D6 08 FE 13 30   .6...6.h.~.....0
8960   02 C6 20 57 FF 54 2B 7E FE 05 CE 00 77 60 69 DD   .. W.T+~....w`i.
8970   21 12 4F 3E C0 FF 12 0E 0C 21 02 1F F3 FF 34 FF   !.O>.....!....4.
8980   51 FA 3E 01 32 DE 4F C9 21 F4 1E F5 3E 08 D3 19   Q.>.2.O.!...>...
8990   F1 FE 01 D8 FE 04 30 03 CD C8 19 03 FE 02 D8 FE   ......0.........
89A0   05 30 03 CD C8 19 FE 03 D8 03 08 3E 81 32 90 4F   .0.........>.2.O
89B0   08 CD C8 19 FE 04 D8 03 21 E5 1D F5 3E 0C D3 19   ........!...>...
89C0   F1 CD C8 19 FE 05 D8 03 F5 D5 0A 57 3E 08 FF 22   ...........W>.."
89D0   D1 F1 C9 1A 77 13 03 23 1A 77 23 13 03 36 00 03   ....w..#.w#..6..
89E0   23 0A EB 86 EB 77 13 C9 Ⓕⓕ 4D 1E 02 84 F4 4F 31   #....w...M....O1
89F0   06 4F FF 00 1B 06 4F D6 00 00 78 02 F8 4F 17 B8   .O....O...x..O..
8A00   D6 08 19 C3 1D 13 12 4F C0 9F 1F 02 F3 FF 00 5F   .......O......._
8A10   DA 4F 0C 00 CB 1D 1B 00 40 68 01 FF 1B 68 41 F8   .O......@h...hA.
8A20   0C 00 1B 12 4F 8F 00 00 0D 10 0D 02 37 08 02 0B   ....O.......7...
8A30   C4 A2 4F 37 88 02 0B C4 A6 4F 05 2C 1B 35 2C 01   ..O7.....O.,.5,.
8A40   0B 7A 1D 02 AF 32 90 4F 3A A1 4F 1E 58 01 BE 1D   .z...2.O:.O.X...
8A50   CD 88 19 3A A5 4F 1E 40 01 B9 1D CD 88 19 3E 4F   ...:.O.@......>O
8A60   32 14 4F 32 17 4F DD 21 61 4F DD 36 00 10 21 15   2.O2.O.!aO.6..!.
8A70   4F CD 30 1D DD 21 78 4F DD 36 00 50 CD 30 1D 3A   O.0..!xO.6.P.0.:
8A80   90 4F B7 28 1D DD 21 8F 4F DD 36 00 10 DD 36 0C   .O.(..!.O.6...6.
8A90   03 DD 36 08 40 DD 36 06 48 DD 36 0B 0A CD 50 1D   ..6.@.6.H.6...P.
8AA0   18 0B 3E 08 D3 19 FF 23 4C 2A 08 F4 1E 11 12 00   ..>....#L*......
8AB0   DD 21 18 4F 01 20 04 3E 02 B8 20 02 0E 60 DD 71   !.O. .>. ..`.q
8AC0   00 DD 36 07 01 DD 36 0C 03 DD 19 10 EC 3E 1D ED   ..6...6......>..
8AD0   47 3E 74 D3 0D FF 51 64 F3 DD 21 0D 02 FF 00 2B   G>T..Qd..!....+
8AE0   12 08 FF 33 40 35 40 01 0B 87 1D 33 20 02 0B BB   ...3@5@....3 ...
8AF0   07 53 1B 0D 01 68 32 07 53 1B 51 3C 2B 08 08 FF   .S...h2.S.Q<+...
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8B00    38 40 02 FF 00 43 14 02 45 34 1B 02 DD 21 18 4F   8@...C..E4...!.O
8B10    11 12 00 06 04 C5 D5 CD CE 18 D1 C1 DD 19 3A DE   ..............:.
8B20    4F 3D 28 DF 10 EF 18 DB 02 C3 0C 1A 3A F8 4F CB   O=<.........:.O.
8B30    7F C8 FF 78 08 28 1B 09 28 1B 5C B9 18 5D B1 18   ...X.<..<.\..].
8B40    55 8F 18 57 95 18 93 8D 18 54 FF 17 56 0A 18 51   U..W.....T..V..Q
8B50    E1 17 C0 32 32 32 32 32 08 08 D9 DD E5 3E 74 D3   ...22222.....>T.
8B60    0D 3E C8 D3 0F 21 12 4F CD 67 1D CD 25 1D AF 32   .>...!.O.G..%.2
8B70    FF 0F DD CB 01 46 20 28 11 05 14 FF 28 26 1E DD   .....F (....(&..
8B80    6E 12 2C 2C FF 1E DD CB 01 6E 20 30 21 D7 1D 16   N.,,.....n 0!...
8B90    00 DD 5E 0F 19 5E 23 56 EB FF 1E 21 0C 1F 18 08   ..^..^#V...!....
8BA0    11 04 16 FF 28 21 3C 1F FF 1E DD 72 0E DD 73 0D   ....(!<....R..S.
8BB0    21 15 4F CD 50 1D DD E1 08 D9 FB C9 21 08 1F 18   !.O.P.......!...
8BC0    E7 F5 C5 D5 E5 DD E5 21 19 4F 11 11 00 06 04 CD   .......!.O......
8BD0    1A 1D 23 11 16 00 06 03 CD 1A 1D AF 32 FF 0F 06   ..#.........2...
8BE0    04 DD 21 18 4F DD CB 01 76 28 11 DD 66 0E DD 6E   ..!.O...v(..F..N
8BF0    0D DD 7E 0F D3 0C 36 C0 DD CB 01 B6 DD CB 01 7E   ..~...6........
8C00    28 2B DD 56 0B DD 5E 06 DD 7E 00 FF 38 DD 72 0E   (+.V..^..~..8.R.
8C10    DD 73 0D DD 77 0F 21 00 40 19 7E EB 36 C0 B7 28   .S..W.!.@..6..(
8C20    08 DD CB 01 BE DD CB 01 EE DD CB 01 F6 11 12 00   ................
8C30    DD 19 10 B1 21 12 4F CD 67 1D 28 12 3E 76 D3 0D   ....!.O.G.(.>V..
8C40    DD 7E 0B FE 32 3E 00 30 02 3E 6A D3 0F FB DD 21   ..2>.0.>J....!
8C50    18 4F 06 04 21 8B 1D 11 12 00 DD CB 01 7E 28 0C   .O..!........(. 
8C60    FF 3E DD CB 07 5E 28 04 DD CB 01 BE DD 19 10 EA   .>...~(....... 
8C70    06 02 21 15 4F CD 67 1D CA F8 1C CD 25 1D FB DD   ..!.O.G....%...
8C80    CB 01 46 C2 03 1D DD CB 01 6E 20 25 DD 7E 03 DD   ..F.....n %.... 
8C90    B6 04 DD B6 08 DD B6 09 20 17 DD 77 02 DD CB 01   ........ ..W....
8CA0    66 20 36 DD 36 12 4B DD CB 01 DE DD CB 01 E6 18   F 6.6.K........
8CB0    28 21 83 1D FF 3E 28 08 DD CB 01 DE DD CB 01 A6   (!...>(........ 
8CC0    DD 7E 11 91 F2 D6 1C DD 5E 12 16 1E 1A DD 77 12   .~......^.....W.
8CD0    13 1A DD CB 01 DE DD 77 11 DD 7E 0F DD BE 10 28   .......W..~....(
8CE0    07 DD CB 01 DE DD 77 10 DD CB 01 5E 20 20 21 15   .....W.....^  !.
8CF0    4F CD 50 1D 05 C2 75 1C FB CD 00 02 DD E1 E1 D1   O.P...U.........
8D00    C1 F1 C9 21 78 1D FF 3E 21 15 4F CD 25 1D DD CB   ...!X..>!.O.%...
8D10    01 9E 21 12 4F CD 50 1D 18 DE 7E 23 E6 A0 28 01   ..!.O.P...~#..(.
8D20    34 19 10 F6 C9 F3 DD 7E FF 77 A7 C0 23 77 2B C9   4......W.#W+.
8D30    DD 36 03 32 DD 36 01 80 DD 36 07 01 DD 36 0C 01   .6.2.6...6...6.
8D40    DD 36 06 04 DD 36 0B 28 DD 36 0F 06 DD 36 12 4B   .6...6.(.6...6.K
8D50    DD E5 D1 F3 DD 36 FF 00 23 7E 73 A7 28 06 5F 7E   .....6..#.S.(._~
8D60    2B 1B 12 C9 2B 73 C9 F3 5E 23 23 56 2B 2B 7B A7   +...+S.^##V++{.
8D70    D5 DD E1 C9 C1 1B 59 1B 0A 44 47 45 54 20 52 45   ......Y..DGET RE
8D80    41 44 59 00 2F 0A 48 44 52 41 57 00 9F 09 5B 00   ADY./.HDRAW...[.
8D90    03 0F 00 03 0F 00 04 0F 00 02 0C 00 04 0F 00 01   ................
8DA0    0B 00 04 0F 00 00 08 00 04 0F 00 FF 06 00 04 0F   ................
8DB0    00 FE 04 00 03 0F 00 FD 03 48 16 2C 43 0E 12 44   .........H.,C..D
8DC0    28 0D 3F 9D 76 FC 87 9D 76 6C 87 06 06 00 00 00   (.?.V...VL.....
8DD0    30 30 00 00 80 0F 0F F8 1D 06 1E 10 1E 18 1E 24   00.............$
8DE0    1E 32 1E 42 1E 01 11 08 1C 3E 68 08 08 3C 7E A9   .2.B.....>K..<.
8DF0    08 3C 7E EB 89 08 1C AE 0A 0A 02 05 40 00 51 00   .<.........@.Q.
8E00    04 00 01 00 00 40 0A 0A 02 03 50 00 14 00 01 40   .....@....P....@
8E10    0A 0A 02 02 54 00 55 40 0A 07 02 04 10 00 05 40   ....T.U@.......@
8E20    54 00 50 00 0A 06 02 05 00 40 45 00 10 00 50 00   T.P......@E...P.
8E30    40 00 0A 05 02 06 00 40 01 00 05 00 14 00 54 00   @......@......T.
8E40    50 00 0A 05 01 05 01 44 10 40 40 60 04 00 0F 03   P......D.@@`....
8E50    05 01 55 00 05 45 40 15 01 40 50 01 40 15 00 54   ..U..E@..@P.@..T
8E60    70 04 02 0F 02 05 15 50 54 50 50 50 50 50 55 15   P......PTPPPPPU.
8E70    4B 04 03 0F 02 05 55 00 15 00 15 00 14 00 05 40   K.....U........@
8E80    D2 14 00 01 04 13 01 10 00 00 45 54 40 00 55 55   ..........ET@.UU
8E90    40 00 0A A8 00 00 0A A2 00 01 0A AA 80 14 02 AA   @...............
8EA0    00 50 00 A8 05 40 05 55 54 00 15 55 50 00 54 55   .P...@.UT..UP.TU
8EB0    50 00 50 05 54 00 50 01 55 00 10 01 55 40 10 00   P.P.T.P.U...U@..
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8EC0   05 50 00 00 01 50 00 00 00 40 00 00 01 40 00 00   . P . . . P . . . @ . . . @ . .
8ED0   00 54 D2 3C 00 0D 04 07 01 10 00 00 45 54 40 00   . T . < . . . . . . . . E T @ .
8EE0   55 55 40 00 0A A8 00 00 0A 88 15 01 16 A5 55 41   U U @ . . . . . . . . . . . U A
8EF0   15 55 55 55 01 0C 20 30 38 30 B2 F2 F6 3C 3C 30   . U U U . . . 080 . . . < < 0
8F00   30 30 47 4F 54 20 4D 45 00 00 01 01 00 00 03 0F   00GOT ME . . . . . . . .
8F10   00 44 00 11 55 10 15 55 50 02 AA 00 02 A2 00 02   . D . . U . . U P . . . . . . .
8F20   AA 80 00 AA 00 00 A8 00 15 55 00 55 55 50 51 55   . . . . . . . . . U . UUPQU
8F30   50 41 55 00 41 55 00 45 55 00 01 55 00 00 04 16   PAU. AU. EU. . U. . . .
8F40   00 05 50 00 00 55 55 00 01 55 55 40 05 55 55 50   . . P . . UU. . UU@. UUP
8F50   15 54 15 54 15 50 05 54 15 40 01 54 15 40 01 54   . T. T. P. T. @. T. @. T
8F60   15 50 05 54 05 54 15 50 01 55 55 40 00 55 55 00   . P. T. T. P. UU@. UU.
8F70   00 15 54 00 02 AA AA 30 00 AA AA 00 12 AA AA 84   . . T . . . . . . . . . . . . .
8F80   10 A8 2A 04 10 20 08 04 52 AA AA 85 10 20 08 04   . . * . . . . R . . . . . . . .
8F90   10 00 00 04 10 00 00 04 37 80 11 B0 09 00 C9 CD   . . . . . . . . 7. . . . . . .
8FA0   99 1F 24 7E 0C 8D 12 96 06 A8 24 96 F0 CD 99 1F   . . $ . . . . . . . $ . . . . .
8FB0   12 BD 06 BD 24 8D 12 BD 06 8D 24 70 F0 CD 99 1F   . . . . $ . . . . . $P . . . .
8FC0   18 E1 12 E1 06 E1 18 E1 12 BD 06 C8 12 C8 06 E1   . . . . . . . . . . . . . . . .
8FD0   12 E1 06 EE 12 E1 F0 88 EF FF 3F 00 FF FD F5 F0   . . . . . . . . . . ? . . . . .
8FE0   E0 B0 FF 3F E1 05 05 8F 05 4C F0 FF FF FF FF FF   . . . ? . . . . . L . . . . . .
8FF0   FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF   . . . . . . . . . . . . . . . .
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