

Holders of Revised HARVEST Specifications Dated 28 August 1959 can bring this issue up to date by:

1. Insert Page 1.1
2. a) In section 1.2 gate #0 has been eliminated and gate #7 becomes "SCTR readout"
b) Bits SD and CP have been eliminated.
3. In section 1.3 SCTR Steps and EOG have been eliminated as Stimuli for adjustments. Also the following adjustment reactions have been deleted;

Numbers 16, 59, 62, 63, 64, 65, 67 and 68.

The corresponding reaction definitions are now void.
4. Pages 1.13, 1.14, 1.15, 1.16, 1.17, 1.18, 1.19 and 1.20 should be replaced.
5. Delete Section 1.11 SMLU.
6. Replace Page 2.1
7. In Section 2.2 Match Unit OP 001 and 101 are eliminated.
8. In Section 2.7 the MD field has been eliminated.
9. Section 4.2. Indirect addressing has been deleted from the specifications. Operand addresses 61-63 are not assigned.
10. Section 4.3. Arithmetic Mode Half-Word Transmit does not exist. Also the spray option has been eliminated.

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By: [Signature] NARA, Date: 4/19/88

Chapter I

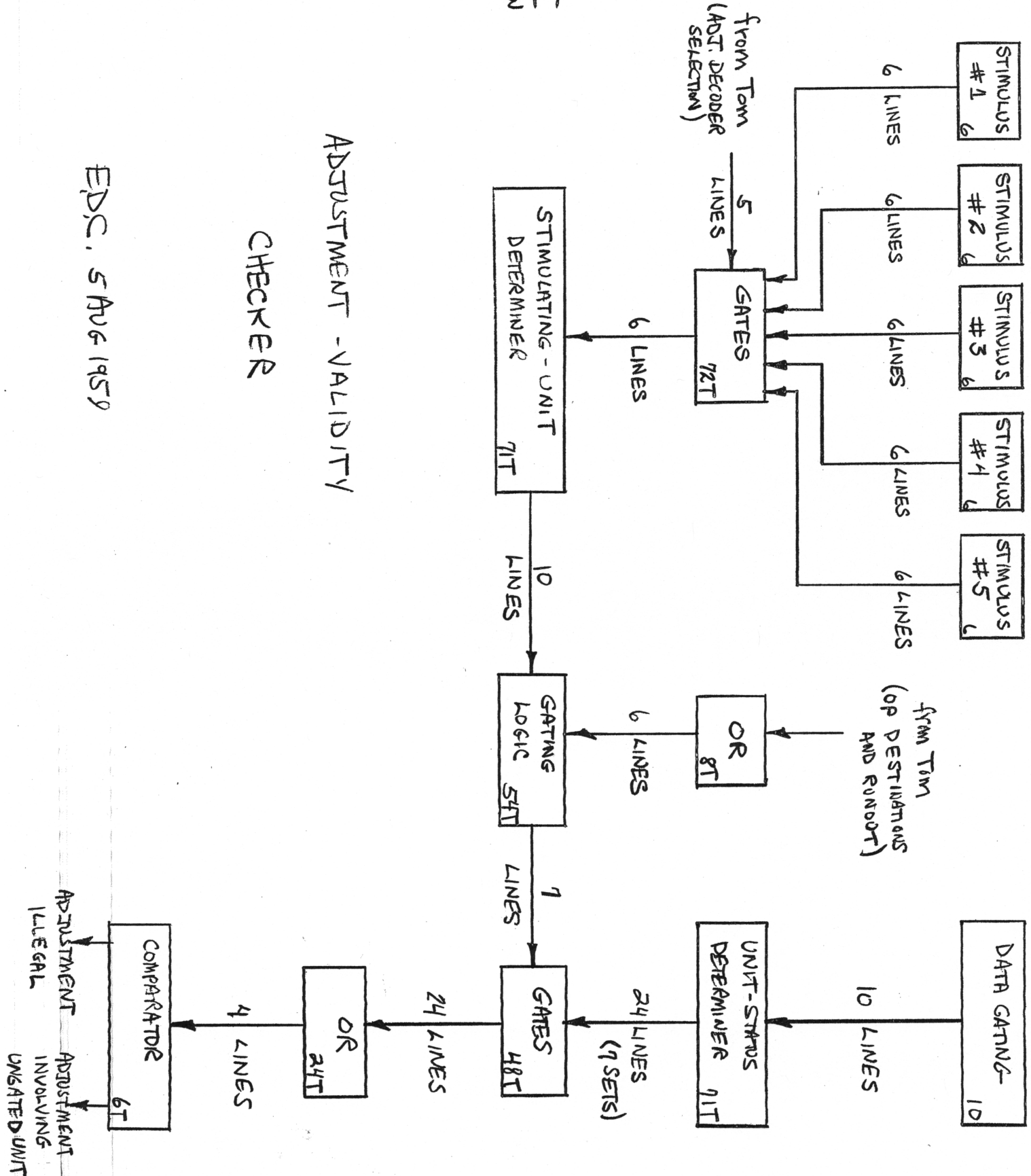
STREAM INSTRUCTIONS

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112

ADJUSTMENT - VALIDITY

CHECKER



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- ~~3.3 Multiple Look Up~~
- 3.4 Sequential Look Up
- 3.5 Indirect Load or Store

4. Special Features

- 4.1 Interrupts
 - 4.1.1 Program Interrupt System
- ~~4.2 Indirect Addressing~~
- 4.3 Arithmetic Mode
- 4.4 Streaming Mode
- 4.5 Program Debugging and Maintenance
 - 4.5.1 Stops
 - 4.5.2 Maintenance Scan
 - 4.5.3 Debugging Aids

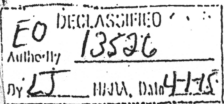


TABLE OF CONTENTS

1. Stream Instructions
 - 1.1 Instruction Formats
 - 1.2 Stream Byte By Byte
 - 1.3 Adjustments
 - 1.4 Adjustment System
 - 1.5 Adjustment Checking
 - 1.6 Stream Stimulus Usage
 - 1.7 Merge
 - 1.8 Search
 - 1.9 Select
 - 1.10 Take, Insert, and Preplace
 - ~~1.11 Multiple Look Up~~
 - 1.12 Sequential Look Up
 - 1.13 Indirect Load and Store
 - 1.14 Adjustment Reaction Definitions

2. Stream Set Up
 - 2.1 Set Up Formats
 - 2.2 Match Units
 - 2.3 Statistical Counter
 - 2.4 Statistical Accumulator
 - 2.5 Data Stream Units
 - 2.6 Logic Unit
 - 2.7 Table Reference Unit
 - 2.8 Stream Unit "R" Registers
 - 2.9 Stream Stimuli
 - 2.10 Stream Unit Index and Control Words
 - 2.11 Stream Unit Index Control Sequence

3. Description of Streaming Instructions
 - 3.1 Stream Byte By Byte
 - 3.2 Compare Instructions
 - 3.2.1 Merge
 - 3.2.2 Search
 - 3.2.4 Takeout, Insert or Replace

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1.6 Stream Stimulus Usage

The following table specified the application of various stimuli which may occur during streaming. The listing is without regard to coding within the stimulus fields.

INT denotes indicators in Sigma interrupt mechanism
 ADJ. M denotes stimuli monitored by stream stimuli mask
 ADJ. S " " directly specified in adjustment stimulus field
 SCTR " " for stepping SCTR
 DEBUG " " for interrupting or scanning during debugging
 GS " " which can define the group size
 STOP " " which defines the termination of the instruction

	STG. REG.	INT	ADJ. M	ADJ. S	SCTR	SACC	DEBUG	GS	STOP
0	Noop			X	X	X	X	X	X
1	Initial			X					
2	EOL ₁ P								
3	F ₁ P		X	X	X			X	
4	F ₂ P		X	X					X
5	F ₃ P	X	X	X					X
6	BLP						X		
7	FFP								
8	CCP								
9	EOL ₁ Q								
10	F ₁ Q		X	X	X			X	
11	F ₂ Q		X	X				X	X
12	F ₃ Q	X	X	X					X
13	BLQ						X		

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	STG. REG.	INT	ADJ. M	ADJ. S	SCTR	SACC	DEBUG	GS	STOP
14	FFQ								
15	CCQ								
16	EOL ₁ R								
17	F ₁ R		X	X	X			X	
18	F ₂ R		X	X					X
19	F ₃ R	X	X	X					X
20	BLR						X		
21	FFR								
22	CCR								
23	EOLU		X	X	X				
24	CCU								
25	EOG		X			X			
26	T Addr. Formed				X				
27	OP in LU								
28	Byte from P				X				
29	Byte from Q				X				
30	Byte to R					X			
31	/ Byte to SACC								
32	- Byte to SACC								
33	SACC ≥ THR		X	X					
34	SACC Goes Minus		X	X					
35	SACC < THR & EOG			X					
36	SACC ≥ THR & Byte in								
37	SCTR STEP								

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STG. REG.	INT	ADJ. M.	ADJ. S.	SCTR	SACC	DEBUG	GS	STOP
38 SCTR = LIM		X	X					
39 SCTR ≠ LIM & EOG			X					
40 W		X	X	X			X	
41 X		X	X	X	X			
42 Y		X	X	X	X			
43 Z		X	X	X			X	
44 X OR Y			X	X			X	
45 W AND X			X					
46 W AND Y			X	X				
47 \bar{W}		X	X		X			
48 \bar{X}		X	X	X				
49 \bar{Y}		X	X	X				
50 \bar{Z}		X	X		X			
51 \bar{W} & \bar{Y}								
52 \bar{W} & \bar{X} & \bar{Y}					X			
53 F = LIM		X	X	X	X			
54 F ≠ LIM			X	X				
55 F ≠ LIM & EOG			X					
56 KB = 1		X	X	X				
57 LB = 1		X	X	X	X			
58 MB = 1		X	X	X				
59 KB = 0			X		X			
60 LB = 0			X	X	X			

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STG. REG.	INT.	ADJ. M.	ADJ. S.	SCTR	SACC	DEBUG	GS	STOP
61 MB = 0			X		X			
62 KB = 0 & F = LIM			X					
63 KB = 1 & F = LIM			X					
64 KB = 1 & F ≠ LIM			X	X				
65 KB = 0 & F ≠ LIM				X				
66 LB = 0 & F = LIM			X					
67 LB = 1 & F = LIM			X					
68 LB = 1 & F ≠ LIM			X	X				
69 LB = 0 & F ≠ LIM				X				
70 MB = 0 & F = LIM			X					
71 MB = 1 & F = LIM			X					
72 MB = 1 & F ≠ LIM			X	X				
73 MB = 0 & F ≠ LIM				X				
74 KG = 1			X					
75 KG = 0			X					
76 LG = 1			X					
77 LG = 0			X					
78 MG = 1			X					
79 MG = 0			X					
80 KG = 1 & EOG		X	X	X				
81 KG = 0 & EOG			X			X		
82 LG = 1 & EOG		X	X	X				
83 LG = 0 & EOG			X			X		

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STG. REG.	INT.	ADJ. M.	ADJ. S.	SCTR	SACC	DEBUG	GS	STOP
84 MG = 1 & EOG		X	X	X				
85 MG = 0 & EOG			X		X			
86 MEM CNT OF	X							
87 SACC OF/UF	X							
88 LOST STIMULUS	X							
89 SCTR OF/UF	X							
90 EXTRACT WRAPAROUND	X							
91 OP INVALID	X							
92 ARITH. ERROR	X							
93 ADJ 1								
94 ADJ 2								
95 ADJ 3								
96 ADJ 4								
97 ADJ 5								
98 ADJ STIM RECOGNIZED	X							
99 ANY ADJ							X	
100 ANY CC = 0		X	X					
101 ANY INDEX FLAG							X	
102 DEBUG	X							
103 P ERROR								X
104 Q ERROR								X
105 R ERROR								X
106 S(SACC) ERROR								X

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	STG. REG.	INT	ADJ. M	ADJ. S.	SCTR	SACC	DEBUG	GS	STOP
107 T ERROR	X								
108 U ERROR	X								
109 L ERROR	X								
110 ANY BYTE TO SACC					X				
111 END OF SEQUENCE									X
112 STOP									
113 EOL 2 P									
114 EOL 2 Q									
115 EOL 2 R									
116 LOOKUP IN WRONG MEM.			X						
117 UNGATED UNIT ADJ	X								
118 ILLEGAL ADJ (INVALID OP)			X						
119 TRIGGER = 1				X					X
120 INCOMPLETE INST.			X						

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1.7 MERGE

DA (1) DATA - ADDRESS

- 0- MOVE DATA
- 1- STORE ADDRESS

IE (1) INTERNAL-EXTERNAL

- 0- INTERNAL
- 1- EXTERNAL

UD (1) UP DOWN ORDERING

- 0- UP
- 1- DOWN

TYPE (1) TYPE

- 0- SIMPLE
- 1- OFFSET

1.8 SSER STREAM SEARCH

SCD (3) SEARCH CONDITION (MOVE RECORD IF)

- 000 - INVALID SCD
- 001 - P < Q
- 010 - P = Q
- 011 - P > Q
- 100 - P > Q
- 101 - P ≠ Q
- 110 - P ≧ Q
- 111 - INVALID SCD

OR(1) ORDERED RANDOM

- 0- ORDERED
- 1- RANDOM

1.9 SSEL STREAM SELECT

IG(1) LEAST GREATEST

- 0 - LEAST
- 1 - GREATEST

1.20

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2.1 STREAM SET UP

REGISTER
 Address

32	W 8	W _{OP} 3	S _{TP} 1	X 8	X _{CON} 3	X _{OP} 3	S _{TP} 1	Y 8	Y _{CON} 3	Y _{OP} 3	S _{TP} 1	Z 8	Z _{OP} 3	S _{TP} 1	S _{FP} 1
33	STREAM STIM MASK 32								SACC THRESHOLD 24				SACC STEP 4	DEBUG CODE 4	
34	SACC 24				SCTR 16				S _A 1	S _D 1	SCTR STEP 5				
35	SCTR LIMIT 11		F 13		TBA				K 12						
36	S _{IT} 5	I _{IT} 6	N _{IT} 5	J _{IT} 5	BS _{IT} 2	M _{IT} 6	S _{IT} 5	I _{IT} 6	N _{IT} 6	J _{IT} 5	MOD 8				
37	S _U 6	I _U 6	N _U 6	BM _U 8	(T)				M _U 6						
38	STREAM STIM STATUS				IND.	ERROR IND 7	BS _{PC} 8	BS _{QC} 8							
39	S _P 24				H _P 18				ES _P 8						
40	S _Q 24				H _Q 18				BS _Q 6						
41	S _R 24				H _R 18				BS _R 6						
42	U														
43	R ₁														
44	R ₂														

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STREAMING MODE INSTRUCTION FORMAT

SBBB	DATA GATES	TAM	PR	PL	LU- OP	GS	STOP	ADJ 1	32				
		12	3	1	5	2	3						
								ADJ 2	32				
								ADJ 3	32				
								ADJ 4	32				
								ADJ 5	32				
SNOP		TAM	PR	PL	XX0000	GS	STOP	ADJ 1	32				
		13	3	2	4	2	3						
SMER		I	U	T	TAM	PR	PL	XX0010	GS	STOP	ADJ 1	32	
		10						4	2	3			
SSER		S	D	R	T	TAM	PR	PL	XX0100	GS	STOP	ADJ 4	32
		6	3					4	2	3			
SSEL		L	T	TAM	PR	PL	XX0110	GS	STOP	ADJ 1	32		
		11						4	2	3			
STIR		R	I	T	TAM	PR	PL	XX1000	GS	STOP	ADJ 1	32	
		8						4	2	3			
SQLL		GATES		TAM	PR	PL	XX1100	GS	STOP	ADJ 1	32		
		4	4					4	2	3			
SILS		GATES		TAM	PR	PL	XX1110	GS	STOP	ADJ 1	32		
		9	5					4	2	3			