



10-1 SAP-1 architecture.

TABLE 10-1. SAP-1 INSTRUCTION SET

Mnemonic	Operation
LDA	Load RAM data into accumulator
ADD	Add RAM data to accumulator
SUB	Subtract RAM data from accumulator
OUT	Load accumulator data into output register
HLT	Stop processing

TABLE 10-2. SAP-1 OP CODE

Mnemonic	Op code
LDA	0000
ADD	0001
SUB	0010
OUT	1110
HLT	1111

State	CON	Active Bits
T <sub>1</sub>	5E3H	Ep, Lm
T <sub>2</sub>	BE3H	Cp
T <sub>3</sub>	263H	Ce, Li

Instn Fetch

Mar ← PC(4)  
PC ← PC + 1  
IR ← Mem

TABLE 10-5. SAP-1 MICROPROGRAM†

Macro	State	CON	Active
LDA	T <sub>4</sub>	1A3H	Lm, Ei
	T <sub>5</sub>	2C3H	Ce, La
	T <sub>6</sub>	3E3H	None
ADD	T <sub>4</sub>	1A3H	Lm, Ei
	T <sub>5</sub>	2E1H	Ce, Lb
	T <sub>6</sub>	3C7H	La, Eu
SUB	T <sub>4</sub>	1A3H	Lm, Ei
	T <sub>5</sub>	2E1H	Ce, Lb
	T <sub>6</sub>	3CFH	La, Su, Eu
OUT	T <sub>4</sub>	3F2H	Ea, Lo
	T <sub>5</sub>	3E3H	None
	T <sub>6</sub>	3E3H	None

Mar ← IR(4-7)  
A ← Mem  
B ← Mem  
A ← Mem(t, A)  
Mar ← IR(4-7)  
B ← Mem  
A ← A(t, A, B)  
O ← A

† CON = Cp, Ep, Lm, Ce, Li, Ei, La, Ea, Su, Eu, Lb, Lo.