

TABLE 4.1-1 SHEET 3

<u>Channel Description</u>	<u>Check</u>	<u>Calibrate</u>	<u>Test</u>	<u>Remarks</u>
23. Environmental Radiological Monitors	N.A.	A(1)	M(1)	(1) Flow
24. Logic Channesl	N.A.	N.A.	M ⁺	
25. Emer. Portable Survey Instruments	N.A.	A	M	
26. Seismograph	N.A.	N.A.	Q	Make trace. Test battery (change semi-annually)
27. Auxiliary Feedwater Flow Rate	M ⁺	R	N.A.	
28. RCS Subcooling Margin Monitor	M ⁺	R	N.A.	
29. PORV Position Indicator (Primary Detector)	M ⁺	N.A.	R	Check consists of monitoring indicator
30. Safety Valve Position Indicator	M ⁺	N.A.	R	position and verifying by observation
31. Safety Valve Position Indicator	M ⁺	R	N.A.	of related parameters
32.a.Loss of Voltage (both 4kv busses)	N.A.	N.A.	R	For AFW actuation at Power Only
b.Undervoltage (both 4kv busses and 480 volt load centers)**	S	R	M	These tests are not required when in cold or refueling shut-down
33. Trip of both Main Feedwater Pump Breakers	N.A.	N.A.	R	For AFW actuation at power only

** This item does not apply on Unit 3 until after implmentation of PC/M 79-116 and on Unit 4 until after implementation of PC/M 80-44.

TABLE 3.5-2
ENGINEERED SAFETY FEATURES ACTUATION

<u>NO.</u>	<u>FUNCTIONAL UNIT</u>	<u>1</u> <u>MIN.</u> <u>OPERABLE</u> <u>CHANNELS</u>	<u>2</u> <u>MIN.</u> <u>DEGREE</u> <u>OF</u> <u>REDUNDANCY</u>	<u>3</u> <u>OPERATOR ACTION</u> <u>IF CONDITIONS OF</u> <u>COLUMN 1 OR 2</u> <u>CANNOT BE SET</u>
1.	SAFETY INJECTION			
1.1	Manual	1	0	Cold Shutdown
1.2	High Containment Pressure	2	1	Cold Shutdown
1.3	High Differential Pressure between any Steam Line and the Steam Line Header	2	1	Cold Shutdown
1.4	Pressurizer Low Pressure*	2	1	Cold Shutdown
1.5	High Steam Flow in 2/3 Steam Lines with Low T_{avg} or Low Steam Line Pressure	1/line in each of 2 lines	1	Cold Shutdown
2.	CONTAINMENT SPRAY			
2.1	High Containment Pressure and High-High Containment Pressure (Coincident)	2 per set	1/set	Cold Shutdown
3.	AUXILIARY FEEDWATER			
3.1	Low-Low Steam Generator Level	2	1	Hot Shutdown
3.2	Loss of Power			
	a. 4.16kV Emergency Bus undervoltage (Loss of Voltage)	2	0	Cold Shutdown
	b. 480 v Load Centers (2 instantaneous relays per load center)**	2	0	Cold Shutdown
	c. 480 v Load Centers (2 inverse time relays per load center)**	2	0	Cold Shutdown
3.3	Safety Injection		(---See 1 above---)	
3.4	Trip of both Main Feedwater Pump Breakers	2	0	Cold Shutdown

*This signal may be manually bypassed, when the reactor is shutdown and pressure is below 2000 psig.

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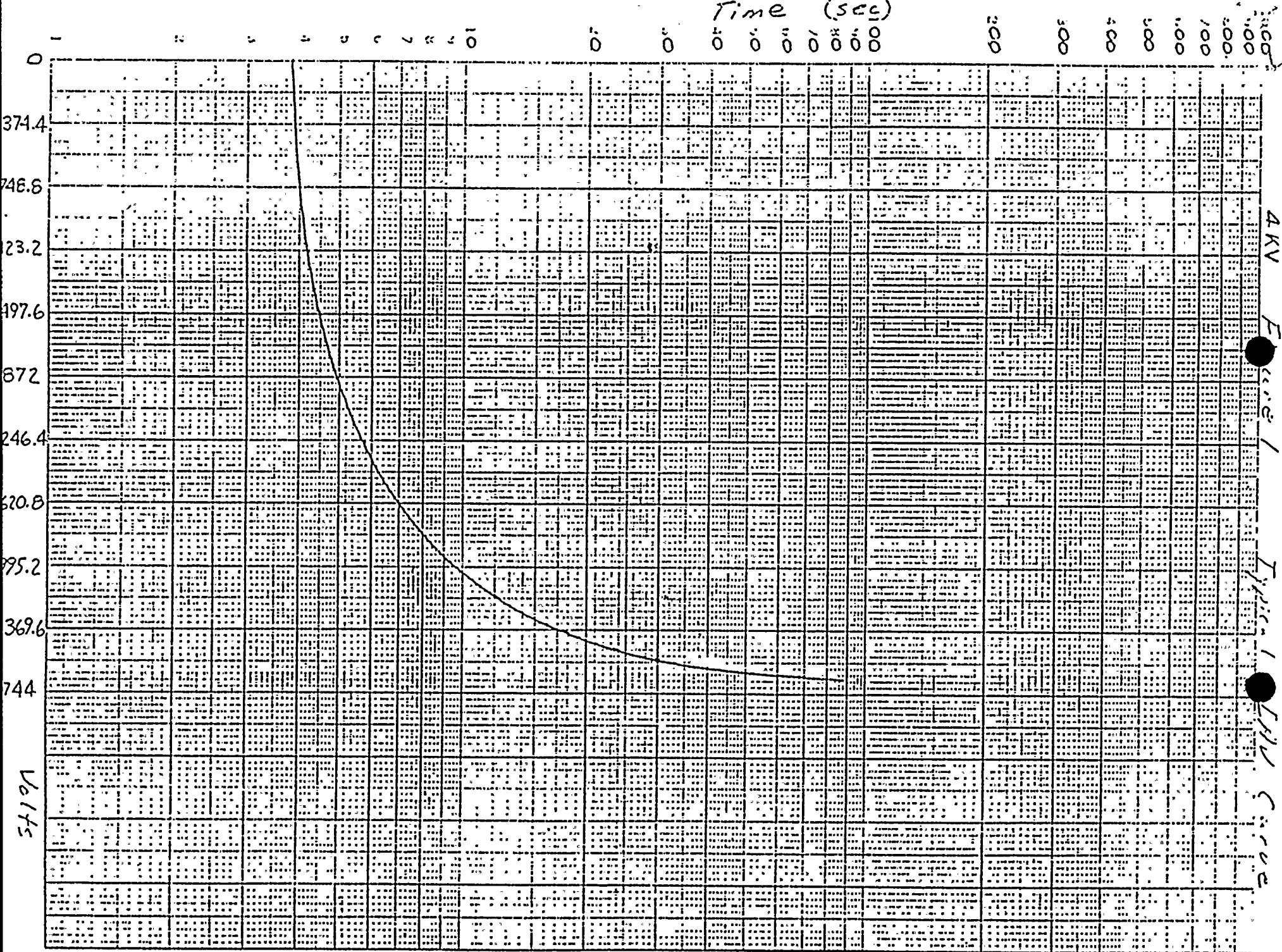
TABLE 3.5-4 (Sheet 2)
ENGINEERED SAFETY FEATURE SETPOINTS (CON'D)

7c.	Degraded Voltage**	Auxiliary Fedwater	All with tolerance of ± 15 volts
	<u>LOAD CENTER/RELAY NO.</u>		<u>SETPOINT</u>
	3A 327H/3A1** #		431V (10 sec. delay)
	327H/3A2** #		431V (10 sec. delay)
	(tag no. later)**		419V (60 sec. ± 30 sec delay)
	(tag no. later)**		419V (60 sec. ± 30 sec delay)
	3B 327H/3B1** #		411V (10 sec. delay)
	327H/3B2** #		411V (10 sec. delay)
	(tag no. later)**		426V (60 sec. ± 30 sec delay)
	(tag no. later)**		426V (60 sec. ± 30 sec delay)
	3C 327H/3C1** #		412V (10 sec. delay)
	327H/3C2** #		412V (10 sec. delay)
	(tag no. later)**		427V (60 sec. ± 30 sec delay)
	(tag no. later)**		427V (60 sec. ± 30 sec delay)
	3D 327H/3D1** #		423V (10 sec. delay)
	327H/3D2** #		423V (10 sec. delay)
	(tag no. later)**		436V (60 sec. ± 30 sec delay)
	(tag no. later)**		436V (60 sec. ± 30 sec delay)
	4A 327H/4A1** #		410V (10 sec. delay)
	327H/4A2** #		410V (10 sec. delay)
	(tag no. later)**		427V (60 sec. ± 30 sec delay)
	(tag no. later)**		427V (60 sec. ± 30 sec delay)
	4B 327H/4B1** #		409V (10 sec. delay)
	327H/4B2** #		409V (10 sec. delay)
	(tag no. later)**		424V (60 sec. ± 30 sec delay)
	(tag no. later)**		424V (60 sec. ± 30 sec delay)
	4C 327H/4C1** #		396V (10 sec. delay)
	327H/4C2** #		396V (10 sec. delay)
	(tag no. later)**		413V (60 sec. ± 30 sec delay)
	(tag no. later)**		413V (60 sec. ± 30 sec delay)
	4D 327H/4D1** #		398V (10 sec. delay)
	327H/4D2** #		398V (10 sec. delay)
	(tag no. later)**		412V (60 sec. ± 30 sec. dela
	(tag no. later)**		412V (60 sec. ± 30 sec. dela
8.	Safety Injection	Auxiliary Feedwater	All SI setpoints
9.	Trip of both Main Feedwater Pump Breakers	Auxiliary Feedwater	N.A.

** These items do not apply on Unit 3 until after implementation of PC/M 79-116 and on Unit 4 until after implementation of PC/M 80-44.

Channel action is subject to condition being concurrent with Safety Injection signal.

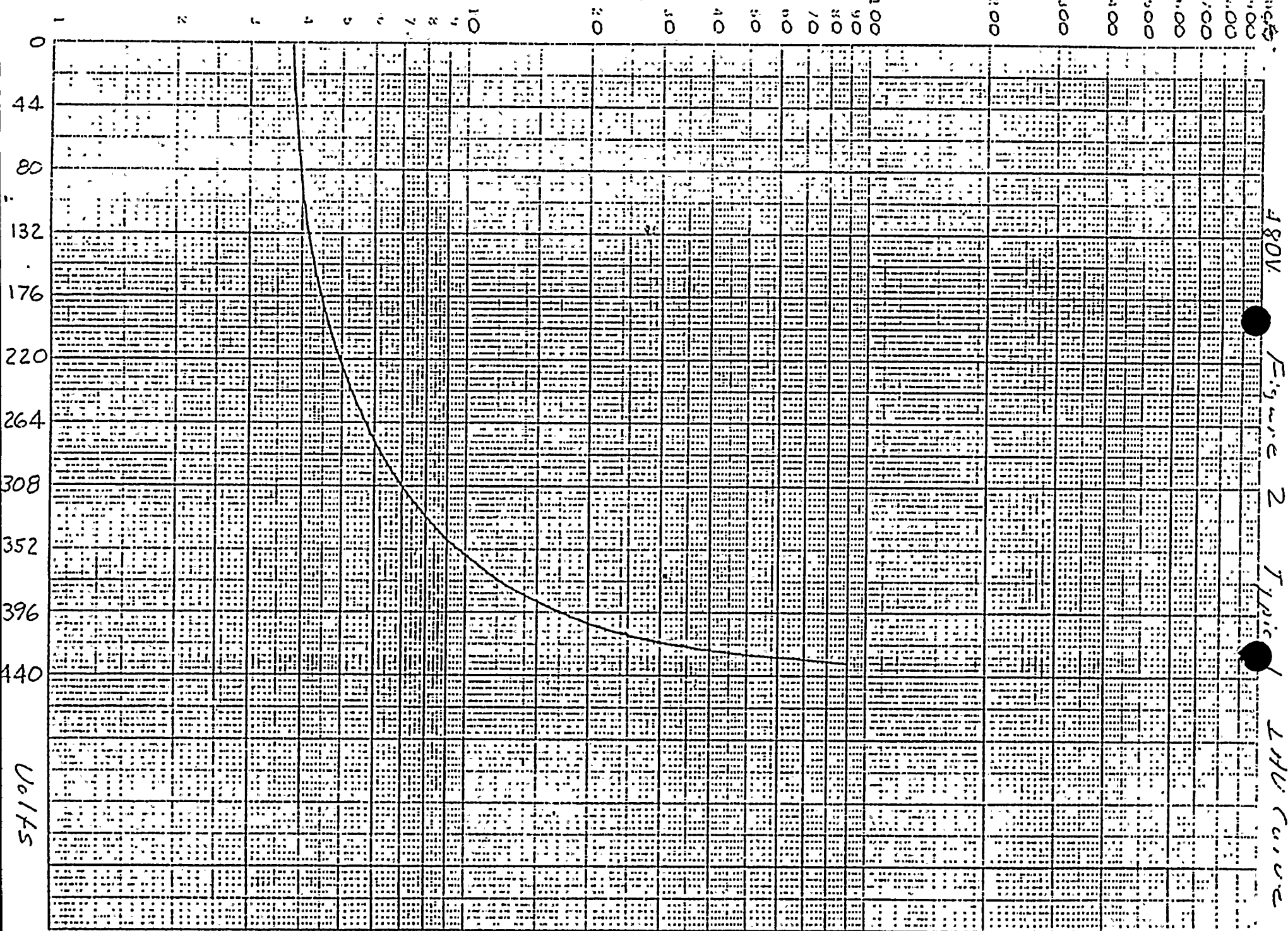
Time (sec)





7-12

Time



480V

Figure 2

Typical

LHV Curve

Uo/As

