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MANAGER
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June 4, 1982

BECo. Ltr. #82-160

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Operating Reactors Branch #2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

License No. DPR-35
Docket No. 50-293

NUREG 0803, Generic SER Regarding Integrity of
BWR Scram System Piping

Dear Sir:

In response to NRC's Generic Letter 81-34 and in accordance with our letter of January 14, 1982 (BECo. Ltr. #82-9), Boston Edison Company's response to the subject NUREG is submitted herewith.

Very truly yours,

avmorisi

Attachments:

1 - BECo Response to NUREG 0803
2 - BECo As-Built Drawings:
   1. M-4894
   2. M-4895
   3. M-4896
   4. M-4897
   5. M-4898
   6. M-4899

A001

BOSTON EDISON COMPANY

Response to NUREG 0803,

Generic Safety Evaluation Report
Regarding Integrity of BWR
Scram System Piping

May 25, 1982

The information below is presented in the same order as discussed in Section 5 of NUREG 0803.

I. Piping Integrity

A. Seismic & As-Built Requirements

Requirement:

"The quality assurance of SDV piping should be verified at each plant by providing the results of any as-built inspections and seismic re-analysis of the SDV piping and its supports conducted in accordance with IE Bulletins or otherwise. If such an inspection has not been previously conducted, the responses should provide a schedule for conducting an as-built inspection and seismic reanalysis of the SDV piping and its supports and a program for correcting any deficiencies identified."

Response:

Both the FSAR (Section A.3.1 and 12.2.1.2) and the GE CRD Piping Specification specify that the scram discharge volume (SDV) piping is seismically designed. The SDV piping was designed using the rigid range (or span) method as described in Bechtel Topical Report BP-TOP-1. Using this method in lieu of a detailed dynamic analysis, pipe supports are located such that the first fundamental frequency of each piping span (assuming a simply supported beam) is in the rigid range. Pipe stress and pipe support loads are then obtained by applying static equivalent loads corresponding to the acceleration in the rigid range of the response spectrum curves for the applicable floor elevations. The use of this method for the CRD system design was confirmed by Bechtel as part of the IE Bulletin 79-14 work scope.

Attached are six as-built drawings of the SDV system which were developed as part of the IE Bulletin 80-17 work scope. Support locations and type are indicated on these drawings; however, no detailed as-built support drawings are included.

Stone & Webster is currently under contract to perform the modifications to make the SDV system comply with IE Bulletin 80-17. Part of this work scope is to develop as-built drawings (including supports) and to perform a reanalysis of the system. This will meet the requirements of NUREG 0803 and is scheduled for completion by December, 1983. At that time a final report will be made to the NRC.

B. Maintanance Procedure Review

Requirement:

Provide "...A schedule and program for reviewing and revising, as appropriate, the HCU-SDV maintenance, surveillance, and modification procedures..."

Response:

Boston Edison Co. is reviewing all maintenance, surveillance, and modification procedures for the SDV system against the following criteria:

1. Is this procedure applicable to the concerns of NUREG 0803 (i.e., is there any potential for breaching SDV integrity while rods are withdrawn)?

2. Is there sufficient guidance to the operator to ensure system integrity?

3. Can the procedure be improved to reduce risks to system integrity?

The following procedures will be reviewed:

PNPS	2.1.1	Startup from Cold Shutdown
	2.2.87	Control Rod Drive System
	3.M.1-1.3	Preventive Maintenance (Mechanical)
	3.M.4-1	Control Rod Drive Removal and Installation
	3.M.4-10	Valve Packing
	3.M.4-20	Valve Disassembly and Assembly
	8.E.3	Control Rod Accumulators Operability
	8.E.3.1	Control Rod Drive Flow Inst. Calibration
	8.I.11	Cold Shutdown Valve Testing
	8.7.1.3	Local Leak Rate Test
	3.M.2-8	Control Rod Drive Performance
	3.M.2-16	Scram Pilot Valve Maintenance
	3.M.2-18	CRD Collet Finger Flushing

The review and revision of these procedures (where applicable) will be completed by September 30, 1982.

C. Inservice Inspection Requirements

Requirement:

"...licensees and applicants for BWR plants should propose in their responses a program of periodic inservice inspection for the SDV system meeting the requirements for Class 2 piping in the Section XI ASME Code. This revised inservice inspection program should be implemented on a schedule consistent with the requirements of the licensee's inservice inspection program for ASME Section XI Class 2 piping."

Response:

PNPS 1 has incorporated the SDV system piping into its inservice inspection program in conformance with the requirements for Class 2 piping of Section XI of the ASME Code. Inspections were started during our 1980 outage, and all requirements for the first inspection interval were completed during our recent refueling outage.

II. Mitigation Capability

A. Revision of Emergency Procedures

Requirement:

"Provide a commitment to implement the required revised emergency procedures in their plant-specific responses by the first refueling outage occurring after January 1, 1982." It is recommended that these changes be implemented through the BWR Owners' Group on Emergency Procedures Guidelines.

Response:

Per its charter, the BWR Owners' Group cannot respond directly to NRC requests for utility action, except at the discretion of its members. Neither can BECo commit the Owners' Group to a specific course of action except by its participation in Owners' Group decisions by vote. Thus, BECo can only provide a response to the staff's guidance to the BWR Owners' Group in NUREG 0803 as if it were addressed to BECo directly.

However, the BWR Owners' Group has discussed the guidance of NUREG 0803 regarding modification of the Emergency Procedure Guidelines and acknowledges the benefits of treating the subject generically. The BWR Owners' Group is in the process of completing an extension of the Guidelines to include steps for reactivity control, and certain other modifications to the Guidelines which have been discussed with your staff. It is BECo's judgment that completion of these modifications outweighs, in immediate importance, the NUREG 0803 guidance for other Guideline modifications. After current activities on the Guidelines are substantially complete, BECo will support a preliminary study by the BWR Owners' Group to determine the best approach to fulfilling the intent of the guidance provided in NUREG 0803. It is not clear that the best approach will involve modification of the Guidelines. When that study is complete the Owners' Group will determine whether to authorize specific actions to modify the Emergency Procedure Guidelines. We will then determine what course of action is necessary for PNPS and advise you of our plan.

B. Iodine Concentration Limits

Requirement:

The Standard Technical Specification (STS) limit of 0.2 microcuries per ml of water iodine concentration should be implemented for all operating BWR's unless 1) "it is demonstrated that the probability of requiring operator access to the reactor building is consistent with the staff's quantitative risk assessment (pipe break plus failure to reset scram)" and 2) based on analysis of operating history and current and projected fuel performance, the probability of operating at coolant activity levels in excess of those allowed by STS is less than 10^{-3} per reactor year.

Response:

Boston Edison Company does not plan to implement the STS limit for coolant activity at Pilgrim as recommended by NUREG 0803. This decision is not based on meeting the conditions (1 and 2) specified above but rather on an evaluation of the NRC's basis for the required change. Specifically, the NRC calculations show that activity levels above the STS level could cause violation of 10 CFR 100 limits and could preclude reactor building access after an SDV rupture. This is not the case for PNPS 1.

A plant specific analysis conducted for BECo by Entech Engineering, Inc., shows that 1) the current technical specification activity limit (20.0 microcuries of total iodine per ml of water, or 100 times STS) does not result in violation of 10 CFR 100 limits after a rupture of the SDV system, and 2) a concentration of 2.0 microcuries per ml of water (10 times STS) is low enough to allow reactor building access for the worst case SDV rupture. Therefore, based on this analysis, a technical specification limit reduction to 2.0 microcuries is being proposed. This level will provide the necessary margin of safety for reactor building access while placing no undue restrictions on reactor power operations. This proposed change will be submitted in July, 1982.

It should be noted that the Entech analysis assumes a plant configuration that will exist after modifications required by IE Bulletin 80-17 are completed (i.e., two separate isolation scram discharge instrument volumes. These modifications will be completed by December, 1983. Continued operation with the present configuration is based on the following logic which is similar to the NRC reasoning in NUREG 0803 Section 5:

1. Violation of 10 CFR 100 will not occur even with the present configuration.

2. Reactor building access will only be hampered under the worst case SDV rupture.

3. Probability of SDV leak actually occuring during the time period prior to the modifications is low.

4. No SDV piping leaks or breaks have been reported in any operating BWR.

III. Environmental Qualification

A. Detection Equipment

Requirement:

"Identify the equipment that would be used to detect a break and/or leak in the SDV system and include the qualification of this equipment in the NRC's ongoing EQ program to show that it would perform the identification function."

Response:

Table 1 provides the qualification information for equipment available for detection of a leak or break in the SDV system. Not all this equipment is qualified to the expected environment; however, it is BECo's contention that sufficient equipment is qualified to these parameters, as shown on Table 1, to perform the intended function and provide reliable indication. This detection equipment includes 1) ECCS and RCIC rooms temperature indications and alarms (TS 2370 & 2372 C&D, TS2371 & 2373 A & B, TS 1360-14 & 1360-16 C & D, and TS 1360 15 & 1360-17A & B) and 2) reactor building exhaust ventilation radiation alarms (Process Radiation Monitors 032A & B). In addition, there are numerous temperature alarms (TE 8125-56, 58, 62, 65, 66, 70, 72, 73, 74, 78, 79, 80 and 83) which, while not qualified in the strict sense, are expected to alarm when their set-point is reached. Since BECo's evaluation of the consequences of this accident adopts the position that recognition and proper corrective action do not occur for 4 hours, it is felt that these indications working together are sufficient to warn the operators of a problem and allow for investigation of the conditions in the reactor building.

BECo also contends that it is highly unlikely that the environment created by the rupture will cause failure of all the unqualified equipment and that operators can expect supplementary alarms from the drain sump level alarms, CRD high temperature alarms and area radiation alarms. This coupled with expected routine inspections of the area and the fact that a rupture of this size will be audible from anywhere in the reactor building ensures detection of this condition within four hours of the scram.

B. Mitigation Equipment

Requirement:

Identify the equipment needed to mitigate an unisolable break in the SDV system and include the qualification of this equipment in the NRC's ongoing EQ program to show that it would perform the mitigation function, paying particular attention to the following guidelines:

1. Qualification of ADS

2. Qualification for water impingement and wetdown by 212°F water.

3. Verification of feedwater and condensate system operation independent of the reactor building environment.

4. Availability of HPCI and RCIC turbines due to high ambient temperature trips.

Response:

BECo has evaluated this accident and concludes that the following systems and support systems should be available to ensure adequate mitigation:

1. Automatic Depressurization System (ADS)

2. Feedwater & Condensate System

3. Core Spray System

4. Residual Heat-Removal System (for LPCI)

5. Reactor Building Closed Cooling Water (RBCCW) System and Salt Water Systems

6. Standby Gas Treatment System

This system list is based on the Pilgrim 1 FSAR and NEDO-24342, "GE Evaluation in Response to NRC Request Regarding BWR Scram System Pipe Breaks", April, 1981, and is consistent with the NRC probability analysis of NUREG 0803. Only equipment required during the first six hours is considered, based on four hours for break detection and two hours for SDV isolation. After that time, the environment is not expected to impact equipment operation.

The bases for the systems selected are as follows:

1. ADS is required for plant depressurization, which will reduce the leak rate and allow reactor building access for isolation.

2. The feedwater and condensate system is provided as a backup for plant cooldown and depressurization using the main condenser(assuming MSIV's remain open).

3. Core Spray and the LPCI mode of RHR are required for redundant low pressure core cooling.

4. RBCCW is needed to supply cooling water to the RHR heat exchangers as the ultimate heat sink if the main condenser is not available.

5. Standby Gas Treatment is required to provide cleanup of the reactor building environment created by the rupture.

High pressure cooling (HPCI &RCIC) is not considered necessary because 1) the plant must be depressurized to preclude undesirable consequences, and 2) HPCI and RCIC are expected to isolate on high temperature within one hour of the rupture.

Table 2 provides the present qualification of equipment required for operation of the mitigation systems. Only components located in the reactor building are listed, since equipment outside the reactor building will not be affected. Water impingement and wetdown are considered only for equipment located in the CRD modules area where the SRV's are located. Results of FSAR Amendment 34 flooding calculations based on Pilgrim I conditions show that flooding will not affect any significant equipment.

Additionally, major load centers and distribution equipment were evaluated within the post-accident environment. This evaluation shows this equipment should be available for operation in an environment in excess of 212°F and at 100% humidity and to be protected from failure by direct impingement.

C. Plant Specific Qualification

Requirement:

"For any equipment required for identification and/or mitigation that is not qualified for service at 212°F and 100% humidity, provide a schedule for defining the plant-specific SDV break environment and a commitment to qualify the equipment in accordance with the NRC's ongoing EQ program."

Response:

BECo has contracted for Bechtel Power Corporation to model the reactor building and generate pressure and temperature profiles during a SDV rupture. Preliminary results from this analysis show the maximum temperatures to be significantly less than the NRC requirement of 212°F. Additionally, we are participating in work by the BWR Owners' Group to evaluate further the SDV rupture scenario and potentially reduce the need for environment qualifications to meet this transient. Since the above work will not be completed before late September 1982, BECo does not feel any decision on a commitment to environmental qualification under NUREG 0803 can be made before October 15, 1982. At that time we will provide an update of our intentions.

Table 1 Qualification of Equipment Available for Detec.

EQUIPMENT NO	DESCRIPTION	LOCATION	QUALIFICATION Temp / Humidity 212° F	100% RH	QUAL OK	COMMENTS
LS 8016	RHR Pump Room A Water Level	RHR&CS Pump Room A	NQ(1)	NQ(1)	NO	No flooding of this area is expected
LS 8017	RHR Pump Room B Water Level	RHR&CS Pump Room B	NQ(1)	NQ(1)	NO	No flooding of this area is expected
TE1001-92A	RHR Steam Leak Detection	RHR&CS Pump Room A	NQ(1)	NQ(1)	NO	No flooding of this area is expected
TE1001-92B	RHR Steam Leak Detection	RHR&CS Pump Room A	NQ(1)	NQ(1)	NO	No flooding of this area is expected
TE1001-92F	RHR STEAM LEAK Detection	RHR&CS Pump Room B	NQ(1)	NQ(1)	NO	No flooding of this area is expected
TE1001-92G	RHR Steam Leak Detection	RHR&CS Pump Room A	NQ(1)	NQ(1)	NO	No flooding of this area is expected
TE1001-92H	RHR Steam Leak Detection	RHR&CS Pump Room B	NQ(1)	NQ(1)	NO	No flooding of this area is expected
LS 8018	HPCI Pump Room Level Switch	HPCI Pump Room	NQ(1)	NQ(1)	NO	
TS 2370&2372 C&D	Hi Space Temp Switch	CRD Modules Area West	305	100%	YES	Note: Switch monitors temp. In duct from HPCI valve room.
TS 2371 & 2373 A & B	Hi Space Temp Switch	RHR&CS Pump Room B	305	100%	YES	Note: Switch monitors temperature in duct from HPCI Pump room.
LS 8019	RCIC Pump Room Level Switch	RCIC Pump Room	NQ (1)	NQ(1)	NO	
TS 1360-14C&D 1360-16C&D	RCIC Steam Leak Detection	RCIC Piping Room	305	100%	YES	
TS 1360-15A&B 1360-17A&B	RCIC Steam Leak Detection	RCIC Pump Room	305	100%	YES	
TE 8125-56	HPCI Room Temp	HPCI Room (1')	NQ (1)	NQ(1)	NO	Reads & Alarms in control room BECO contends environment will not contribute to failure prior to alarm.

NOTE: (1) Qualification is not yet proven

Equipment No.	Description	Location	Qualification Temp / 212° F	Humidity 100% RH	Qual Ok.	Comments
TE 8125 - 58	RHR Room A Temperature	RHR Room A (12)'	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm
TE 8125 - 62	RCIC Room Temp.	RCIC Room (2')	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm.
TE 8125 - 65	CRD Pump Room Temp.	CRD Pump Room (7')	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm.
TE 8125 - 66	RHR Room B Temp.	RHR Room B (7')	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm.
TE 8125 - 70	RCIC PIPING Area Temp	RCIC Piping Room (23')	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm.
TE 8125 - 72	RHR Piping Area Temp	RHR Piping Area 23'el	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm.
TE 8125 - 74	CRD Area Temp.	CRD Area West (23)	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm.
TE 8125 - 73	CRD Area Temp.	CRD Area East (23')	NQ (1)	NQ(1)	No	Reads & Alarms in Control room BECo contends environment will not contribute to failure prior to alarm.
TE 8125 - 78	51' Level Temp Ind	Drywell Wall North	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to falilure prior to alarm
TE 8125 - 79	74' Level Temp Ind	Drywell Wall North	NQ (1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm
TE 8125 - 80	Fuel Pool Area Temp	Fuel Pool Area 74' el	NQ(1)	NQ(1)	No	Reads & Alarms in Control Room BECo contends environment will not controbute to failure prior to alarm
TE 8125 - 83	91' Level Ind	West Wall 91' Level	NQ (1)	NQ (1)	No	Reads & Alarms in Control Room BECo contends environment will not contribute to failure prior to alarm
Process RAD Monitors 032 A&B	Exhaust Ventilation Radiation Monitors	See Comments	Not Required		Yes	These monitors are located external to the Reactor Building
41 ARM Ch #8	AREA RADIATION MONITOR	Rx Bldg 23' Level	NQ (1)	NQ(1)	No	

Table 1 (Cont.)

EQUIPMENT NO.	DESCRIPTION	LOCATION	QUALIFICATION Temp / Humidity ~~212° F / 100% RH~~		QUAL. OK	COMMENTS
41 ARM Ch #10	Area Rad Monitor	23' Level Reactor Bldg.	NQ(1)	NQ(1)	NO	
14 ARM Ch # 11-14	Area Rad Monitors	117' Level Rx Bldg.	NQ(1)	NQ(1)	No	

EQUIPMENT NO.	DESCRIPTION	LOCATION	QUALIFICATION Temp / 212° F	Humidity 100% RH	QUAL. OK	COMMENTS
ADS SYSTEM						
SV 203-3A	ADS Actuation Valve	DRYWELL	347 F	100%	YES	Will not be affected by Rupture Environment
SV 203-3B	ADS Actuation Valve	DRYWELL	347 F	100%	YES	Will not be affected by Rupture Environment
SV 203-3C	ADS Actuation Valve	DRYWELL	347 F	100%	YES	Will not be affected by Rupture Environment
SV 203-3D	ADS Actuation Valve	DRYWELL	347	100%	YES	Will not be affected by Rupture Environment
CORE SPRAY SYSTEM						
DPIS 1459A&B	Rx Vessel CS Line Rupture Detection	CRD PUMP ROOM MEZZANINE	212 F	100%	YES	
MO14ØØ-3A	CS Pump A suction Valve	RHR & CS Pump Room A	250 F	100%	YES	
MO14ØØ-3B	CS Pump B Suction Valve	RHR & CS Pump Room B	250 F	100%	YES	
MO14ØØ-4A	CS Pump A Test Line Block Valve	RHR & CS Pump Room A	250 F	100%	YES	
MO14ØØ-4B	CS Pump B Test Line Block Valve	RHR & CS Pump Room B	250 F	100%	YES	
MO14ØØ-24A Mo14ØØ-25A	Injection Block Valves Loop A	RWCU Hx. Ex. & Pump Room	212 F	100%	YES	
MO14ØØ-24B MO14ØØ-25A	Injection Block Valves Loop B	Open Area 51' Level West Half	212 F	100%	YES	
P 215 A	Core Spray Pump A.	RHR & CS Pump Room A	212 F	100%	YES	

EQUIPMENT NO.	DESCRIPTION	LOCATION	QUALIFICATION Temp / Humidity 212° 100% RH		QUAL OK	COMMENTS
P 215 B	Core Spray Pump B	RHR & CS Pump Room B	212 F	100%	YES	
PS263-52A	CS & RHR Valve Open Permissive	Open Area 51' Level East Half	212 F	100%	YES	
PS 1451 A	ADS Permissive	RHR & CS Pump Room A	212 F	100%	YES	
PS 1451B	ADS Permissive	RHR & CS Pump Room B	212 F	100%	YES	
PS 1464A	ADS Permissive	RHR & CS Pump Room A	212 F	100%	YES	
PS 1464B	Ads Permissive	RHR & CS Pump Room B	212 F	100%	YES	
SV1400-51A&B	Testable Check Valve Bypass Vav.	Drywell	346 F	100%	YES	
			RHR SYSTEM			
DPIS1001-79A	Low Flow Trip Signal to M01001 - 18A	RHR & CS Pump Room A	212 F	100%	YES	
SPIS1001-793	Low Flow Trip Signal to M01001 - 18A	RHR & CS Pump Room B	212 F	100%	YES	
LIS263-72 A&C	RHR Pump Start (LPCI)	OPEN AREA, 51' Level, East Half	250 F	98%	NO	
LIS263-72 B&D	RHR Pump Start (LPCI)	OPEN AREA, 51' Level, West Half	250 F	98%	NO	
LITS263-73A	Containment Spray Perm (Monitoring)	CRD Modules Area East	250 F	100%	YES	

Table 2 (Cont.)

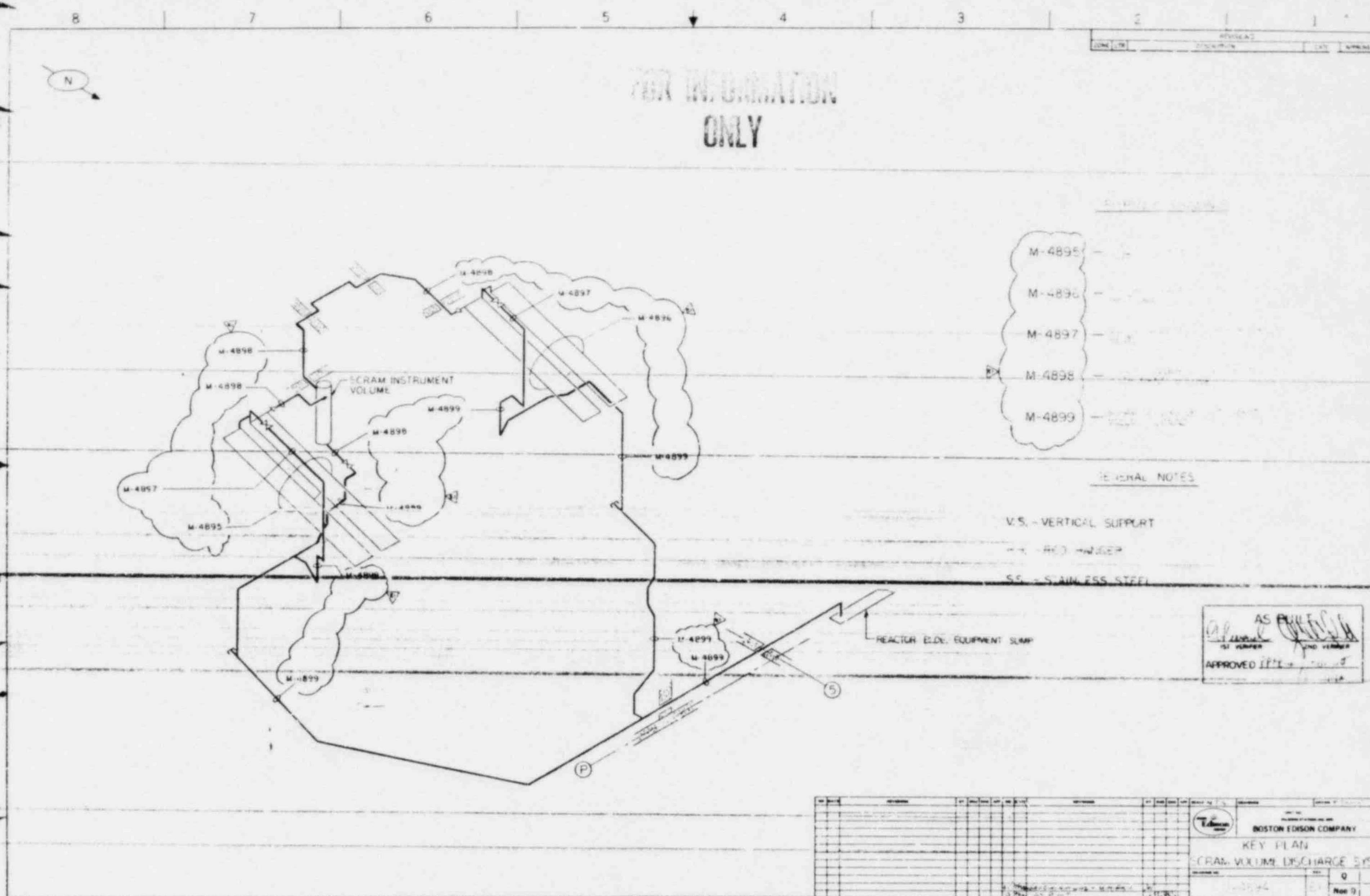
EQUIPMENT NO.	DESCRIPTION	LOCATION	QUALIFICATION Temp / 212° F	Humidity 100% RH	QUAL. OK	COMMENTS
LITS263-73B	Containment Spray Perm (Monitoring)	CRD Modules Area West	250 F	100%	YES	
MO1001-7A&C	RHR Pump A&C Suct. Block Valve	RHR & CS Pump Room A	250 F	100%	YES	
MO1001-7B&D	RHR Pump B&D Suct. Block Valve	RHR & CS Pump Room B	250 F	100%	YES	
MO1001-16A	A RHR Ht. Ex. Bypass Block Valve	RHR & CS PUMP Room A	250	100%	YES	
MO1001-16B	B RHR Ht. Ex. Bypass Block Valve	RHR & CS Pump Room B	250 F	100%	YES	
MO1001-18A	RHR Pumps A&C Min. Recirc Block Valve	RHR &CS Pump Room A	250 F	100%	YES	
MO1001-18B	RHR Pumps B&D Min Recirc Block Valve	RHR & CS Pump Room B	250 F	100%	YES	
MO1001-21	RHR to CHEM WASTE Block Valve	CRD Pump Room Mezz.	250 F	100%	YES	Valve is normaly shut & will fail as is
MO1001-23A & 26A	Containment Spray Block Valve	RWCU Ht.Ex Pump Room	212 F	100%	YES	
MO1001-23B & 26B	Containment Spray Block Valve	RCIC Piping Room	212 F	100%	YES	
MO1001-28A	LPCI Flow Control Valve	RHR Piping Room	250 F	100%	YES	
MO1001-28B	LPCI Flow Control Valve	RHR/HPCI Piping Room	250 F	100%	YES	
MO1001-29A	LPCI Loop A Block Valve	RHR Piping Room	250 F	100%	YES	
MO1001-29B	LPCI Loop B Block Valve	RHR/HPCI Piping Room	250 F	100%	YES	

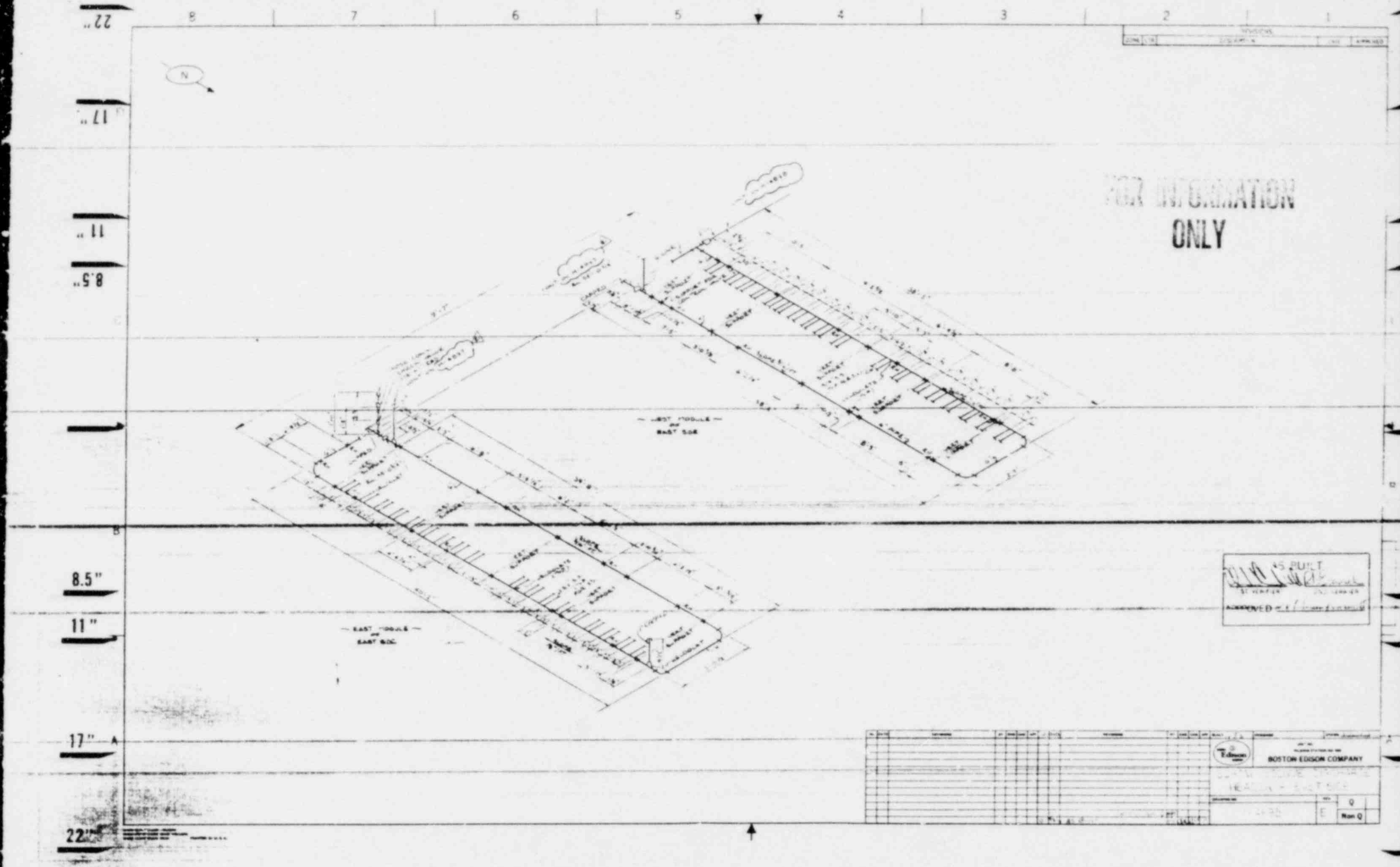
EQUIPMENT NO.	DESCRIPTION	LOCATION	QUALIFICATION Temp / Humidity 212° F 100% RH		QUAL. OK	COMMENTS
MO1001-32	Block Valve to Chemical Waste	CRD PUMP Room Mezz.	250 F	100%	Yes	
MO1001-34A	Loop A Torus Cooling & Spray Block Valve	RHR & CS pump Room A	250 F	100%	Yes	
MO1001-34B	Loop B Torus Cooling & Spray Block Valve	RHR & CS Pump Room B	250 F	100%	Yes	
MO1001-36A	Loop A Torus Cooling Block Vlv	RHR & CS Pump Room A	250 F	100%	Yes	
MO1001-36B	Loop B Torus Spray Block Valve	RHR & CS Pump Room B	250 F	100%	Yes	
MO1001-37A	Loop A Torus Spray Throttle Valve	RHR & CS Pump Room A	250 F	100%	Yes	
MO1001-37B	Loop B Torus Spray Throttle Valve	RHR & CS Pump RoomB	250 F	100%	Yes	
MO1001-43A&C	RHR & Shtdown Cooling Block valves for Pumps A & C	RHR & CS Pump Room A	250 F	100%	Yes	
MO1001-43B&D	RHR & Shutdown Cooling Block Valves for Pumps B & D	RHR&CS Pump Room B	250 F	100%	Yes	
MO1001-47	Common RHR & Shutdown cooling downstream block Valve	RHR Piping Room	250 F	100%	Yes	
MO1001-50	Common RHR & Shutdown cooling downstream block valve	Drywell	329 F	100%	Yes	
MO1001-60	Rx Vessel Head Spray Upstream Block Valve	Fuel pool Ht. Ex Area 51' Lv.	250 F	100%	Yes	
MO1001-63	Rx Vessel Head Spray downstream Block Valve	Drywell	329 F	100%	Yes	
P 203 A&C	RHR PUMPS A & C	RHR & Cs Pump Room A	212 F	100%	Yes	

Table 2 (Cont.)

EQUIPMENT NO.	DESCRIPTION	LOCATION	QUALIFICATION Temp / Humidity 212° F - 100% RH	QUAL. OK	COMMENTS
P203 B&D	RHR Pumps B&D	RHR & CS PUMP Room B	212 F 100%	YES	
PS261-23 A&B	Close Shutdown System & Headspray Isolation Valves.	CRD Pump Room Mezzanine	200 F 100%	NO	
PS263-52 A	CS & RHR Valve Open Permissive	51' Level Open Area East	NO DATA	NO	
PS263-52 B	CS & RHR Valve Open Permissive	51' Level Open Area West	NO DATA	NO	
PS263-52 A	CS & RHR Pump Permissive	51' Level Open Area East	No Data	NO	
PS263-52 B	CS & RHR Pump Permissive	51' Level Open Area West	No Data	NO	
PS1001-89A&C	ADS Permissive	74' 3" Level North	212 F 100%	YES	
PS1001-89B&D	ADS Permissive	51' Level Open Area West	212 F 100%	YES	
PS1001-90A&C	CS & RHR Initiation (Drywell Pressure)	74' 3" Level North	212 F 100%	YES	
PS1001-90B&C	CS & RHR Initiation (Drywell Pressure)	51' Level Open Area West	212 F 100%	YES	
PS1001-93A&C PS1001-104A&C	ADS Auto Actuation Permissive	RHR & CS Pump Room A	212 F 100%	YES	
PS1001-93B&D PS1001-104B&D	ADS Auto Actuation Permissive	RHR &CS Pump Room B	212 F 100%	YES	

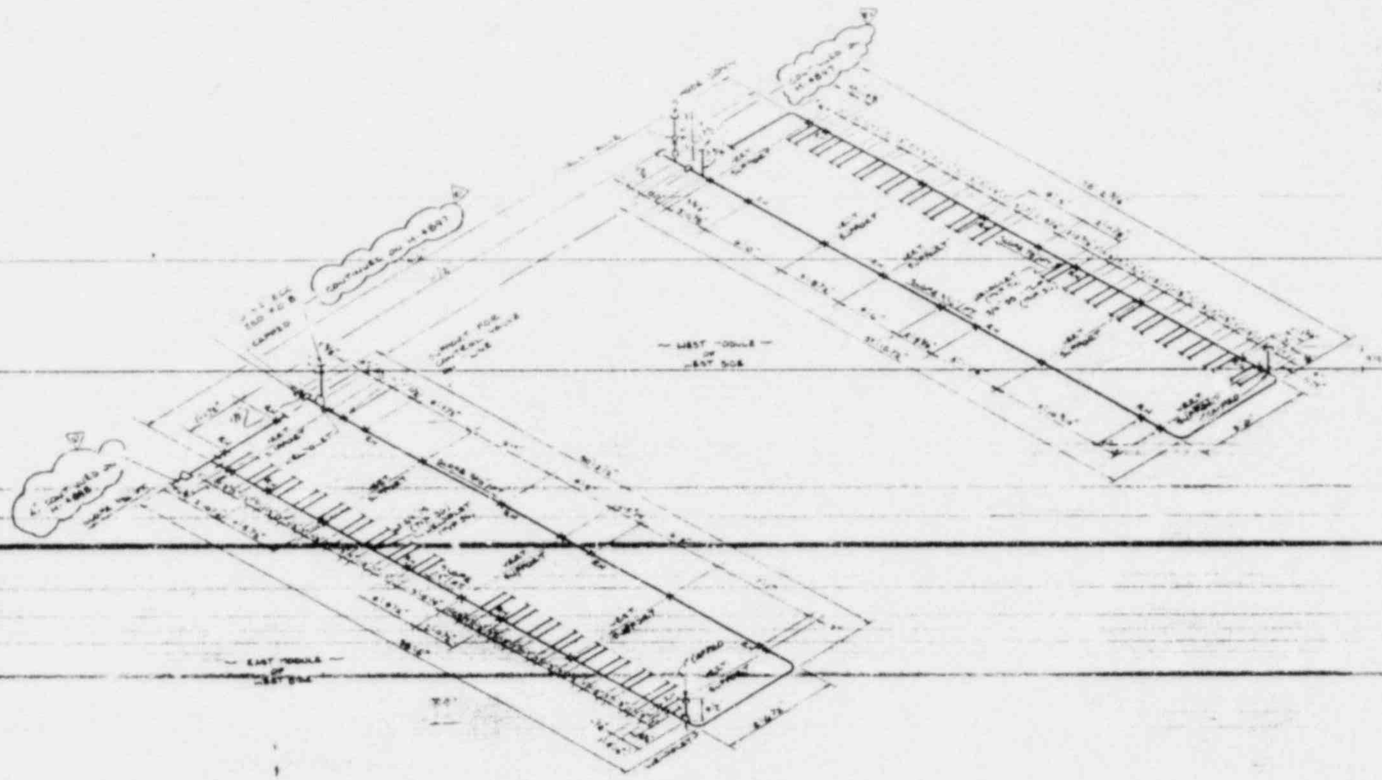
EQUIPMENT NO.	DESCRIPTION	LOCATION	QUALIFICATION Temp / Humidity 212° F 100% RH		QUAL OK	COMMENTS
		RBCCW				
MO 4060 A&B	A RHR Ht. Ex. Isolation Valves	RHR & CS Pump Room A	250 F	100%	YES	
MO 4010 A&B	B RHR Ht. Ex Isolation Valves	RHR & CS Pump Room B	250 F	100%	YES	
MO-4065	Fuel Pool Ht. Ex Isolation Vlv.	74' 3" Level	NQ (1)	NQ (1)	NO	Need to insure isolation to provide flow to RHR Ht Ex.
		STANDBY GAS TREATMENT SYSTEM				
SVL 55 & 56	CRD Maintence Room Vent Isolation	51' Level Open Area West	346 F	100%	YES	
SVL 57	Reactor Building Containment Exhaust To SGTS	RCIC Piping Room	346 F	100%	YES	
SVL 58	SGTS Filter A Inlet	RCIC Piping Room	346 F	100%	YES	
SVL 60	REFUELING Area to SGTS ISOLATION	RCIC Piping Room	346 F	100%	YES	
SVL 62	SGTS Filter B Inlet	RCIC Piping Room	346 F	100%	YES	
SVL 79	Reactor Building Cl. Up Exhaust to SGTS	RCIC Piping Room	346 F	100%	YES	


FOR INFORMATION ONLY
N
SCRAM INSTRUMENT VOLUME
M-4895
M-4896
M-4897
M-4898
M-4899
REACTOR BLDG. EQUIPMENT SUMP
GENERAL NOTES
V.S. - VERTICAL SUPPORT
R.H. - ROD HANGER
S.S. - STAINLESS STEEL
AS BUILT
1ST VERIFIER
2ND VERIFIER
APPROVED
BOSTON EDISON COMPANY
KEY PLAN
SCRAM VOLUME DISCHARGE SYS
Rev 0



FOR INFORMATION
ONLY
WEST MODULE
EAST SIDE
EAST MODULE
EAST SIDE
N
AS BUILT
BOSTON EDISON COMPANY
Q
E
Non Q
REVISIONS
22"
17"
11"
8.5"

FOR INFORMATION ONLY



AS BUILT

1ST VERIFIER / 2ND VERIFIER

APPROVED

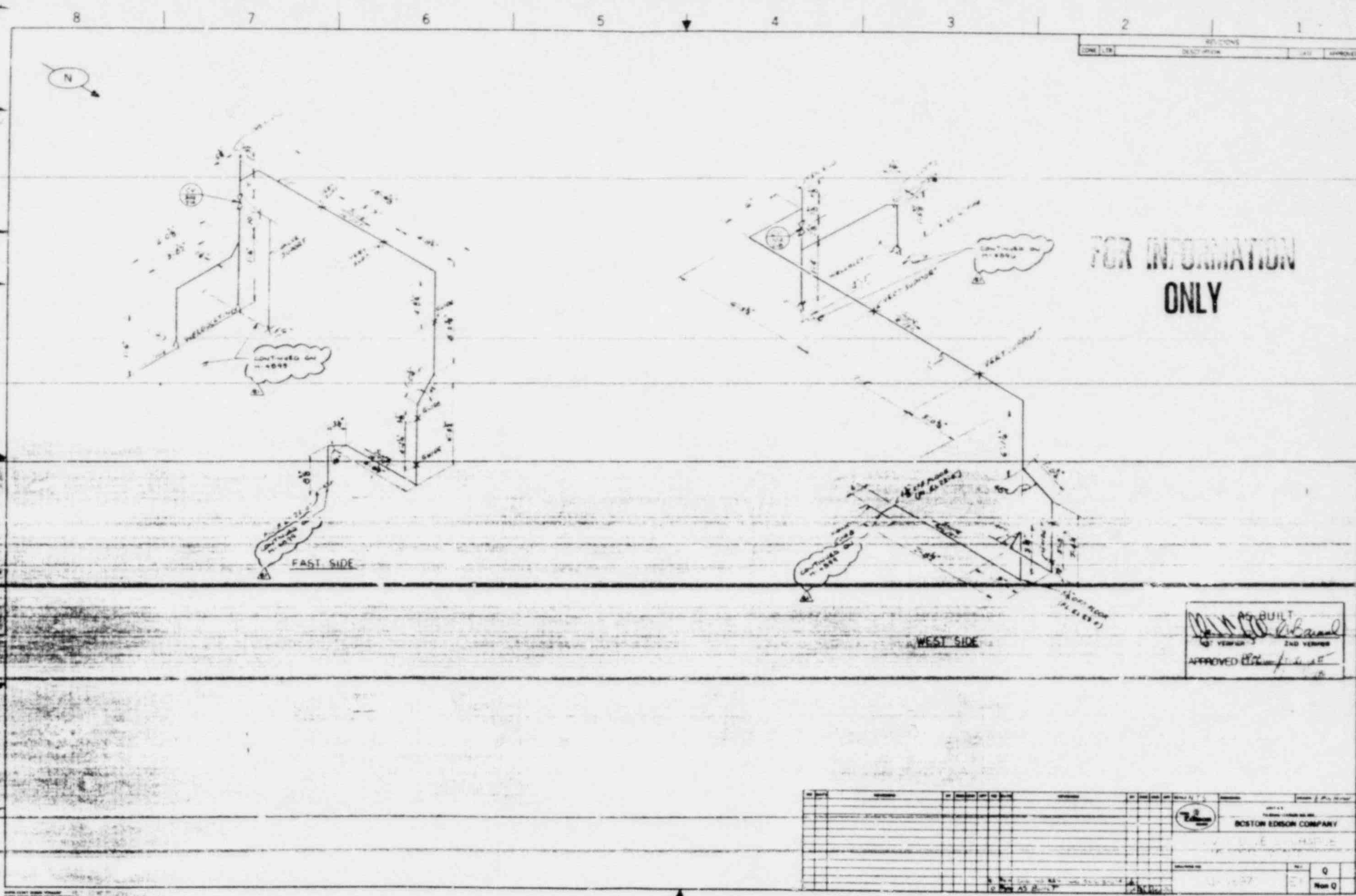
BOSTON EDISON COMPANY

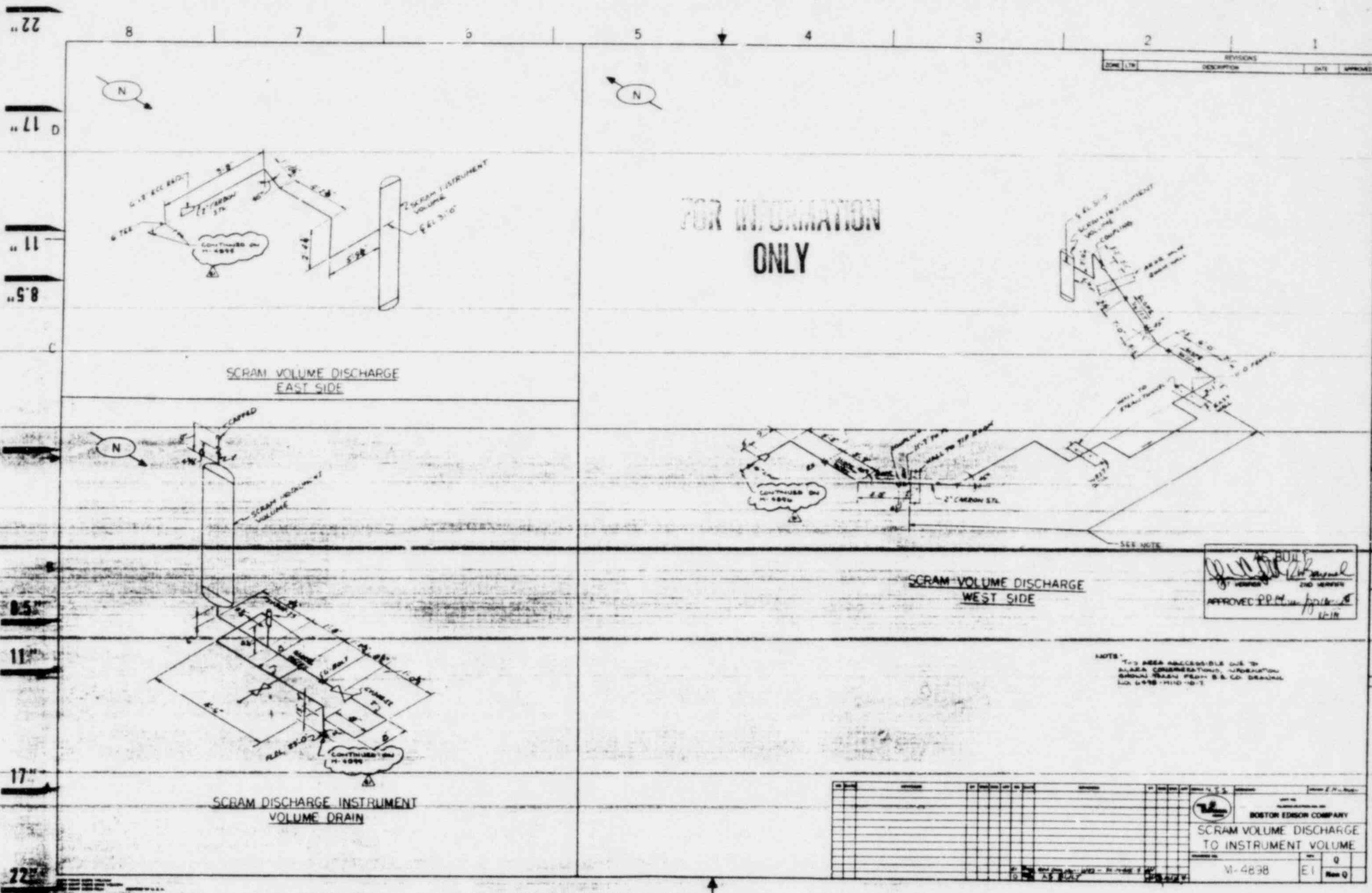
SCRAM VOLUME DISCHARGE HEADER - WEST SIDE

M-4E25

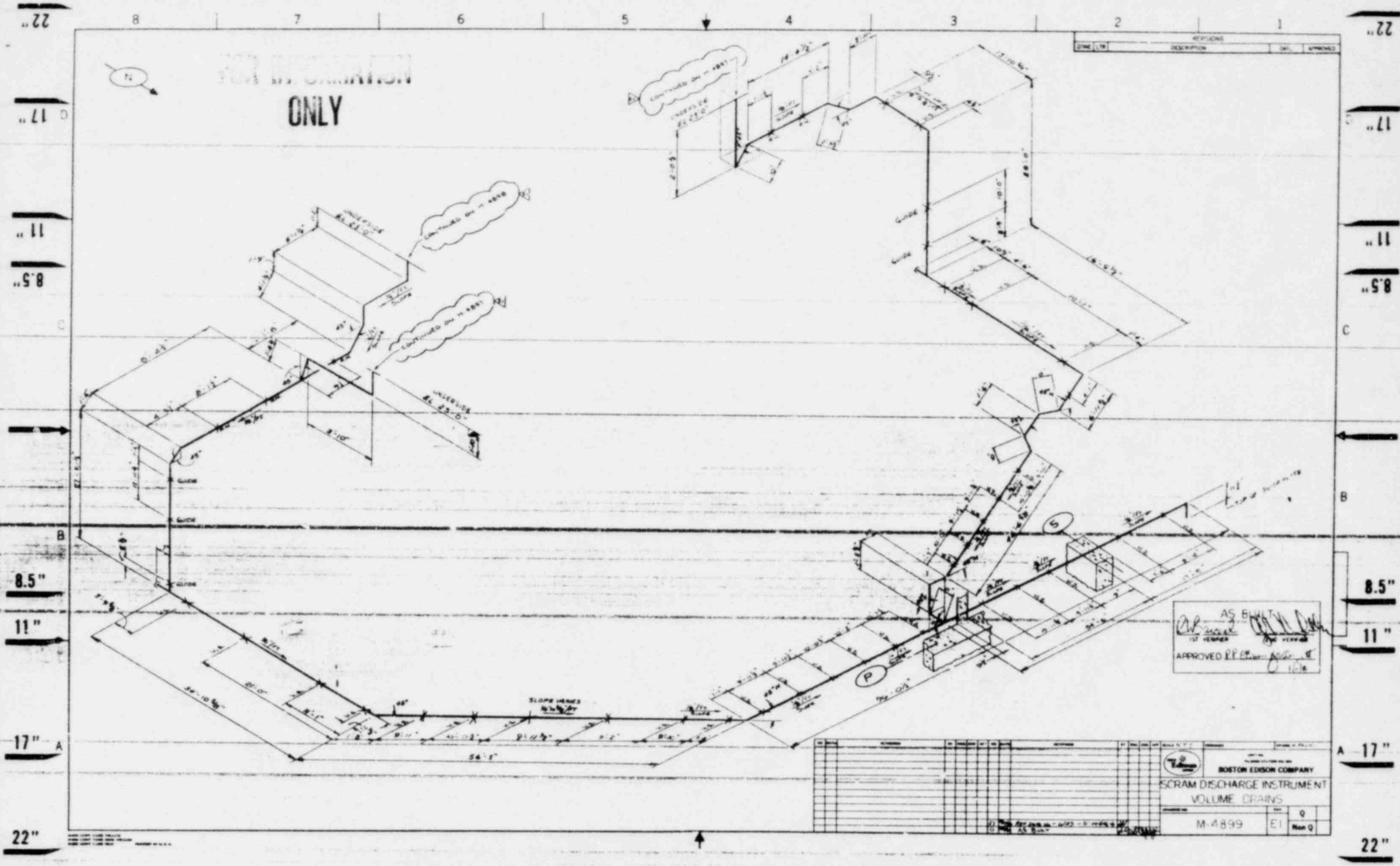
Q / Non Q

AS BUILT


FOR INFORMATION ONLY
N
EAST SIDE
WEST SIDE
AS BUILT
1ST VERIFIER
2ND VERIFIER
APPROVED
BOSTON EDISON COMPANY
Q
Non Q



FOR INFORMATION
ONLY
SCRAM VOLUME DISCHARGE
EAST SIDE
SCRAM DISCHARGE INSTRUMENT
VOLUME DRAIN
SCRAM VOLUME DISCHARGE
WEST SIDE
2" CARBON STL
SEE NOTE
AS BUILT
APPROVED
BOSTON EDISON COMPANY
SCRAM VOLUME DISCHARGE
TO INSTRUMENT VOLUME
M-4898
E1


FOR INFORMATION
ONLY
N
CONTINUED ON M-4898
CONTINUED ON M-4897
UNDERSIDE EL 23'-0"
GUIDE
SLOPE VARIES
56'-5"
S
P
REVISIONS
ZONE
LTR
DESCRIPTION
DATE
APPROVED
AS BUILT
1ST VERIFIER
2ND VERIFIER
APPROVED
BOSTON EDISON COMPANY
SCRAM DISCHARGE INSTRUMENT
VOLUME DRAINS
M-4899
E1
Q
Rev Q
AS BUILT
8
7
6
5
4
3
2
1
A
B
C
22"
17"
11"
8.5"