

BOSTON EDISON COMPANY
800 BOYLSTON STREET
BOSTON, MASSACHUSETTS 02199

WILLIAM D. HARRINGTON
SENIOR VICE PRESIDENT
NUCLEAR

BECo Ltr. 84-146
September 11, 1984

Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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

Response to IGSCC Inspection Order Confirming Shutdown

References: (a) USNRC Letter (Vassallo to Harrington) dated 8/26/83 with
Enclosure "IGSCC Inspection Order Confirming Shutdown"
(b) BECo Letter (W. D. Harrington to H. R. Denton dated
12/8/83, File Reference #83-292

Enclosures: (A) Matrix of IGSCC Inspection Order Examinations
(B) ISI Isometrics
(C) Welds not Scheduled for Examination
(D) Hydrogen/Water Chemistry Program
(E) Recirculation Nozzle Repair Program and Hydrogen Water
Chemistry Materials Qualification

Dear Sir:

This letter submits information in response to Section III.C.5 of the IGSCC Inspection Order Confirming Shutdown (Order) dated August 26, 1983. The Order required that a report be submitted to NRC of the results of mandated inspections and corrective actions taken. The format of this letter is to address each of the parts of Section III.C of the Order. The Order parts are reproduced below followed by our response.

Order Part III.C.1

To the extent practicable, the licensee shall conduct an ultrasonic examination of 100%, but in no case less than the number specified in Attachment A to the July 21, 1983 50.54(f) letters, of the welds involving 304 stainless steel piping of greater than or equal to 4" in the following systems or portions thereof:

- a. Recirculation System
- b. ASME Code Class 1 Portion of the Residual Heat Removal System
- c. ASME Code Class 1 Portion of the Core Spray System external to the Reactor Vessel
- d. ASME Code Class 1 Portion of the Reactor Cleanup System

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Response

Enclosure (A) identifies those welds which were examined in accordance with the Order. Based on the results of ultrasonic examination of selected welds, Boston Edison Company (BECo) elected as corrective action to replace 304 stainless steel piping within the drywell. Consequently, the inspection requirements of the Order for welds in removed piping became moot. Enclosure (A) also contains, where available, stress rule index and carbon content information, as requested in Order Part III.C.5 and describes corrective action taken based on results of inspections regarding the Order. Enclosure (B) contains isometrics which show weld locations for the welds listed in Enclosure (A) and also to show those portions of the piping which were replaced with 316NG piping.

Order Part III.C.2

Within 10 days of the date of this Order or prior to the commencement of the inspections required by this Order, whichever is later, the licensee shall provide to the Director, Office of Nuclear Reactor Regulation, a list of the welds specified above that it does not intend to inspect during this current outage together with a suitable technical justification for not conducting such inspections at this time. This list should identify each weld not being inspected by system, location and size.

Response

Reference (b) contained a list of specific welds which BECo requested an exemption from the Order. Subsequent to that submittal, BECo has revised its inspection plans and now requests an exemption only for the welds listed in Enclosure C.

Order Part III.C.3

All UT personnel conducting these inspections shall have received appropriate training in IGSCC inspection using cracked thick-wall pipe specimens. All Level II and III UT operators shall have successfully completed the performance demonstration tests described in IEB 83-02. The footnote on page 4 of IEB 83-02, which allowed qualification under IEB 82-03, Revision 1, is no longer applicable.

Response

BECo selected Magnaflux Quality Services (MQS) to conduct the required examinations and all MQS personnel were qualified in accordance with the requirements of the Order at the EPRI validation course given at the J. A. Jones Applied Research Center. Documentation of this training is available for review.

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Order Part III.C.4

Based on the results of the inspections, the licensee shall take appropriate corrective actions.

Response

- a) Based on the results of ultrasonic inspection of selected welds as described in a meeting with the members of the NRC Staff on November 17, 1983, BECo elected to replace all Recirculation System piping with 316NG material.
- b) In order to eliminate interference problems associated with replacing the Recirculation System and also to keep the boundaries of the piping system consistent with the design specification, BECo elected to replace the stainless steel portion of the Residual Heat Removal (RHR) System piping from the Recirculation System piping connections out to the drywell penetrations with 316NG material.

The results of an ultrasonic (UT) examination of all the welds in the Class 1 portion of the RHR System outside the drywell identified four indications in weld number 10-IB-14A. (See Enclosure B.) That portion of the RHR System in which this weld is included will also be replaced during the current outage with 316NG piping.

In addition, the existing weld within the penetration and the penetration to new piping sub-assembly material will be corrosion resistant clad on the inside surface using 308L weld material.

- c) The portion of the Core Spray System piping from the manual isolation valves to the penetration will be replaced with 316NG material during the current outage. Results of the UT examination of all of the Class 1 portion of the Core Spray System, outside the drywell, identified four indications in weld number 14-B-21. Replacement material is not available at this time; therefore, an evaluation will be performed using NRC acceptance criteria for flaws less than 25% of the wall thickness to allow operation during the next operating cycle without repair.
- d) Boston Edison elected to replace the suction piping in the ASME Class 1 portion of the Reactor Water Cleanup (RWCU) System from the RHR piping connection to the drywell penetration for the same reason as the RHR System within the drywell.

The UT examination of the Class 1 welds of the RWCU System outside containment was completed (with the exception of welds 12-I-20 and 12-I-22 which have pipe whip restraints covering the welds) and no indications were observed.

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Discussion

Replacement activities were conducted in accordance with NRC supplied procedural guidance for pipe replacement at BWR's. This guidance contained in Generic Letter 84-07, addresses the major considerations that should be included in a pipe replacement program. Our replacement program addresses each of the major considerations; that is, the program contains sections for Design Specifications, Codes, Materials, Design Changes, Stress Analysis, Fabrication, Installation, Examination, Testing, System Characteristics, Inspection and Quality Assurance.

The Codes and Standards published in 10 CFR 55.55a were used, specifically the 1980 Edition of Section III with W81 Addenda to the extent practical for replacement activities. The original design basis was used for material changes only. For situations involving major configuration changes to small bore (2" and less) piping, later Codes and Standards were used (ASME III, 1980 Edition with W81 Addenda).

The original design basis was also used for material changes to small bore piping involving only material substitution.

An independent review of our replacement program concluded that our replacement program is consistent with the procedural guidance given in Generic Letter 84-07. Additionally, our independent review has shown that the Design Specifications used for pipe replacement and vessel safe ends replacement contain the same load combinations as those identified in our FSAR.

As the result of corrective action to replace Class 1 304 stainless steel piping within the drywell, the following other actions have been taken or are planned:

- (1) Liquid penetrant examinations were conducted on the as-found heat affected zone of cast stainless steel components, such as valves and pumps to determine whether IGSCC existed. The results of these examinations show no IGSCC existed on the heat affected zone on the inside surfaces of those components prior to preparing the ends for welding.
- (2) Last pass heat sink welding is being planned for use on the Core Spray and RHR Systems where new 316NG stainless steel piping connects with existing 304 stainless steel within the drywell at the reactor containment penetrations.

BECO's objectives for a Hydrogen Water Chemistry Program at Pilgrim Station are described in Enclosure D. Details of our interim objectives for the next fuel cycle as well as our long term objectives are discussed.

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This letter also transmits information regarding our program for recirculation nozzle repairs (see Enclosure E). This particular information is submitted in response to your request at a meeting which was held on June 15, 1984 to discuss the indications found in the Pilgrim Station recirculation nozzles. Enclosure E also contains information which qualifies the concept of Hydrogen Water Chemistry control for the reactor coolant as a means of mitigating IGSCC in BWR's.

BECo intends to follow the guidelines of the Boiling Water Reactor Owners Group (BWROG) on Pipe Cracking for augmented inspections of safe-end to nozzle welds. The initial input for this augmented inspection program was transmitted to the NRC by a letter from the BWROG on Pipe Cracking (G.H. Neils) to the NRC (H. R. Denton) dated June 27, 1984.

An evaluation of the piping replacement program has been conducted. This evaluation concluded (1) there is no increase in the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the FSAR; (2) the possibility for an accident or malfunction of a different type than any evaluated previously in the FSAR is not created; and (3) that in complying with Section XI, the BECo Owner's Specification (M-544) defines the codes of the original construction as well as the codes to be used for the replacement. The use of Section III of the ASME Boiler & Pressure Vessel Code does not compromise original quality nor does it decrease the overall margins used during the original construction.

Structural integrity evaluations and repairs related to the safe-end to nozzle welds and thermal sleeves cracking have been conducted in accordance with requirements of our Technical Specifications which embraces the codes and standards adopted by the NRC.

A Safety Evaluation for operation with cracked thermal sleeves has been conducted and the results indicate that no safety concerns associated with full-power operation exists. Full structural margin of the principal safety barrier, the reactor coolant pressure boundary, would be maintained because the thermal sleeves are not part of the pressure boundary. Failure of a jet pump, low flow, can be detected with in-plant instrumentation and the plant can be shut down in a controlled manner as required by the Technical Specifications.

Adequate surveillance inspections are required by our Technical Specifications to determine jet pump flow mis-match which is the condition that would result from a failed thermal sleeve/jet pump riser pipe.

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It should be noted that this report is submitted at this time to facilitate your review. It is our intent to satisfy the requirements of the Order well in advance of our scheduled startup from the current outage. Should you have any questions as a result of your review, do not hesitate to contact me.

Very truly yours,

W D Harrington

Attachments

Commonwealth of Massachusetts)
County of Suffolk)

Then personally appeared before me W. D. Harrington, who, being duly sworn, did state that he is Senior Vice President-Nuclear of Boston Edison Company, the applicant herein, and that he is duly authorized to execute and file the submittal contained herein in the name and on behalf of Boston Edison Company and that the statements in said submittal are true to the best of his knowledge and belief.

My Commission expires: *October 21, 1988*

Peter M Kahler

Notary Public

cc: Dr. T. E. Murley, Regional Administrator
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

Mr. R. C. DeYoung, Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

MATRIX OF IGSCC INSPECTION ORDER EXAMINATIONS

SYSTEM	ORDER REQUIREMENTS	BECO'S ACTION	STRESS RULE	CARBON CONTENT	EXAMINATION RESULTS	CORRECTIVE ACTION	REMARKS
RECIRC	100% UT examination of all welds. (approx. 125)	<u>Examined</u> 2-N2A-5	1.963	.046	Indications Reported.	Replace the entire Recirculation System with 316 NG material.	
		2-N2C-3	1.188	.079	No Indications.		
		2-N2D-5	1.808	.065	Indications Reported.		
		2-N2E-4	1.215	.053	No Indications.		
		2-N2K-5	1.907	.046	No Indications		
		2-N1A-3	1.163	.070	Indications Reported.		
		2-N1A-9	1.153	.070	Indications Reported.		
RHR (Suction and Discharge)	100% UT of the ASME Code Class 1 Portion of the system.	<u>Examined</u> 10-0-1	1.849	.050	No Indications.	Replace the RHR System within containment along with Recirculation System with 316 NG material.	
		10-0-2	1.213	.050	No Indications.		
		10-0-3	1.228	.050	No Indications		
		10-IA-2	2.178	.050	No Indications.		
		10-IA-14	Not Available.	Not Available.	No Indications.		Outside Containment.
		10-IA-15	Not Available.	Not Available.	No Indications.		Outside Containment.
		10-IB-14	Not Available.	Not Available.	No Indications.		Outside Containment.
		10-IB-14A	Not Available.	Not Available.	Indications Reported.		Will be replaced with 316 NG material.

MATRIX OF IGSCC INSPECTION ORDER EXAMINATIONS

SYSTEM	ORDER REQUIREMENTS	BECO'S ACTION	STRESS RULE	CARBON CONTENT	EXAMINATION RESULTS	CORRECTIVE ACTION	REMARKS
		10-IB-15	Not Available.	Not Available.	Indications Reported.	Evaluated as counter-bore and confirmed by construction x-ray.	
		10-IB-16	Not Available.	Not Available.	No Indications.		
RHR (Head Spray)	100% Ultrasonic Examination of the ASME Code Class 1 Portion of the system.	Ultrasonically examined twenty-two of the twenty-three welds.			No Indications.		Inside and outside containment.
		Weld 10-HS-23* is scheduled for radiography (tri-metallic weld).					Exemption from Order requested. Scheduled for RT.
Core Spray	100% Ultrasonic Examination of the ASME Code Class 1 Portion of the system.	1) The following welds will be radiographed: 14-A-1, 14-A-3, 14-A-10A, 14-B-1, 14-B-3, 14-B-10A 2) 14-A-2 and 14-B-2 not examined as it is 316L material.					Exemption from Order requested. Scheduled for RT. Excluded from Order because welds are not 304SS.

MATRIX OF IGSCC INSPECTION ORDER EXAMINATIONS

SYSTEM	ORDER REQUIREMENTS	BECO'S ACTION	STRESS RULE	CARBON CONTENT	EXAMINATION RESULTS	CORRECTIVE ACTION	REMARKS
		3) All 304SS from 14-A-3 and 14-B-3 to the manual isolation valves was replaced with carbon steel during the 1977 refueling outage.					Excluded from Order because welds are not 304SS.
		4) 304 pipe material from the manual isolation valves to the drywell penetration is being replaced with 316 NG. This eliminates the following welds:					
		A-Loop	B-Loop				
		14-A-11	14-B-11				
		14-A-11A	14-B-12				
		14-A-12	14-B-13				
		14-A-13	14-B-14				
		14-A-14	14-B-15				
		14-A-15	15-B-16				
		14-A-16					

MATRIX OF IGSCC INSPECTION ORDER EXAMINATIONS

SYSTEM	ORDER REQUIREMENTS	BECO'S ACTION	STRESS RULE	CARBON CONTENT	EXAMINATION RESULTS	CORRECTIVE ACTION	REMARKS
		5) The following welds outside containment to the Class 1 boundary were examined:					
		<u>A-Loop</u>					
		14-A-17	Not Available.	Not Available.	No Indications.		
		14-A-18	Not Available.	Not Available.	Indications Reported.	Evaluated as counterbore and confirmed by construction X-ray.	
		14-A-19	Not Available.	Not Available.	No Indications.		
		<u>B-Loop</u>					
		14-B-17	Not Available.	Not Available.	No Indications.		
		14-B-18	Not Available.	Not Available.	No Indications.		
		14-B-19	Not Available.	Not Available.	No Indications.		
		14-B-20	Not Available.	Not Available.	No Indications.		
		14-B-21	Not Available.	Not Available.	Indications Reported.	Within 25% of wall thickness, therefore, evaluation in accordance with NRC criteria shall be performed.	
RWCU	100% Ultrasonic Examination of the ASME Code Class 1 System.						1) RWCU Suction pipe from the RHR supply line to the drywell penetration will be replaced with 316NG material.

MATRIX OF IGSCC INSPECTION ORDER EXAMINATIONS

SYSTEM	ORDER REQUIREMENTS	BECO'S ACTION	STRESS RULE	CARBON CONTENT	EXAMINATION RESULTS	CORRECTIVE ACTION	REMARKS
		Welds 12-0-24 through 12-0-31 (Outside containment.)	Not Available.	Not Available.	No Indications.		
		RWCU Discharge pipe from the transition weld 12-I-17 through weld 12-I-36 were examined with the following exceptions: a) 12-I-20, 12-I-22 pipe whip restraints.	Not Available.	Not Available.	No Indications.		
Penetrations RHR	100% Ultrasonic examination.	BECO requested exemption X-51A	Not Available.	Not Available.			No examination conducted; penetration welds are inaccessible for ultrasonic examination.

MATRIX OF IGSCC INSPECTION ORDER EXAMINATIONS

SYSTEM	ORDER REQUIREMENTS	BECO'S ACTION	STRESS RULE	CARBON CONTENT	EXAMINATION RESULTS	CORRECTIVE ACTION	REMARKS
		X-51B	Not Available.	Not Available.	ID of dye was dye penetrant inspected. NO IGSCC.	To be corrosion resistant clad when piping subsequently associated with welds Nos. 10-IB-14A and 10Ib-15 is replaced.	
Core Spray		X-16A	Not Available.	Not Available.			No examination conducted; penetration welds are inaccessible for ultrasonic examination.
		X-16B	Not Available.	Not Available.			No examination conducted; penetration welds are inaccessible for ultrasonic examination.

MATRIX OF IGSCC INSPECTION ORDER EXAMINATIONS

SYSTEM	ORDER REQUIREMENTS	BECO'S ACTION	STRESS RULE	CARBON CONTENT	EXAMINATION RESULTS	CORRECTIVE ACTION	REMARKS
RWCU		X-14	Not Available.	Not Available.			No examination conducted; penetration welds are inaccessible for ultrasonic examination.

SYMBOLS

ENCLOSURE (B)

////// NRC REQUIRES UT EXAMINATION

..... REPLACE WITH 316NG MATERIAL



NOT EXAMINED DUE TO OBSTRUCTION, MAT'L ETC.



ULTRASONIC TEST COMPLETED



WELD SCHEDULED FOR RADIOGRAPHY (TRI-METALLIC)



INDICATIONS REPORTED

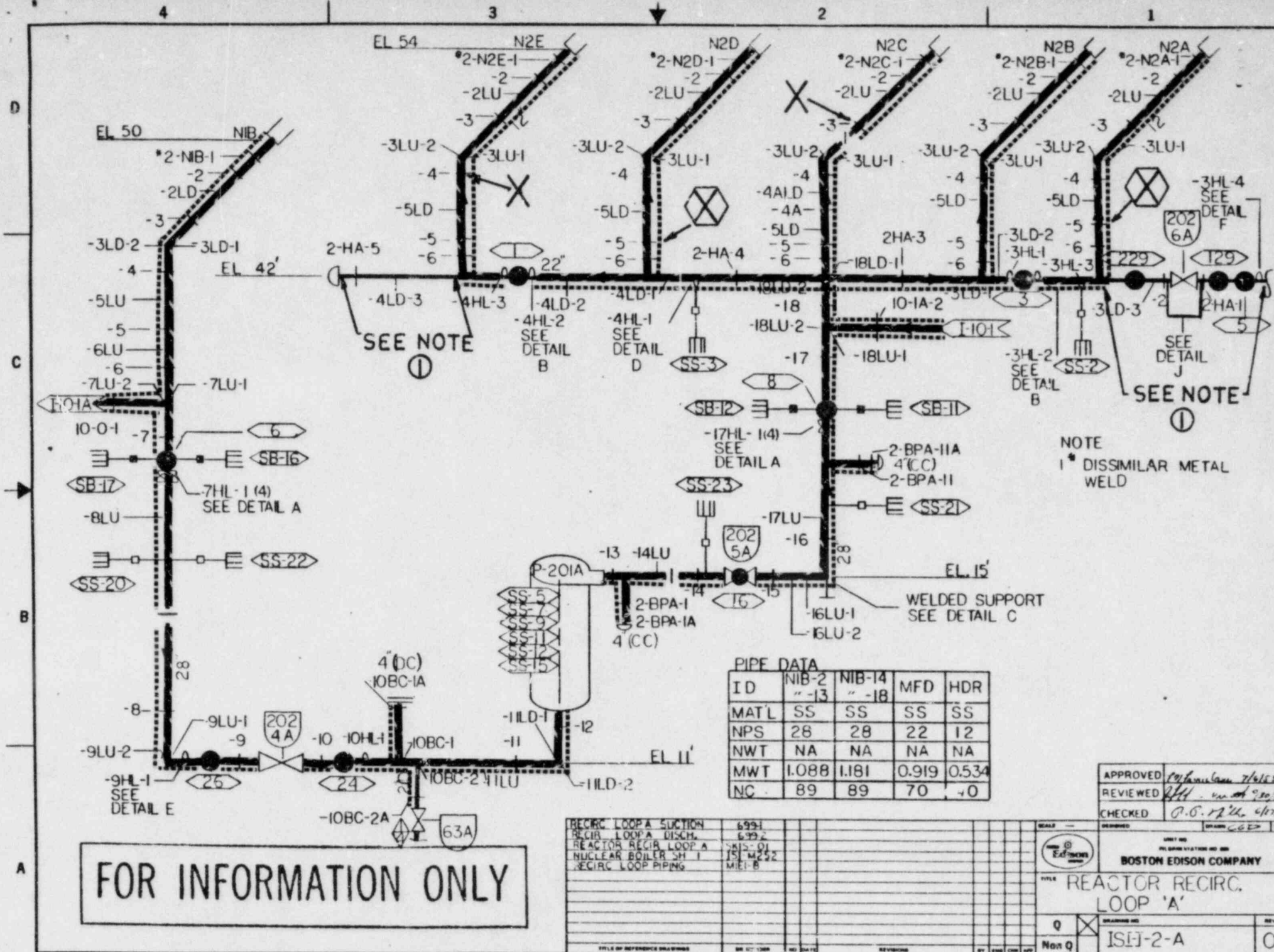
NOTES

1. Section will be removed rather than replaced.
2. ID of weld was dye penetrant inspected. No IGSCC. To be corrosion resistant clad when piping subsequently associated with welds Nos. 10-IB-14A and 10Ib-15 is replaced.
3. Indications reported.
4. Evaluated as counterbore and confirmed by construction x-ray.
5. Within 25% of wall thickness, therefore, evaluation in accordance with NRC criteria shall be performed.

FOR INFORMATION ONLY

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CHECKED	<i>[Signature]</i>

				BOETOR EDISON COMPANY	
		ISI ISO NOTATION			
0	<input checked="" type="checkbox"/>	ISI-1 0		0	



SEE NOTE
①

SEE NOTE
①

NOTE
① * DISSIMILAR METAL WELD

PIPE DATA

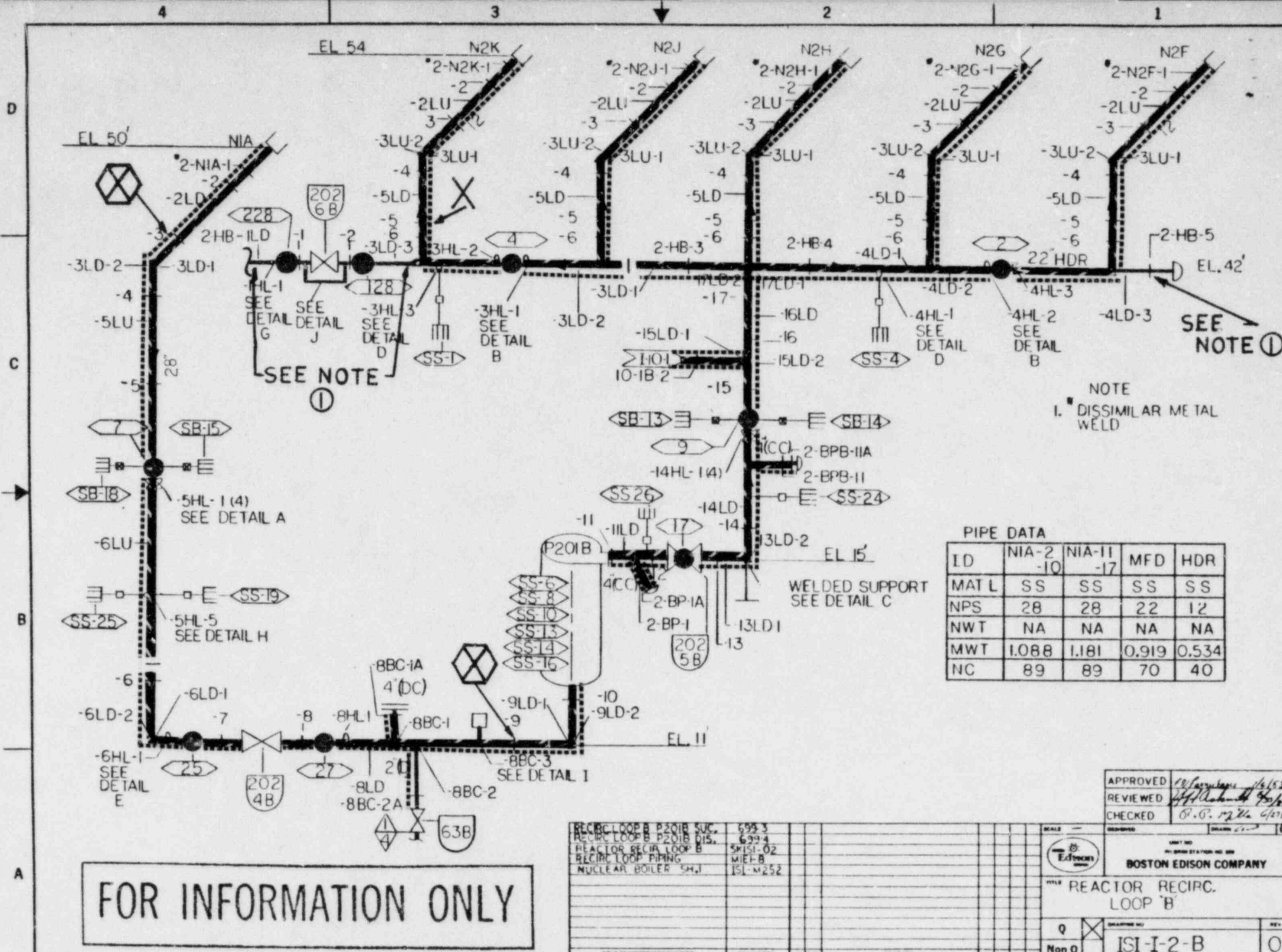
ID	NIB-2 "-13	NIB-14 "-18	MFD	HDR
MATL	SS	SS	SS	SS
NPS	28	28	22	12
NWT	NA	NA	NA	NA
MWT	1.088	1.181	0.919	0.534
NC	89	89	70	40

APPROVED *[Signature]*
 REVIEWED *[Signature]*
 CHECKED *[Signature]*

SCALE: --- DRAWING NO: --- SHEET NO: ---
 BOSTON EDISON COMPANY
 REACTOR RECIRC. LOOP 'A'
 Q DRAWING NO: ISEJ-2-A
 Non Q REV: 0

TITLE OF REFERENCE DRAWING	NO.	DATE	REVISION	BY	CHK	APP
RECIRC LOOP A SUCTION	699-1					
RECIRC LOOP A DISCH.	699-2					
REACTOR RECIRC LOOP A	NIS-01					
NUCLEAR BOILER SH-1	151 M252					
RECIRC LOOP PIPING	MEI-8					

FOR INFORMATION ONLY



NOTE
1. DISSIMILAR METAL WELD

PIPE DATA

ID	NIA-2 -10	NIA-11 -17	MFD	HDR
MAT L	SS	SS	SS	SS
NPS	28	28	22	12
NWT	NA	NA	NA	NA
MWT	1.088	1.181	0.919	0.534
NC	89	89	70	40

APPROVED *[Signature]* 1/6/52
 REVIEWED *[Signature]* 1/6/52
 CHECKED *[Signature]* 1/6/52

SCALE: *[Blank]* DRAWING NO. *[Blank]* C

UNIT NO. *[Blank]*
 DIVISION STATION NO. *[Blank]*
BOSTON EDISON COMPANY

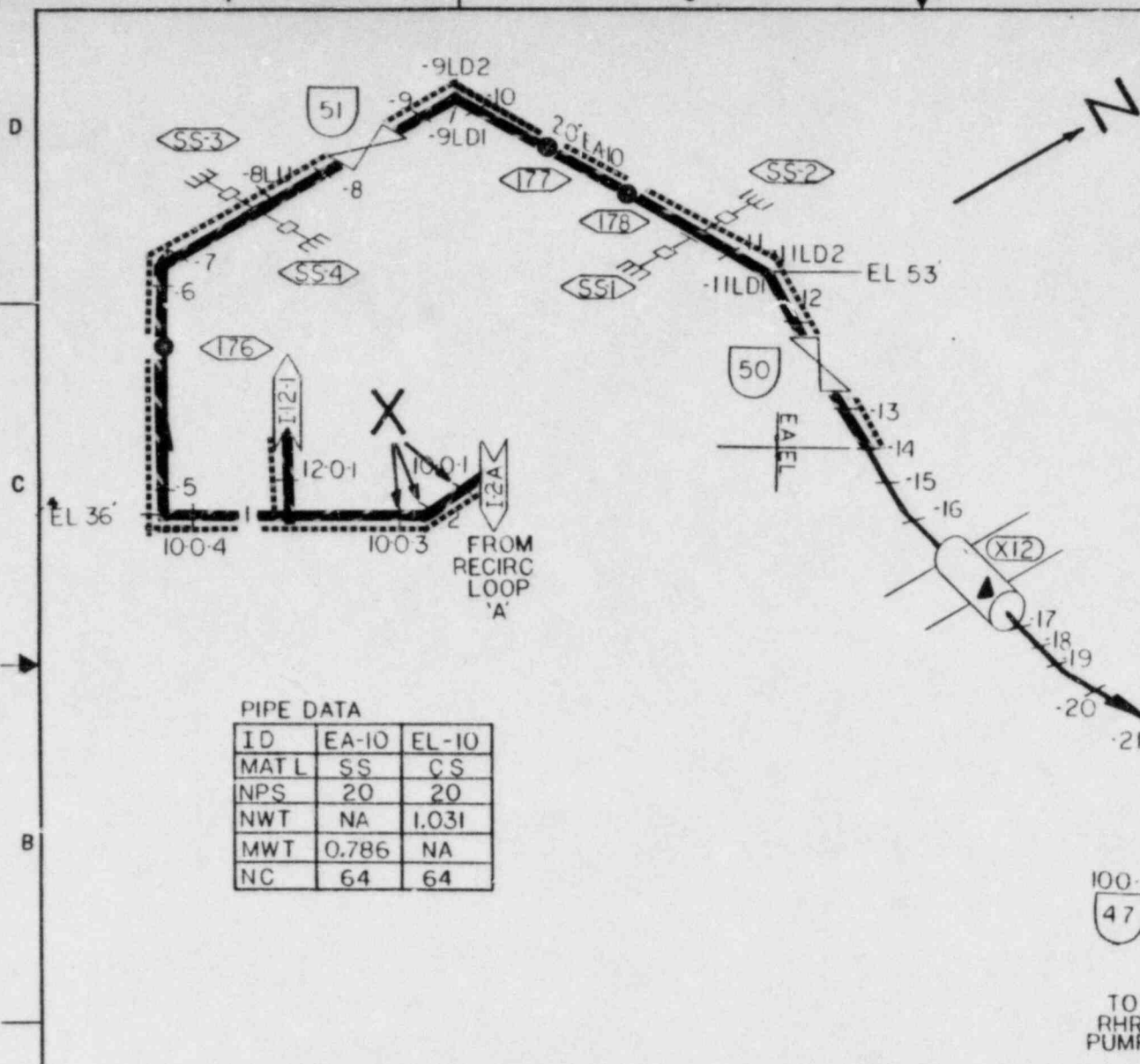
TITLE: REACTOR RECIRC. LOOP 'B'

DESIGNED BY: *[Blank]* DATE: *[Blank]*

Non Q ISI-I-2-B 0

TITLE OF REFERENCE DRAWING	REV. NUMBER	REV. DATE	REVISION	BY	CHK	APP
RECIRC LOOP B P201B SUC.	699-3					
RECIRC LOOP B P201B DIS.	699-4					
REACTOR RECIRC LOOP B	5K151-02					
RECIRC LOOP PIPING	WIE-F					
NUCLEAR BOILER SH-1	151-M252					

FOR INFORMATION ONLY



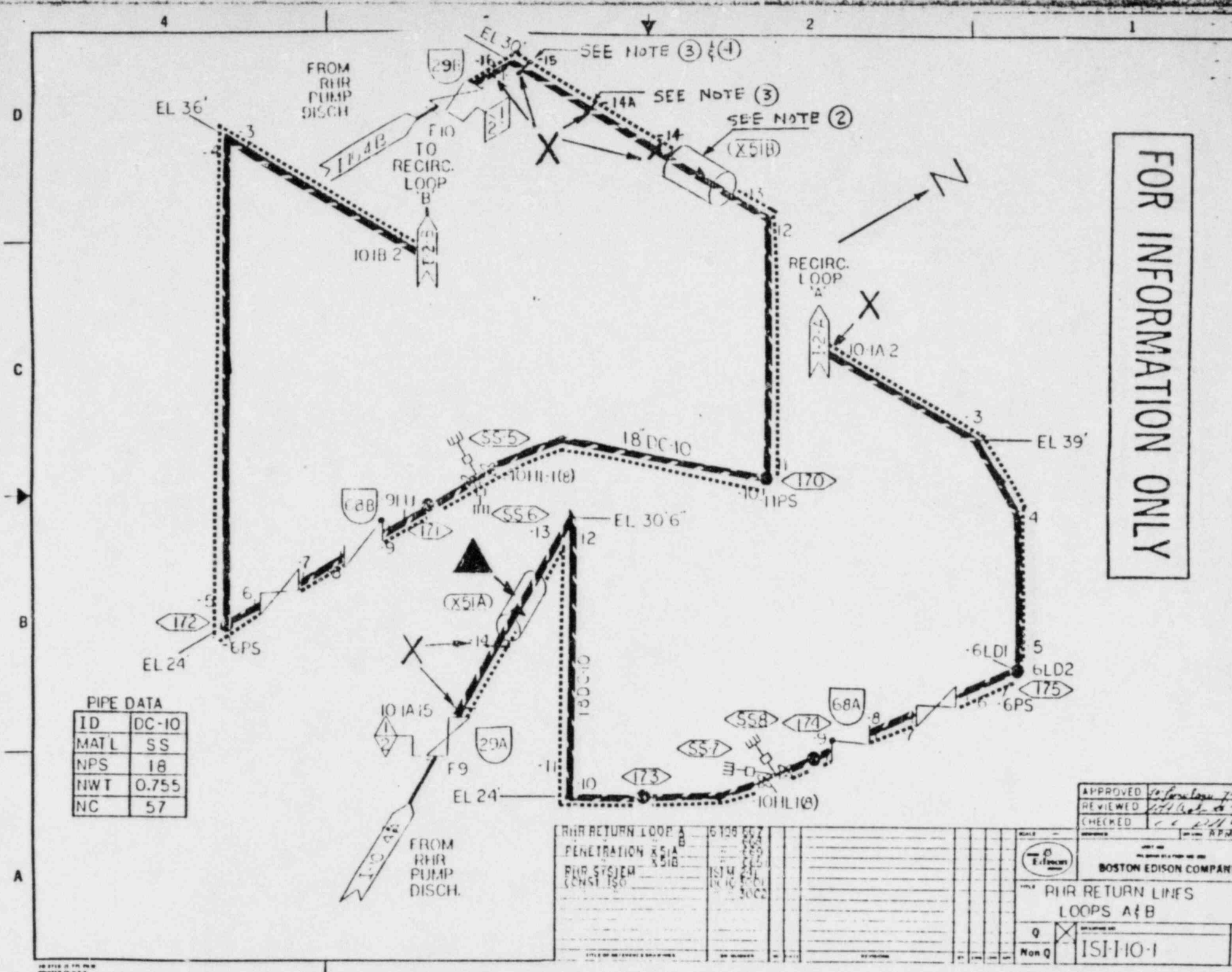
PIPE DATA

ID	EA-10	EL-10
MATL	SS	CS
NPS	20	20
NWT	NA	1.031
MWT	0.786	NA
NC	64	64

FOR INFORMATION ONLY

TITLE OF REFERENCE DRAWING	OF NUMBER	NO. DATE	REVISIONS	BY	CHK	APP
RHR SUPPLY SYSTEM	6458-661	63-1				
	151M 231					
	MICOBCC213					

APPROVED	<i>[Signature]</i>
REVIEWED	<i>[Signature]</i>
CHECKED	<i>[Signature]</i>
DESIGNED	DRWNG RPM
 BOSTON EDISON COMPANY	
TITLE	
RHR SUPPLY	
Q	DRWNG NO
Non Q	ISI-110-1A
	REV
	0



FOR INFORMATION ONLY

PIPE DATA

ID	DC-10
MATL	SS
NPS	18
NWT	0.755
NC	57

RHR RETURN LOOP A	16128	667							
PENETRATION X51A									
RHR SYSTEM X51B									
RHR SYSTEM CONST ISO	1814	241							

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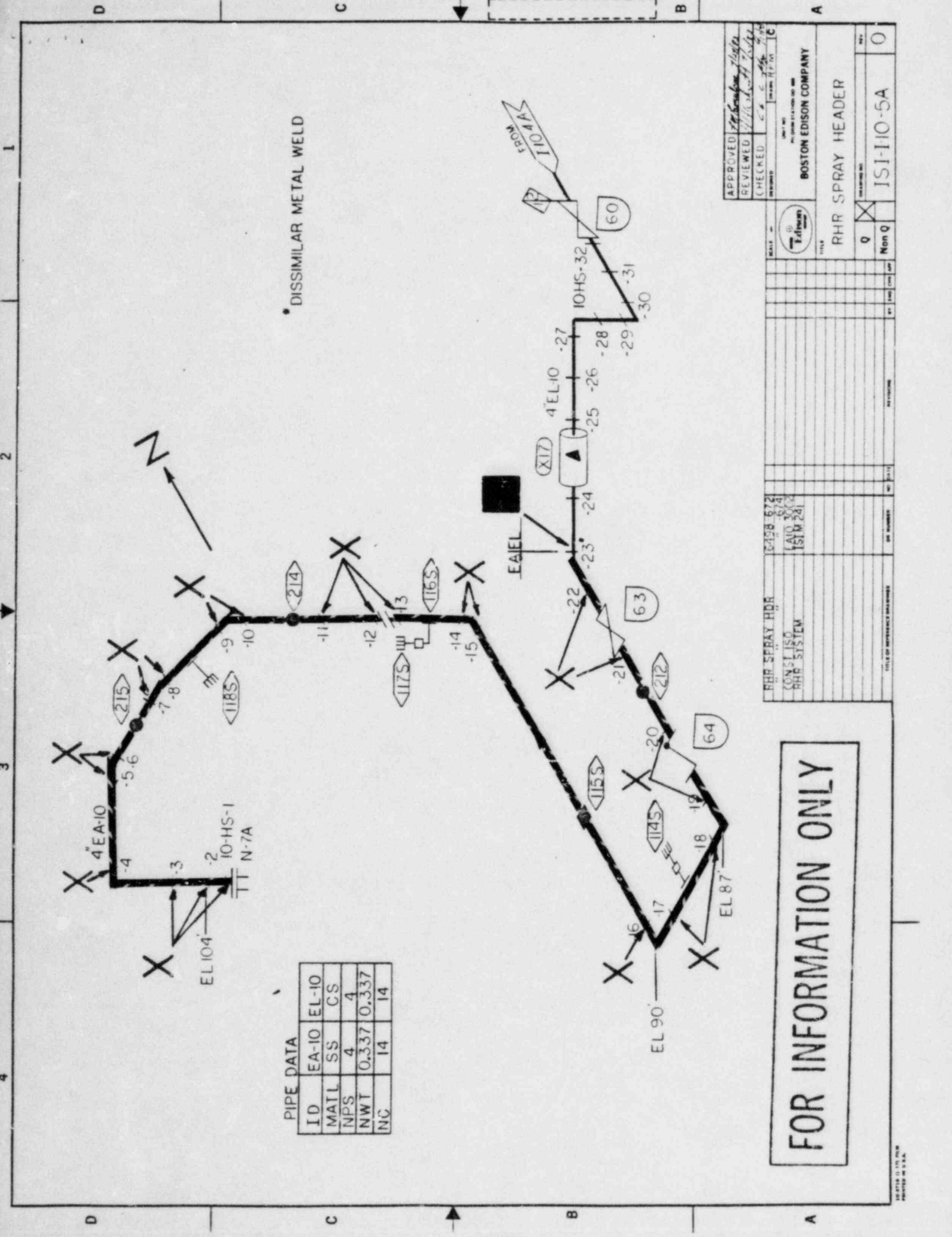
SCALE: AS SHOWN

BOSTON EDISON COMPANY

RHR RETURN LINES
LOOPS A & B

Q Non Q

ISI-10-1 0



PIPE DATA

ID	EA-10	EL-10
MATL	SS	CS
NPS	4	4
NWT	0.337	0.337
NC	14	14

FOR INFORMATION ONLY

APPROVED	<i>[Signature]</i>
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DESIGNED	<i>[Signature]</i>

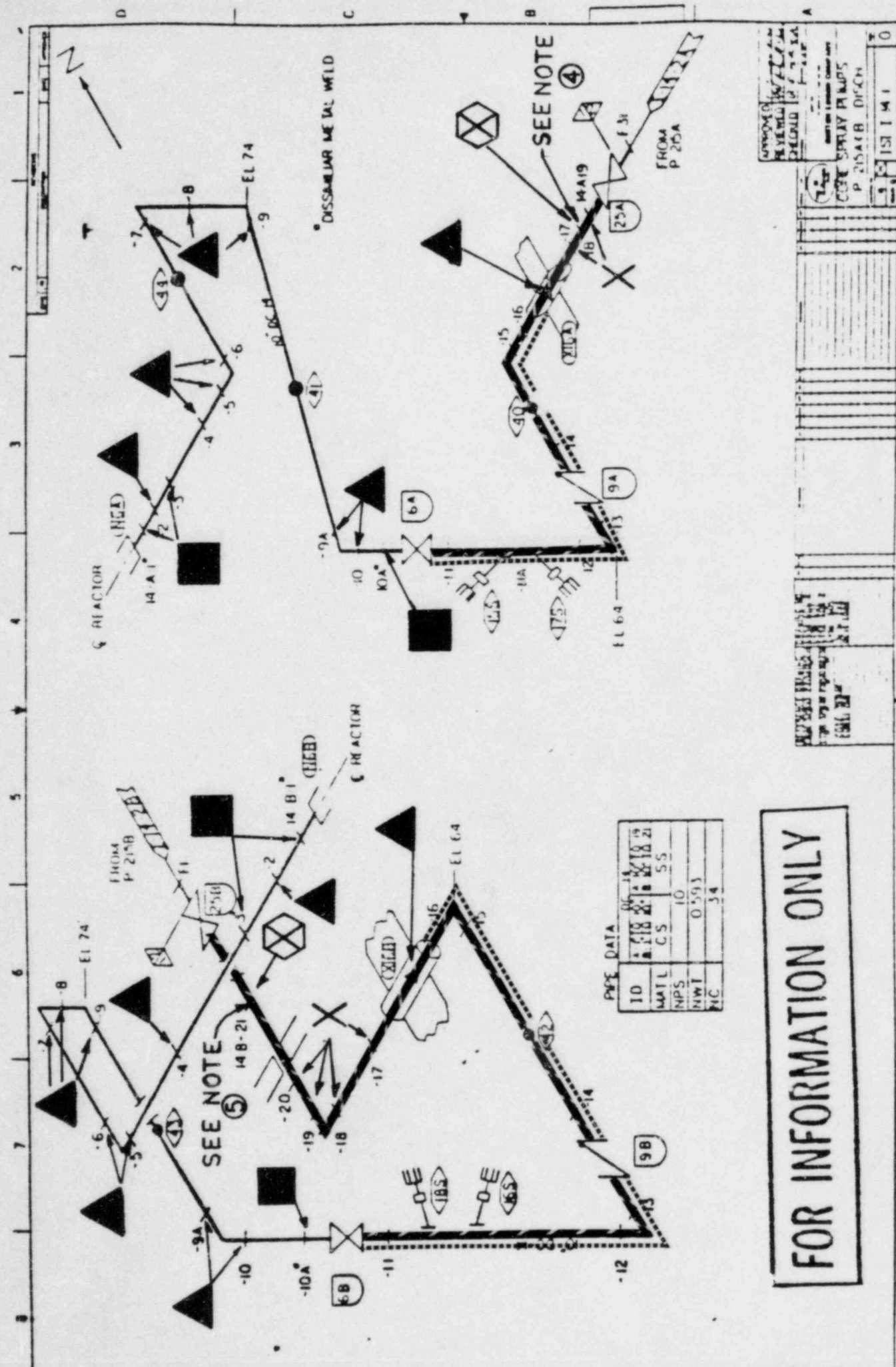
SCALE:

TITLE: RHR SPRAY HDR
CONSISTO RHR SYSTEM

NO.	REV.	DESCRIPTION	DATE
1	0	ISSUED FOR CONSTRUCTION	04/18/87
2	0	ISSUED FOR CONSTRUCTION	04/18/87
3	0	ISSUED FOR CONSTRUCTION	04/18/87
4	0	ISSUED FOR CONSTRUCTION	04/18/87
5	0	ISSUED FOR CONSTRUCTION	04/18/87
6	0	ISSUED FOR CONSTRUCTION	04/18/87
7	0	ISSUED FOR CONSTRUCTION	04/18/87
8	0	ISSUED FOR CONSTRUCTION	04/18/87
9	0	ISSUED FOR CONSTRUCTION	04/18/87
10	0	ISSUED FOR CONSTRUCTION	04/18/87

PROJECT NO: 101-110-5A
 CONTRACT NO: 101-110-5A
 DRAWING NO: 101-110-5A
 SHEET NO: 0

BOSTON EDISON COMPANY
 RHR SPRAY HEADER
 0 Non 0
 101-110-5A 0



1
2
3
4
5
6
7
8

A
B
C
D

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5
6
7
8

REACTOR

DISSIMILAR METAL WELD

REACTOR

SEE NOTE 4

SEE NOTE 5

FROM P 25A

FROM P 25B

SEE NOTE 4

FROM P 25A

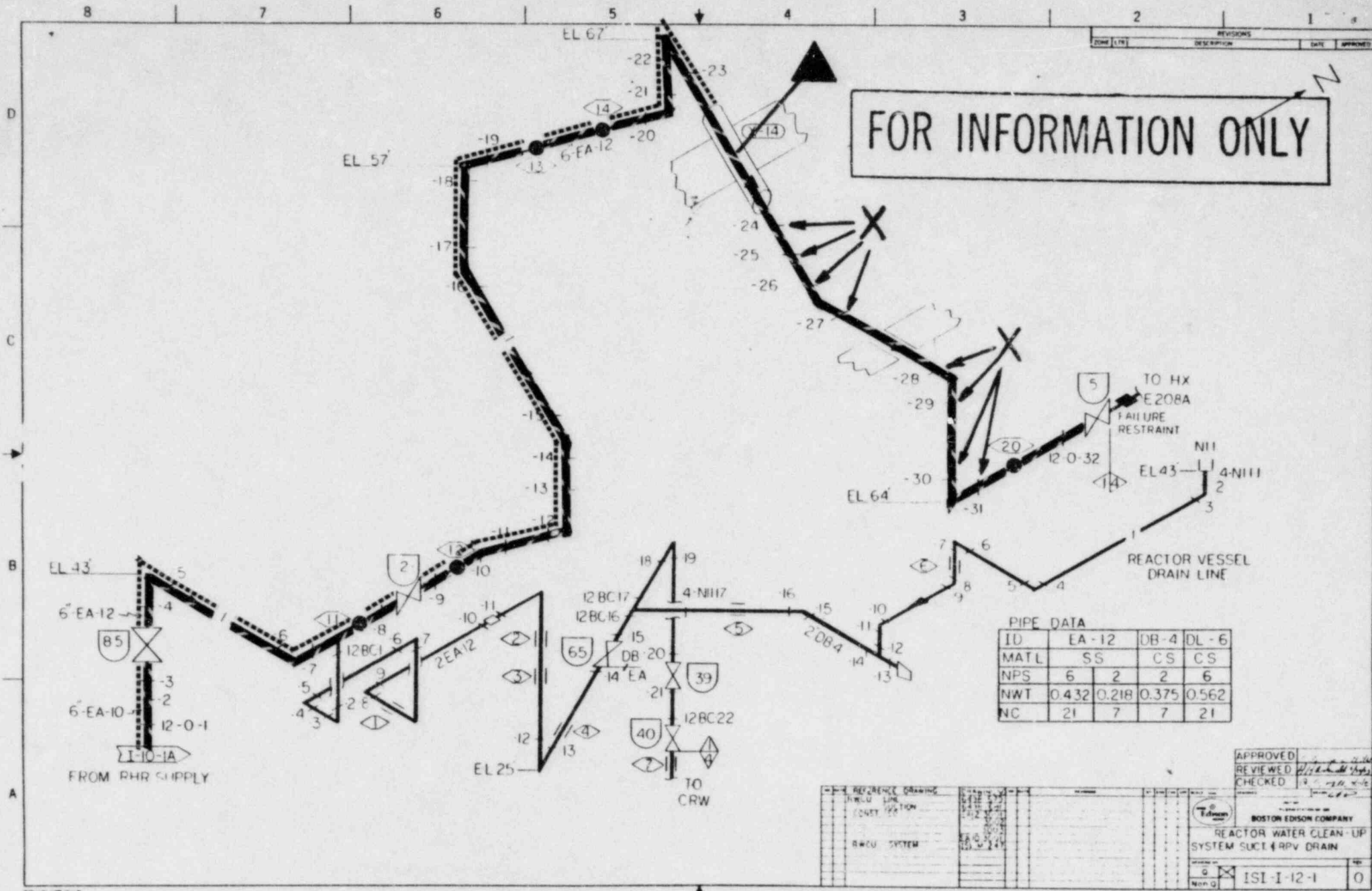
PNE DATA

ID	06	18	18	21
MATL	CS	CS	SS	SS
NPS	10	10	10	10
NWT	0.593			
HC	34			

FOR INFORMATION ONLY

APPROVED BY
REVIEWED BY
DESIGNED BY
DATE
P 25A/B DFCN
151141

1
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3
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5
6
7
8



FOR INFORMATION ONLY

PIPE DATA

ID	EA-12	DB-4	DL-6
MATL	SS	CS	CS
NPS	6	2	6
NWT	0.432	0.218	0.375
NC	21	7	21

APPROVED
 REVIEWED
 CHECKED

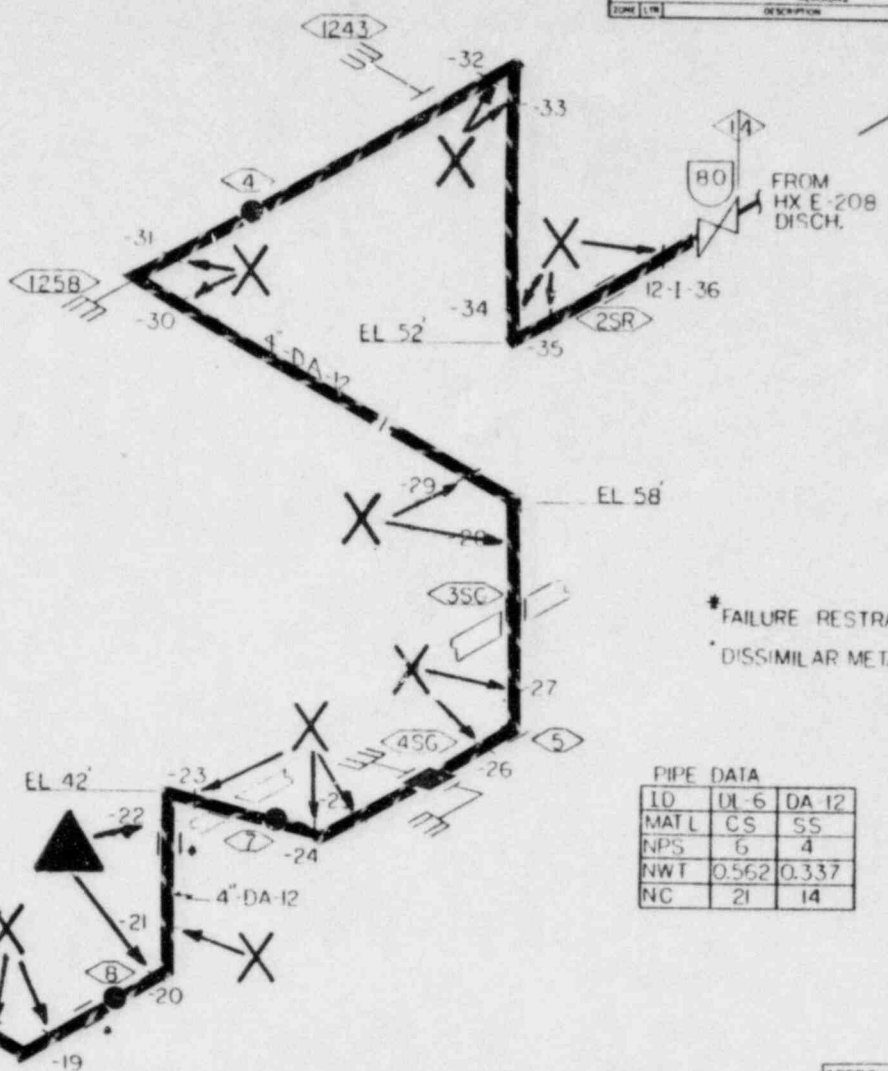
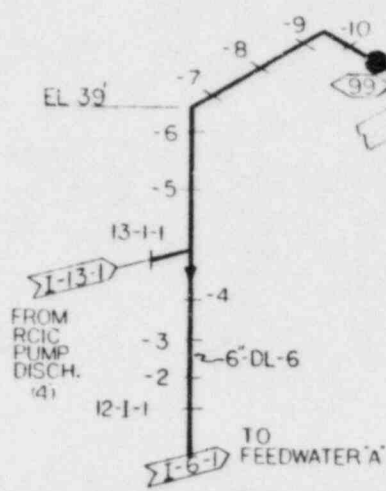
NO.	REFERENCE DRAWING	DATE	BY	CHKD
1	DRW. 100	11/12/78
2	CONV. 100	12/12/78
3

BOSTON EDISON COMPANY
 REACTOR WATER CLEAN-UP
 SYSTEM SUCT. & RPV DRAIN

0
 Non-G
 ISI-1-12-1 0

FOR INFORMATION ONLY

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED



- * FAILURE RESTRAINTS
- * DISSIMILAR METAL

PIPE DATA

ID	DL-6	DA-12
MAT L	CS	SS
NPS	6	4
NWT	0.562	0.337
NC	21	14

APPROVED	<i>[Signature]</i>
REVIEWED	<i>[Signature]</i>
CHECKED	<i>[Signature]</i>

BOSTON EDISON COMPANY
 REACTOR WATER CLEAN-UP
 SYSTEM HX E 208 DISCH

2	ISI-I-12-2	0
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WELDS NOT SCHEDULED FOR EXAMINATION

<u>SYSTEM</u>	<u>WELD IDENTIFICATION^A</u>	<u>DIAMETER</u>	<u>DRAWING NO.</u>	<u>EXEMPT CODE^B</u>
Head Spray	10-HS-23	4"	ISI-I-10-5A	4
Core Spray (Loop A)	14-A-1*	10"	ISI-I-14-1	2
	14-A-3*	10"	ISI-I-14-1	2
	14-A-10A*	10"	ISI-I-14-1	2
	Penetration Weld (X-16A)	10"	ISI-I-14-1	1,3
Core Spray (Loop B)	14-B-1*	10"	ISI-I-14-1	2
	14-B-3*	10"	ISI-I-14-1	2
	14-B-10A*	10"	ISI-I-14-1	2
	Penetration Weld (X-16B)	10"	ISI-I-14-1	1,3
RWCU	12-I-20	4"	ISI-I-12-2	3
	12-I-22	4"	ISI-I-12-2	3
	12-I-16	6"	ISI-I-12-2	4

NOTES:

- A. Carbon steel welds shown on drawings are not listed.
- B. Exemption Codes are:
1. Normal system operating temperature less than 200°F.
 2. Weld is in 316 stainless steel piping material having low carbon content (below 0.02%) or is a dissimilar metal weld consisting of low carbon 316 stainless steel and carbon steel base materials, clad with Inconel and welded out with Inconel weld metal.
 3. Weld is not accessible for ultrasonic examination because of component configuration.
 4. Tri-metallic weld.

Weld 10-HS-23 will require radiography due to its configuration. Welds 14-A-1*, 14-B-1*, 14-A-3*, 14-B-3*, 14-A-10A*, and 14-B-10A* in the ASME Code Class I portion of the Core Spray System external to the Reactor Vessel will be radiographed in lieu of UT examination because these welds are tri-metallic. Welds 14-A-2 and 14-B-2 were fabricated with 316L base metal and 308L weld metal and consequently were excluded from the Order.

HYDROGEN/WATER CHEMISTRY PROGRAM FOR
PILGRIM NUCLEAR POWER STATION

The Hydrogen/Water Chemistry Program for Pilgrim Nuclear Power Station will contain three major objectives. The first objective will be to develop and permanently implement Hydrogen chemistry control for the reactor coolant system. The purpose of this objective is to suppress IGSCC in the reactor coolant system piping by reducing the electrochemical driving force for IGSCC. A commercially feasible hydrogen chemistry control program/system does not exist at this time. As such, commencing with startup from the current refueling outage, feasibility studies will be conducted at Pilgrim Station to develop the necessary design criteria to develop such a system. Injection and instrument taps will be installed and other modifications made to the reactor coolant system to facilitate testing. Various methodologies will be evaluated and a final conceptual design is targeted for implementation during RFO #7.

The implementation of Hydrogen chemistry control at Pilgrim Station will significantly impact station operations. Radiation levels are expected to rise which in turn will create shielding problems in several areas of the plant. Extensive analyses and evaluations will have to be conducted to address this impact. From a licensing perspective relief from the Technical Specifications will be needed for the Main Steam Line Radiation Limits.

The second objective of the Hydrogen/Water Chemistry Program provides interim measures, during the upcoming fuel cycle, to minimize the potential for IGSCC propagation. This objective creates a general water chemistry control program for the reactor coolant. It is our intention to make every effort to comply with the Electric Power Research Institute guidelines for BWR water chemistry. Achieving this second objective will also require several major changes to system operations. Lessons learned during this interim period will be incorporated in the ongoing program to modify the reactor coolant environment to mitigate IGSCC.

The final objective is to effect a reorganization such that water chemistry control at Pilgrim Station is given sufficient attention and importance to make it an integral part of station operations. Dedicated manpower and resources will be allocated to facilitate a permanent and comprehensive Hydrogen/Water Chemistry Program.

GENERAL ELECTRIC COMPANY

AFFIDAVIT

I, Joseph F. Quirk, being duly sworn, depose and state as follows:

1. I am Manager, BWR Systems Licensing, Nuclear Safety & Licensing Operation, General Electric Company, and have been delegated the function of reviewing the information described in paragraph 2 which is sought to be withheld and have been authorized to apply for its withholding.
2. The information sought to be withheld pertains to the proprietary information submitted in NEDC-30730-P, "Pilgrim Nuclear Power Station Recirculation Nozzle Repair Program and Hydrogen Water Chemistry Materials Qualification", Class III, August 1984.
3. In designating material as proprietary, General Electric utilizes the definition of proprietary information and trade secrets set forth in the American Law Institute's Restatement of Torts, Section 757. This definition provides:

"A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business and which gives him an opportunity to obtain an advantage over competitors who do not know or use it... A substantial element of secrecy must exist, so that, except by the use of improper means, there would be difficulty in acquiring information... Some factors to be considered in determining whether given information is one's trade secret are: (1) the extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and to his competitors; (5) the amount of effort or money expended by him in developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others."

4. Some examples of categories of information which fit into the definition of proprietary information are:
 - a. Information that discloses a process, method or apparatus where prevention of its use by General Electric's competitors without license from General Electric constitutes a competitive economic advantage over other companies;
 - b. Information consisting of supporting data and analyses, including test data, relative to a process, method or apparatus, the application of which provide a competitive economic advantage, e.g., by optimization or improved marketability;

- c. Information which if used by a competitor, would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality or licensing of a similar product;
 - d. Information which reveals cost or price information, production capacities, budget levels or commercial strategies of General Electric, its customers or suppliers;
 - e. Information which reveals aspects of past, present or future General Electric customer-funded development plans and programs of potential commercial value to General Electric;
 - f. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection;
 - g. Information which General Electric must treat as proprietary according to agreements with other parties.
5. In addition to proprietary treatment given to material meeting the standards enumerated above, General Electric customarily maintains in confidence preliminary and draft material which has not been subject to complete proprietary, technical and editorial review. This practice is based on the fact that draft documents often do not appropriately reflect all aspects of a problem, may contain tentative conclusions and may contain errors that can be corrected during normal review and approval procedures. Also, until the final document is completed it may not be possible to make any definitive determination as to its proprietary nature. General Electric is not generally willing to release such a document to the general public in such a preliminary form. Such documents are, however, on occasion furnished to the NRC staff on a confidential basis because it is General Electric's belief that it is in the public interest for the staff to be promptly furnished with significant or potentially significant information. Furnishing the document on a confidential basis pending completion of General Electric's internal review permits early acquaintance of the staff with the information while protecting General Electric's potential proprietary position and permitting General Electric to insure the public documents are technically accurate and correct.
6. Initial approval of proprietary treatment of a document is made by the Subsection Manager of the originating component, the man most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge. Access to such documents within the Company is limited on a "need to know" basis and such documents at all times are clearly identified as proprietary.

7. The procedure for approval of external release of such a document is reviewed by the Section Manager, Project Manager, Principal Scientist or other equivalent authority, by the Section Manager of the cognizant Marketing function (or his delegate) and by the Legal Operation for technical content, competitive effect and determination of the accuracy of the proprietary designation in accordance with the standards enumerated above. Disclosures outside General Electric are generally limited to regulatory bodies, customers and potential customers and their agents, suppliers and licensees only in accordance with appropriate regulatory provisions or proprietary agreements.
8. The document mentioned in paragraph 2 above has been evaluated in accordance with the above criteria and procedures and has been found to contain information which is proprietary and which is customarily held in confidence by General Electric.
9. The information mentioned in paragraph 2 provides details of the recirculation inlet and outlet safe-end to nozzle weld inspection and repair prior to the installation of new safe-ends at Pilgrim. In addition, justification is provided for continued operation with intermittently cracked recirculation inlet nozzle thermal sleeves. Also, the results of the hydrogen water chemistry materials qualification program are discussed.
10. The information to the best of my knowledge and belief, has consistently been held in confidence by the General Electric Company, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties have been made pursuant to regulatory provisions or to proprietary information agreements which provide for maintenance of the information in confidence.
11. Public disclosure of the information sought to be withheld is likely to cause substantial harm to the competitive position of the General Electric Company and deprive or reduce the availability of profit-making opportunities because:
 - a. It was developed with the expenditure of resources exceeding \$500,000.00.
 - b. Public availability of this information would deprive General Electric of the ability to seek reimbursement and would permit competitors to utilize this information to General Electric's detriment, to the substantial financial and competitive disadvantage of General Electric.

STATE OF CALIFORNIA)
COUNTY OF SANTA CLARA) ss:

Joseph F. Quirk, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at San Jose, California, this 30th day of August, 1984.

Joseph F. Quirk
Joseph F. Quirk
General Electric Company

Subscribed and sworn before me this 3rd day of August, 1984.

Ruthe M. Kinnamon
NOTARY PUBLIC, STATE OF CALIFORNIA



175 Curtner Avenue, San Jose, CA 95125