

INSERVICE INSPECTION OF TMI-1  
CLASS 1 COMPONENT PRESSURE BOUNDARY

I. Scope and Objectives

This attachment describes the inservice inspection program for Class 1 (reactor coolant system) pressure boundary components of TMI-1. The objective of the inservice inspection program is to provide assurance of the continuing integrity of the reactor coolant system while at the same time minimizing radiation exposure to personnel and plant downtime in the performance of the inspections.

II. Identification of Class 1 Boundary

The Class 1 boundary was established in accordance with 10CFR50, paragraph 50.2(v) and footnote 2 to paragraph 50.55a(g)(1). The Class 1 boundary is shown in the attached drawings, Drawing Nos. C-300-004 & 5-GN1, C300-015 to 017-GN1, and C-300-019 & 020-GN1.

III. Applicable Code Edition and Addenda

In accordance with 10CFR50, paragraph 50.55a(b), the applicable Code Edition and Addenda are the 1974 Edition with Addenda through Summer 1975.

IV. Period of Applicability

In accordance with 10CFR50, paragraph 50.55a(g)(4)(ii), this program is applicable from January 1978 to May 1981. However, the program is

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written in terms of the Code required ten-year inspection interval, which started September 1974.

V. Bases for Inspection

The inspection program detailed in Table A-1 below follows the Code, except that inspections are focused on those areas which engineering analysis indicates are subject to relatively more critical conditions of stress, fatigue, radiation, and/or thermal cycles. Inspections are also required of those areas which had recordable indications during the pre-service baseline examination. It is considered that inspection of areas subjected to relatively more critical conditions or which have pre-existing indications will provide good assurance of identification of any potential problems before significant flaws develop in the Class 1 component pressure boundaries.

VI. Inspection Program

Inservice inspections will be carried out in accordance with Section XI, 1974 Edition with Addenda through Summer 1975, except that the specific inspections to be performed will be in accordance with Table A-1 rather than Tables IWB-2500 and IWB-2600 in the Code.

Any repairs found to be necessary as a result of inservice inspections will be performed in accordance with Section XI, 1974 Edition with Addenda through Summer 1975.

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TABLE A-1

## CLASS I INSERVICE INSPECTIONS

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ITEM NO. PER TABLE IWB-2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
<u>Reactor Vessel</u>					
B1.1	B-A	Longitudinal and circumferential welds and major weld repairs in the core beltline region. These welds include the two circumferential welds and four longitudinal welds in the beltline region.	Volumetric	At or near the end of the 10-year inspection interval, 10% of each longitudinal and 5% of each circumferential weld will be inspected. When the neutron fluence exceeds $10^{19}$ nvt ( $E_n$ of 1.0 Mev or greater), the length of each weld which is inspected will be increased to 50%. At least 50% of areas with major repairs shall be inspected by the end of the second 10-year inspection interval.	These inspections will include a region in the center circumferential weld which had a UT reflector.
B1.2	B-B	Longitudinal and circumferential welds in the shell and heads (other than those covered in Items B1.1 and B1.3).	See Remarks	See Remarks	The welds in this category are the circumferential weld just above the support skirt junction with the vessel, the lower head to vessel weld which is only accessible from the bottom of the vessel, and the circumferential nozzle belt weld. The stresses and fatigue usages in these welds are lower than in the other reactor vessel shell welds to be inspected per Items B1.3 and B1.4. Therefore, no inspections are planned.
B1.3	B-C	Vessel to flange and head to flange circumferential welds.	Volumetric	1/3 about every 3-1/3 years.	
B1.4	B-D	Primary nozzle to vessel welds and nozzle inside radiused sections.	Volumetric	100% of one outlet nozzle will be inspected each five years, and 100% of the higher stressed core flood nozzle will be inspected near the end of the 10-year inspection interval.	The outlet nozzles are selected for inspection since they see higher stresses and fatigue usage than the inlet nozzles. The higher stressed core flood nozzle is selected because it has a somewhat different configuration than the outlet nozzles.
B1.5	B-E	Pressure retaining partial penetration welds in the vessel.	Visual	The area around 25% of the control rod drive penetration nozzle welds will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B1.6	B-F	Primary nozzle to safe-end welds (dissimilar metal welds).	Volumetric	100% of the dissimilar metal weld at the nozzle leading to core flooding tank 1A will be inspected. This inspection will be done near the end of the 10-year inspection interval.	The pipe stresses at this nozzle are about three times those at the nozzle leading to tank 1B. The core flooding nozzles are the only nozzles on the reactor vessel with dissimilar metal welds. Surface inspection will not be performed because of the high radiation levels at this weld.
B1.7	B-G-1	Closure studs, in-place.	See Item B1.8	See Item B1.8.	
B1.8	B-G-1	Closure studs and nuts 2 inches and over in diameter.	Volumetric and surface	Cumulative 100% with 33-1/3% being examined about every 3-1/3 years.	The studs and nuts are normally removed during refueling and are thus accessible for surface inspection.

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TABLE A-1

## CLASS 1 INSERVICE INSPECTIONS

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ITEM NO. PER TABLE IWB-2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
01.9	B-G-1	Ligaments between threaded stud holes.	Volumetric	Cumulative 100% with 33-1/3% being examined about every 3-1/3 years.	
01.10	B-G-1	Closure washers, bushings.	Visual	Cumulative 100% with 33-1/3% being examined about every 3-1/3 years.	
01.11	B-G-2	Pressure retaining bolting below 2 inches in diameter.	Visual	Cumulative 100% with 33-1/3% being examined about every 3-1/3 years.	Will be done in place unless joints are disassembled for other reasons.
01.12	B-H	Integrally welded vessel supports	See Remarks	See Remarks	Inspection is not required since the skirt to vessel junction is an integrally forged piece.
01.13	B-I-1	Closure head cladding	See Remarks	See Remarks	Experience has shown cladding inspections to not be warranted, and they have been deleted.
01.14	B-I-1	Vessel cladding.	See Remarks	See Remarks	Experience has shown cladding inspections to not be warranted, and they have been deleted.
01.15	B-N-1	Vessel interior.	Visual	Normally accessible areas will be visually inspected at the first refueling and every third refueling thereafter.	
01.16	B-N-2	See Remarks	See Remarks	See Remarks	This inspection applies only to BWRs.
01.17	B-N-3	Removable core support structures.	Visual	This inspection will be performed once each 10-year inspection interval.	
01.18	B-O	Control rod drive housings	Volumetric	There are three control rod drive housings with welds with UT reflectors. These three housings will be inspected during the 10 year interval with one being inspected each 3-1/3 years.	
01.19	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
Pressurizer					
02.1	B-B	Longitudinal and circumferential welds.	Volumetric	One foot of the circumferential and one foot of the longitudinal weld at each corner of the heater bundle course will be inspected. One corner will be inspected within 3-1/3 years, a second within 6-2/3 years, and all four by the end of ten years.	The intersections of the longitudinal and circumferential welds at the four corners of the heater bundle course see higher stresses and fatigue usages than the other longitudinal and circumferential shell welds in the pressurizer.

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ITEM NO. PER TABLE IWB-2500	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
B2.2	B-D	Nozzle-to-vessel welds and nozzle-to-vessel radiused section.	Volumetric	The surge nozzle weld will be inspected in the first five years and the spray nozzle in the second five years of the 10-year inspection interval. In addition, the three relief and safety nozzles each have UT reflectors, and the areas with reflectors will be inspected during the 10-year inspection interval with one nozzle being inspected each 3-1/3 years.	The surge and spray nozzles are subjected to higher stresses than the relief and safety valve nozzles, and are therefore selected for inspection.
B2.3	B-E	Heater penetrations.	Visual	These connections will be inspected during the pressure test conducted near the end of the 10-year inspection interval.	
B2.4	B-F	Nozzle-to-safe-end welds (dissimilar metal).	See Remarks	See Remarks	These dissimilar metal welds are covered in Item B4.
B2.5, B2.6 and B2.7	B-G-1	Pressure retaining bolting 2 inches and greater in diameter.	Visual, volumetric and surface	The bolting for the manway and the three heater bundles will be inspected during the 10-year inspection interval with one or two of these sets of bolting being checked about every 3-1/3 years.	In-place visual and volumetric inspections will be performed unless the bolting is removed for other reasons, in which case surface inspection will also be performed.
B2.8	B-H	Integrally welded vessel supports.	Volumetric	The eight supports will be inspected each 10-year inspection interval, with about 1/3 of them being inspected each 3-1/3 years.	
B2.9	B-I-2	Vessel cladding.	See Remarks	See Remarks	Experience has shown cladding inspections to not be warranted, and they have been deleted.
B2.10	B-I-1	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B2.11	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	This bolting will be visually inspected at least once during the 10-year interval. The inspections will be done in place unless breaking the connection is required for other reasons. 1/3 of these inspections will be done about every 3-1/3 years.	
Steam Generators (S.G.) and Let-Down Coolers (L.C.)	B-B	Longitudinal or circumferential welds in primary side shell	Volumetric	S.G. -- The only welds in this category are the tubesheet-to-head welds. Five percent of the upper head-to-tubesheet welds on one steam generator will be inspected near the end of the inspection interval. In addition, all of the four tubesheet to head welds have some UT reflectors, and these reflectors will all be inspected during the 10-year inspection interval.	The upper head-to-tubesheet welds are subjected to relatively more severe stress conditions than the lower head-to-tubesheet welds, though both welds see very low stresses and 0.0 fatigue usage.

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TABLE A-1

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ITEM NO. PER TABLE IWB-2500	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
B3.1 (continued)				L, C. -- A portion of the longitudinal seam welds on each primary manifold is accessible at the manifold-to-pipe joint. The accessible portion will be inspected near the end of the inspection interval on the inlet manifold of the cooler which is used the most.	The inlet manifold is subjected to much more severe temperature transients than the outlet manifold.
B3.2	B-D	Primary nozzle-to-head welds and nozzle inside radiused section.	Visual	S, G. -- No volumetric inspections are planned. Visual inspection of the inside radiused section will be performed once during the 10-year inspection interval if the primary heads are opened for other reasons.  L, C. -- There are no L, C. welds in this category.	The reactor coolant piping surge nozzle and reactor vessel outlet nozzle welds are subjected to significantly more severe stress and fatigue usage conditions than S, G. nozzle welds. Since the surge and reactor vessel outlet nozzle welds will be inspected, inspection of the S, G. nozzle welds is not warranted.
B3.3	B-F	Primary nozzle-to-safe-end welds (dissimilar metal).	See Remarks	See Remarks	S, G. and L, C. -- There are no welds in this category.
B3.4, B3.5 and B3.6	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	Visual, volumetric and surface	S, G. -- The bolting for the four manways will be inspected during the 10-year interval, with one or two manways being inspected each 3-1/3 years.  L, C. -- There is no bolting in this category.	In-place visual and volumetric inspections will be performed unless the bolting is removed for other reasons, in which case surface inspection will also be performed.
B3.7	B-H	Integrally welded vessel supports.	Volumetric	S, G. -- Ten percent of the length of this weld on each steam generator will be inspected during the 10-year inspection interval with 3-1/3% of each weld being inspected about every 3-1/3 years.  L, C. -- There are no supports in this category.	These inspections will include the regions in one of these welds which had UT reflectors.
B3.8	B-I-2	Vessel cladding.	See Remarks	S, G. -- See Remarks  L, C. -- There is no cladding in the L, C.	Experience has shown cladding inspections to not be warranted, and they have been deleted.
B3.9	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B3.10	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	S, G. -- This bolting will be visually inspected at least once during the 10-year inspection interval. The inspections will be done in place unless breaking the connection is required for other reasons. 1/3 of these checks will be done about every 3-1/3 years.  L, C. -- There is no bolting in this category.	

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ITEM NO. PER TABLE IWB-2500	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
<u>Piping</u> B4.1	B-F	Safe-end welds (dissimilar metal).	Volumetric and surface	<p>28" pipe -- The four bimetallic welds at the RC pump outlets will be inspected in the 10-year inspection interval; one by 3-1/3 years, two by 6-2/3 years, and four by ten years.</p> <p>14" pipe -- See Item B1.6.</p> <p>12" and 10" pipe -- The bimetallic welds at the surge line connection to the reactor coolant pipe and to the pressurizer will be inspected. One of these will be inspected each five years.</p> <p>4" and under pipe -- The bimetallic weld at the high pressure injection nozzle used for normal make-up will be inspected once each 3-1/3 years, and the bimetallic weld at the nozzle connected to valve MU-V86A will be inspected once during the 10-year inspection interval.</p>	<p>The bimetallic welds at the RC pump outlets see significantly higher stresses and fatigue usage than at the RC pump inlets.</p> <p>There are three welds in this group: One decay heat outlet and one surge line dissimilar metal weld to the reactor coolant (RC) piping, and one surge line dissimilar metal weld to the pressurizer. Of these welds, the welds at the surge line connection to the pressurizer and the RC pipe see significantly higher stresses and fatigue usage and thus are selected for inspection.</p> <p>The welds in this group include four high pressure injection, one letdown, and three drain line dissimilar metal welds to the RC piping, and three relief and one spray dissimilar metal welds to the pressurizer. Of these welds, the high pressure injection nozzle used for normal make-up sees relatively higher thermal transients and is selected for inspection. The dissimilar metal weld in the nozzle connected to MU-V86A is subjected to the highest piping stresses and is also selected for inspection.</p>
B4.2, B4.3 and B4.4	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	See Remarks	See Remarks	There are no bolted joints in Class 1 piping with bolting 2 inches or over in diameter.
B4.5	B-J-1	Circumferential and longitudinal pipe welds.	Volumetric	<p>The most severely stressed welds (exclusive of dissimilar metal welds which are covered in Item B4.1) in each size range in each system will be inspected. The following welds will be inspected during the 10-year inspection interval:</p> <p><u>Reactor Coolant System</u></p> <p>a. In the 36" I.D. reactor coolant pipe, the welds between the 180° elbow at the top of the steam generator and the vertical run up from the reactor vessel will be inspected together with one foot of each intersecting longitudinal weld. In addition, the reactor vessel outlet nozzle-to-pipe welds will be inspected, since access to these welds is provided when the nozzles are inspected per Item B1.4.</p>	

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TABLE A-1

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ITEM NO. PER TABLE IWB-2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
P4.5 (continued)				<p>b. In the 28" I.D. reactor coolant pipe, the welds at the upstream ends of the elbows at the discharges of each reactor coolant pump will be inspected together with one foot of each intersecting longitudinal weld.</p> <p>c. In the surge line, the weld at the far end of the elbow welded to the RC pipe will be inspected.</p> <p>d. In the safety valve lines (6" diameter), the weld at the end of the second 90° elbow from the pressurizer safety nozzle to valve RC-RV1A will be inspected.</p> <p>e. In the safety lines (2-1/2" diameter), the first weld in the 2-1/2" pipe after the reducer will be inspected.</p> <p><u>Core Flooding System</u></p> <p>The pipe-to-reactor nozzle weld in the line from tank A will be inspected.</p> <p><u>Decay Heat System</u></p> <p>a. Inlet lines (10" diameter) -- The first weld inside the reactor building in the line with DH-V4B will be inspected.</p> <p>b. Outlet line (12" diameter) -- The downstream weld on the elbow just before the secondary shield wall will be inspected.</p> <p><u>Make-Up and Purification System</u></p> <p>a. High pressure injection (2-1/2" diameter) --</p> <p>(1) Line with valve MU-V16A -- The weld on the reactor building wall side of the first elbow inside the reactor building will be inspected.</p> <p>(2) Line with valve MU-V16B -- The weld on reactor building wall side of the first elbow inside the reactor building will be inspected.</p> <p>(3) Line with valve MU-V16C -- The weld on the downstream side of valve MU-V86B will be inspected.</p> <p>(4) Line with valve MU-V16D -- The weld on the downstream side of valve MU-V86A will be inspected.</p>	

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ITEM NO. PER TABLE IWB-2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
B4.5 (continued)				<p>b. Letdown line (2-1/2" diameter) -- The upstream pipe-to-tee weld upstream of valves MU-VIA and MU-VIB will be inspected.</p> <p>c. Four welds with UT reflectors will also be inspected.</p> <p>The pipe weld inspections will be distributed approximately uniformly over the 10-year inspection interval.</p>	
B4.6	B-J	Branch pipe connections (nozzle-to-pipe welds) over 6 inches in nominal diameter.	Volumetric	The surge line to RC pipe connection will be inspected each 10-year interval.	The only branch connections over 6 inches nominal size are the decay heat-to-RC pipe connection, and the pressurizer surge line-to-RC piping connection. The surge line nozzle weld has a significantly higher usage factor, and is therefore selected for inspection.
B4.7	B-J	Branch pipe connections (nozzle-to-pipe welds) 6 inches or less in nominal diameter.	Surface	The high pressure injection nozzle used for normal make-up will be inspected once each 3-1/3 years.	The nozzles in this category are the four HP injection nozzles, one spray line nozzle, three drain nozzles, and one letdown nozzle. Of these the HP injection nozzle used for normal make-up is subjected to the most severe conditions. Also, experience has shown that nozzles where cold water is injected into a hot system are subject to cracking.
B4.8	B-J	Socket welds.	Surface	25% of the socket welds 2 inches and under and larger than 1 inch will be inspected each inspection interval, except the socket welds in the auxiliary spray line between the spray line and RC-V4. The weld on the pressurizer side of the valve RC-V4 in the auxiliary spray line will be inspected once during the inspection interval.	A detailed stress analysis of most of this piping was not performed and, therefore, standard code inspection requirements will be met. However, a stress analysis was performed for part of the auxiliary spray line, and the selected weld is the highest stressed weld in that line. The 1-1/2" reactor coolant pump seal water piping is exempted from this inspection since the RC pump seal would limit leakage through this piping to less than 1" piping.
B4.9	B-K-1	Supports integrally welded to the pressure boundary.	Volumetric	One support will be inspected each 10-year inspection interval.	There are two integrally welded supports, one on a decay heat line and one on a core flooding line.
B4.10	B-K-2	Piping support components.	Visual	All of the support components will be inspected during the 10-year inspection interval. The inspections will be distributed approximately uniformly over the inspection interval.	
B4.11	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B4.12	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	See Remarks	See Remarks	These joints are covered in the pressurizer and valve sections of this specification.

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TABLE A-1

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ITEM NO. PER TABLE IWB-2600	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
<u>Reactor Coolant Pumps</u>					
B5.1, B5.2 and B5.3	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	Visual, volumetric and surface	The bolting for the four RC pumps will be inspected during the 10-year inspection interval, with one or two pumps being inspected each 3-1/3 years.	In-place visual and volumetric inspections will be performed unless the bolting is removed for other reasons, in which case surface inspection will also be performed.
B5.4	B-K-1	Integrally welded supports.	Visual and surface	One pump will be inspected each 10-year interval.	Lug welds on the pump casings cannot meaningfully be R. T. or U. T. inspected because of their geometry and since the casings are cast austenitic stainless steel. Therefore LP will be used.
B5.5	B-K-2	Support components.	Visual	All the support components will be visually inspected during the 10-year inspection interval.	
B5.6	B-L-1	Pump casing seam welds.	See Remarks	See Remarks	There are no casing seam welds on Class I pumps.
B5.7	B-L-2	Internal inspection of pump casings.	Visual	This inspection will be done to the extent practicable for one pump casing near the end of the 10-year inspection interval if a pump is removed for other reasons.	
B5.8	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B5.9	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	This bolting will be visually inspected at least once during the 10-year interval. The inspections will be done in place unless breaking the connection is required for other reasons. 1/3 of these inspections will be done about every 3-1/3 years.	
<u>Valve Pressure Boundary</u>					
Bv.1, Bv.2 and Bv.3	B-G-1	Pressure retaining bolting 2 inches and over in diameter.	See Remarks	See Remarks	None of the valves within the Class I boundary use bolting 2 inches or larger in diameter.
Bv.4	B-K-1	Integrally welded supports.	See Remarks	See Remarks	Integrally welded supports are not used for valves within the Class I boundary.

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ITEM NO. PER TABLE IWB-2500	EXAMINATION CATEGORY PER TABLE IWB-2500	AREAS TO BE EXAMINED	INSPECTION METHOD	INSPECTION SCHEDULE AND EXTENT	REMARKS
B6.5	B-K-2	Support components.	Visual	74 of the support components will be visually inspected during the 10-year inspection interval. These inspections will be distributed approximately uniformly over the inspection interval.	
B6.6	B-M-1	Valve body seam welds.	See Remarks	See Remarks	None of the valves within the IS boundary have body seam welds.
B6.7	B-M-2	Internal inspection of valves over 4 inches in nominal size. This applies to:  Valve Tag No. DH-V1 DH-V2 DH-V4A and B DH-V22A and B CF-V4A and B CF-V5A and B	Visual	Visual inspections will be performed on one valve of each design once during the 10-year inspection interval if the valves are disassembled for other reasons.  <u>Size and Type</u> Gate-12 inches Gate-12 inches Gate-10 inches Check-10 inches Check-14 inches Check-14 inches <u>Manufacturer - Catalog No.</u> Walworth 5262 Walworth 5262 Walworth 5262 Chapman 2573 Rockwell 1570 Rockwell 1570	
B6.8	B-P	Exempted components.	Visual	These components will be inspected for leakage during the pressure test conducted near the end of the 10-year inspection interval.	
B6.9	B-G-2	Pressure retaining bolting less than 2 inches in diameter.	Visual	The bolting will be visually inspected at least once during the 10-year inspection interval. Inspections will be done in place unless breaking the connection is required for other reasons. 1/3 of the bolts will be inspected about every 3-1/3 years.	

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1. THIS DRAWING REFLECTS THE CLASSIFICATIONS FOR THE SYSTEM SHOWN ON GAT FLOW DIAGRAM NOT FOR

2. ALL PIPING SHOWN ON THIS DRAWING IS THE CLASS 1

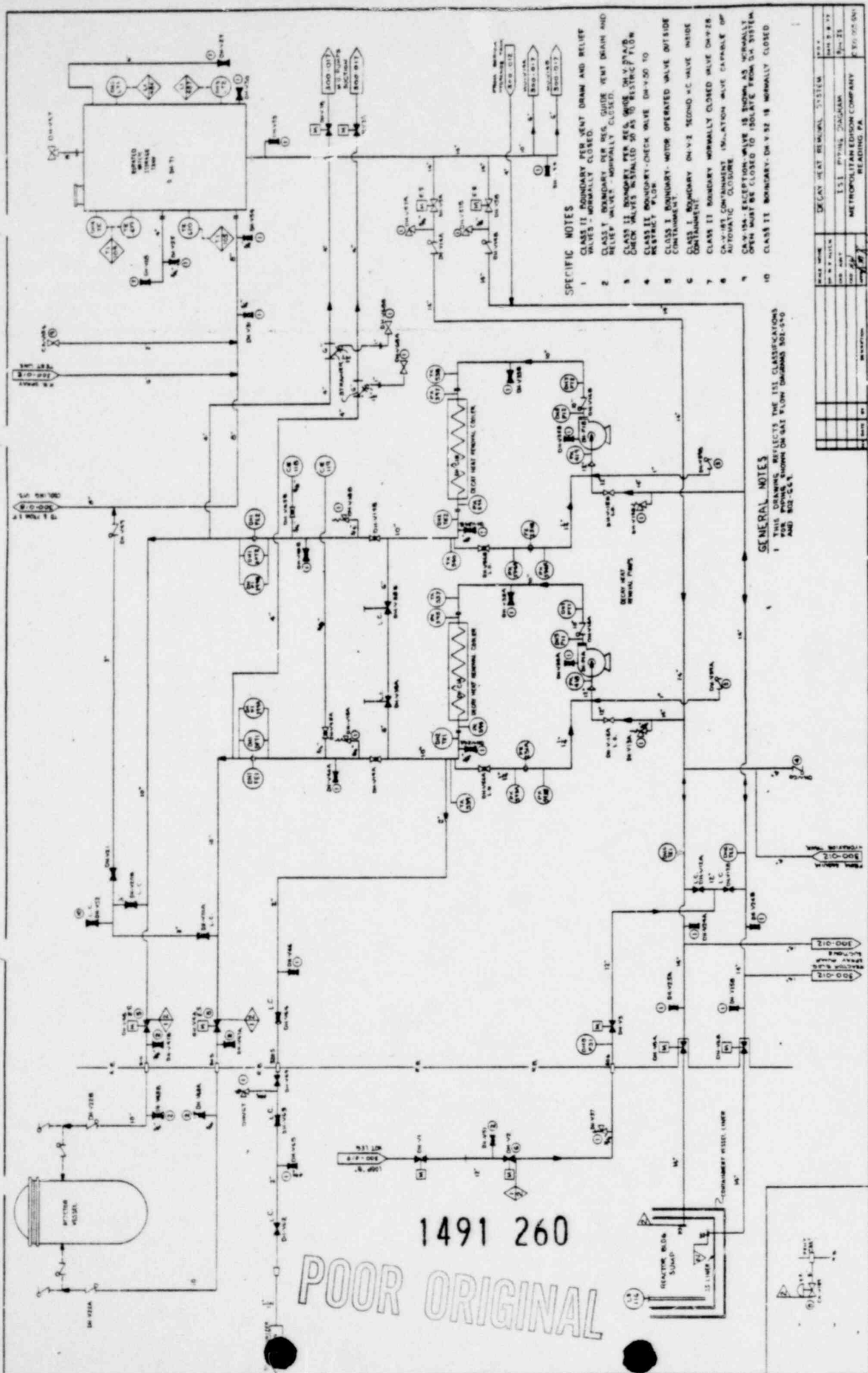
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|---------|------------------------------|----------|------------|
| DATE    | 10/25/80                     | FILE NO. | 100-100000 |
| NAME    | COLE, FLORENCE BISS EM       | DATE     | 10/25/80   |
| ADDRESS | 151 TYPING CIRCLE            | DATE     | 10/25/80   |
| CITY    | MEETROPOLITAN EDISON COMPANY | DATE     | 10/25/80   |
| STATE   | READING, PA.                 | DATE     | 10/25/80   |



- SPECIFIC NOTES**
- 1 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 2 CLASS I BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 3 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 4 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 5 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 6 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 7 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 8 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 9 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED
  - 10 CLASS II BOUNDARY PER CENT DRAIN AND RELIEF VALVES - NORMALLY CLOSED

**GENERAL NOTES**

1 THIS DRAWING REFLECTS THE 111 CLASSIFICATIONS AND NOTATIONS ON THE PUMP DRAWINGS SEE-111

DATE	11/11/77
BY	J. J. J.
CHECKED	J. J. J.
APPROVED	J. J. J.
REVISION	
1	11/11/77
2	11/11/77
3	11/11/77
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POOR ORIGINAL



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James M. Smith

- ② The following are the names of the persons who have been appointed to the various committees of the Board of Directors of the Corporation for the year ending December 31, 1967:
- ③ The following are the names of the persons who have been appointed to the various committees of the Board of Directors of the Corporation for the year ending December 31, 1967:

SPRINGER

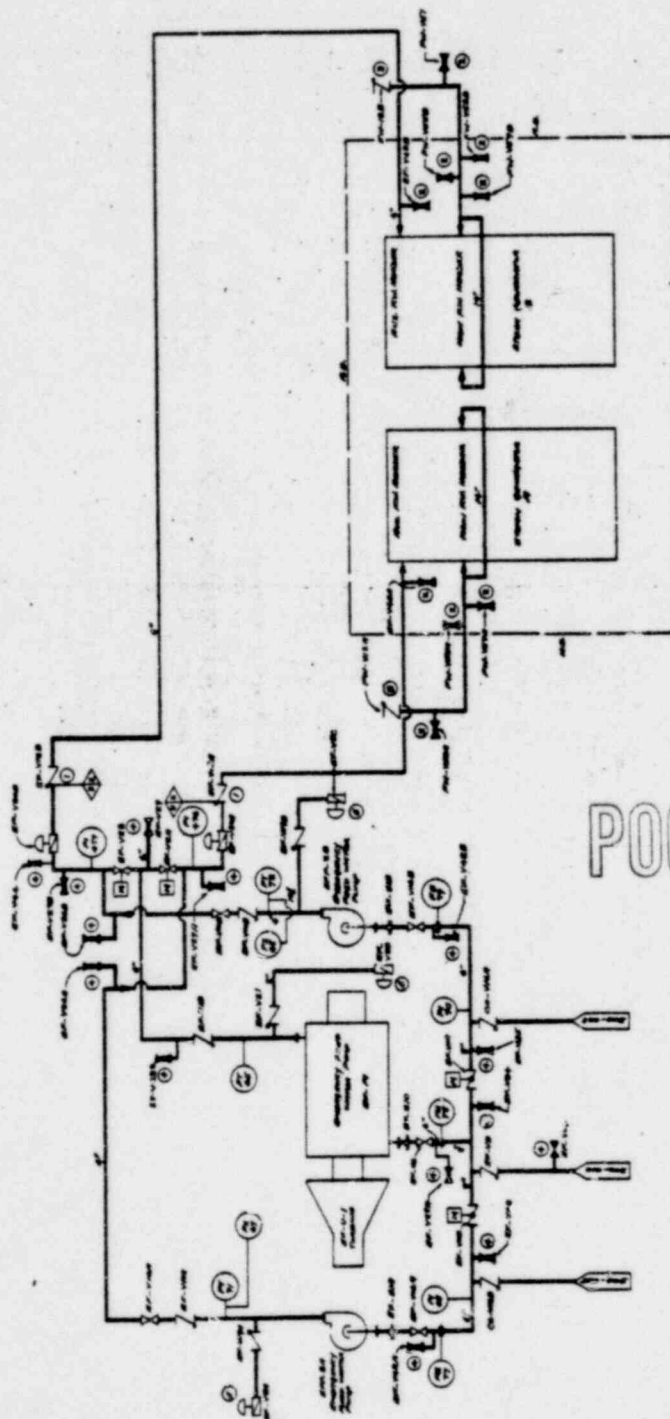
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Discussion:

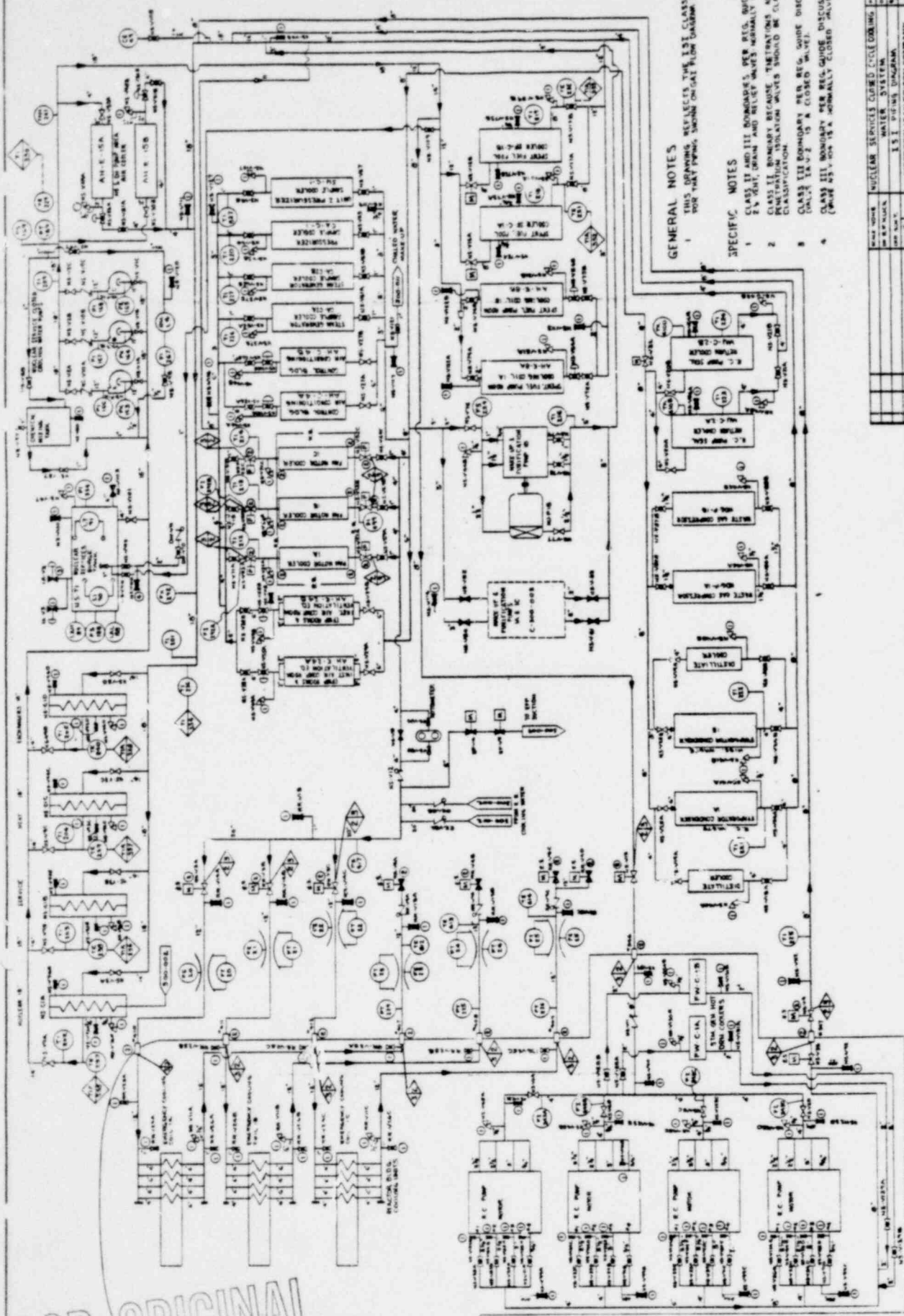
① The Bureau of Land Management has been authorized to acquire the land for the purpose of establishing a national monument.





POOR ORIGINAL

1491 263



GENERAL NOTES

1 THIS DRAWING REFLECTS THE LIST CLASSIFICATIONS FOR THAT PERIOD, SOME ORIGINALLY DATED 1952-53

SPECIFIC NOTES

- 1 CLASS II AND III BOUNDARY, PER REG. CODE, 2A AND 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2L, 2M, 2N, 2O, 2P, 2Q, 2R, 2S, 2T, 2U, 2V, 2W, 2X, 2Y, 2Z, 3A, 3B, 3C, 3D, 3E, 3F, 3G, 3H, 3I, 3J, 3K, 3L, 3M, 3N, 3O, 3P, 3Q, 3R, 3S, 3T, 3U, 3V, 3W, 3X, 3Y, 3Z, 4A, 4B, 4C, 4D, 4E, 4F, 4G, 4H, 4I, 4J, 4K, 4L, 4M, 4N, 4O, 4P, 4Q, 4R, 4S, 4T, 4U, 4V, 4W, 4X, 4Y, 4Z, 5A, 5B, 5C, 5D, 5E, 5F, 5G, 5H, 5I, 5J, 5K, 5L, 5M, 5N, 5O, 5P, 5Q, 5R, 5S, 5T, 5U, 5V, 5W, 5X, 5Y, 5Z, 6A, 6B, 6C, 6D, 6E, 6F, 6G, 6H, 6I, 6J, 6K, 6L, 6M, 6N, 6O, 6P, 6Q, 6R, 6S, 6T, 6U, 6V, 6W, 6X, 6Y, 6Z, 7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, 7J, 7K, 7L, 7M, 7N, 7O, 7P, 7Q, 7R, 7S, 7T, 7U, 7V, 7W, 7X, 7Y, 7Z, 8A, 8B, 8C, 8D, 8E, 8F, 8G, 8H, 8I, 8J, 8K, 8L, 8M, 8N, 8O, 8P, 8Q, 8R, 8S, 8T, 8U, 8V, 8W, 8X, 8Y, 8Z, 9A, 9B, 9C, 9D, 9E, 9F, 9G, 9H, 9I, 9J, 9K, 9L, 9M, 9N, 9O, 9P, 9Q, 9R, 9S, 9T, 9U, 9V, 9W, 9X, 9Y, 9Z, 10A, 10B, 10C, 10D, 10E, 10F, 10G, 10H, 10I, 10J, 10K, 10L, 10M, 10N, 10O, 10P, 10Q, 10R, 10S, 10T, 10U, 10V, 10W, 10X, 10Y, 10Z, 11A, 11B, 11C, 11D, 11E, 11F, 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POOR ORIGINAL

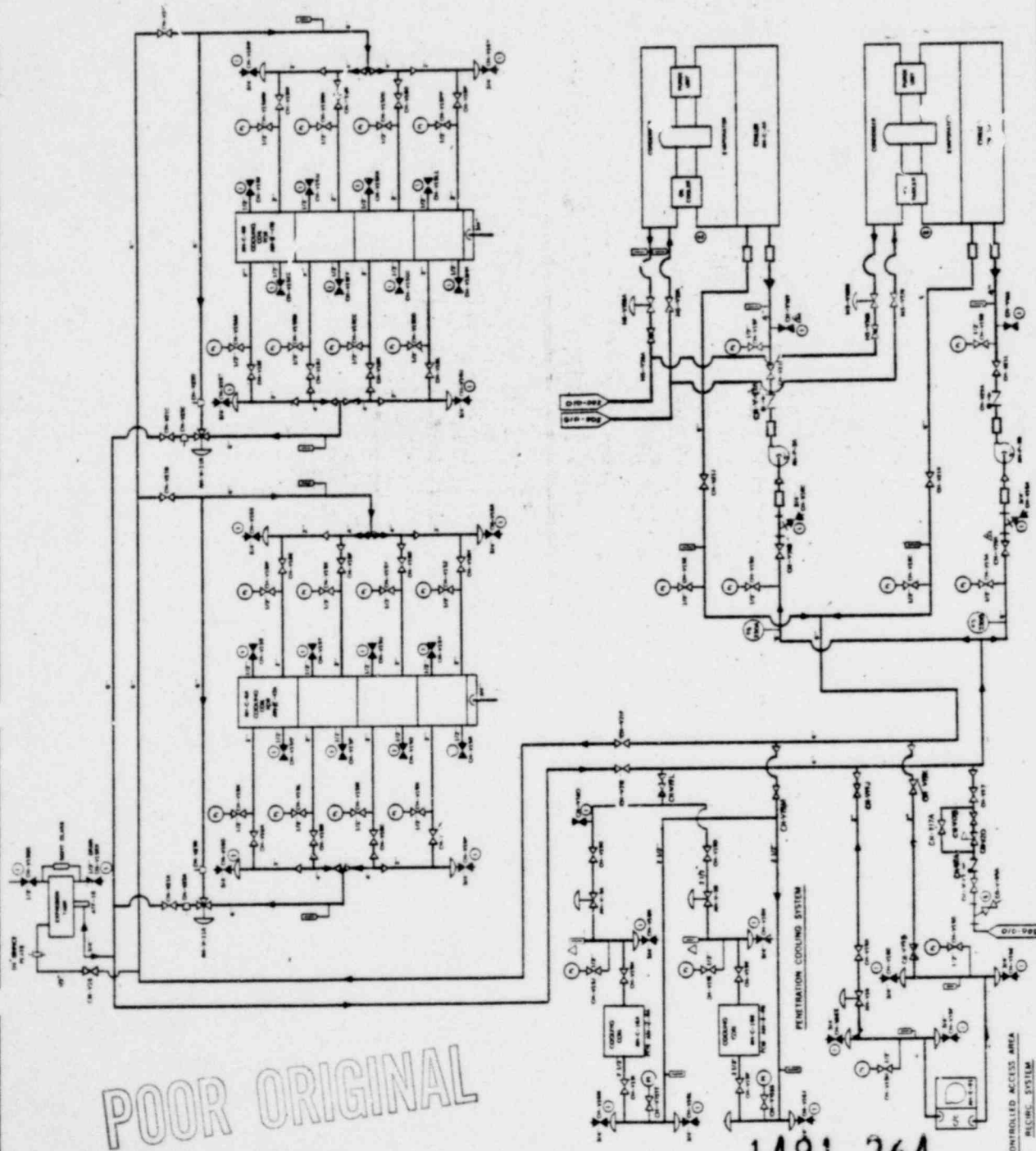
# GENERAL NOTES

1. THIS DRAWING REFLECTS THE ISE CLASSIFICATIONS AND THE SYSTEM SHOWN ON THE P&ID DIAGRAM.
2. ALL PIPING SHOWN ON THIS DRAWING IS T&E CLASS 3.

# SPECIFIC NOTES

1. CLASS 112 SYSTEM, BOUNDARIES PER REG GUIDE.
2. VENTING CONNECTION ON THE EVAPORATOR NEED NOT BE CLASSIFIED BECAUSE IT WILL NOT AFFECT THE OPERATION OF THE COLLIER.

NO.	DATE	DESCRIPTION
1	10/1/77	CONTROL EVAPORATOR CHILLED WATER
2	10/1/77	ISE PIPING DIAGRAM
3	10/1/77	HEAT EXCHANGER COMPANY
4	10/1/77	READING, PA.

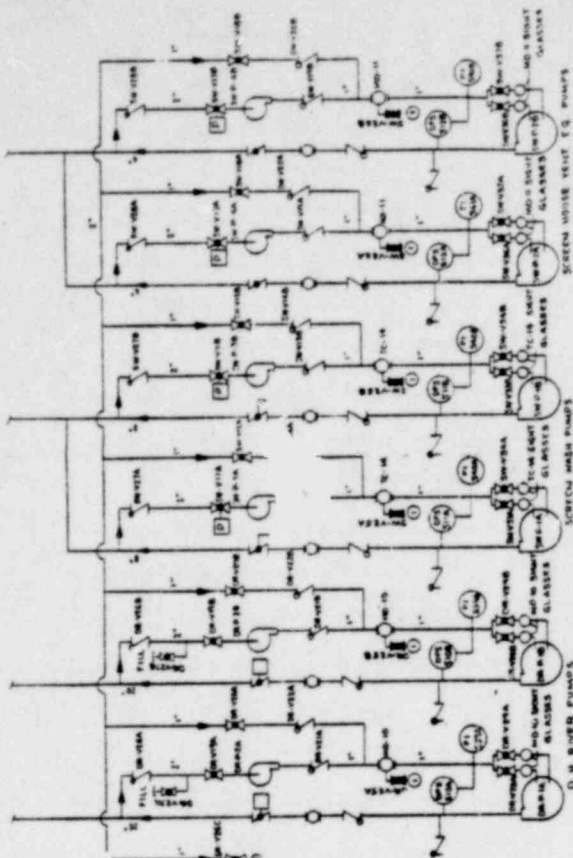
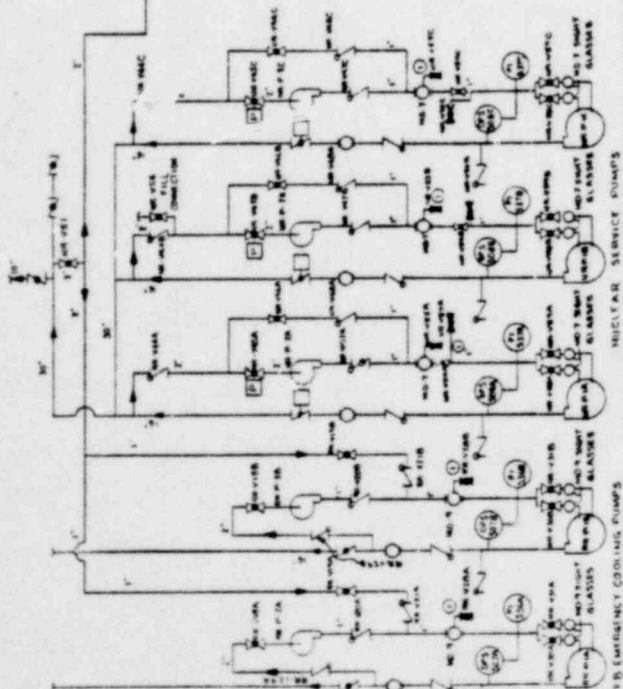


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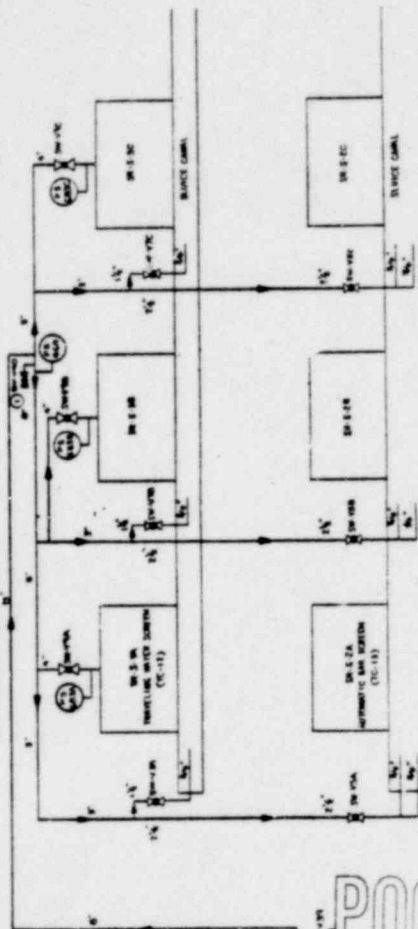




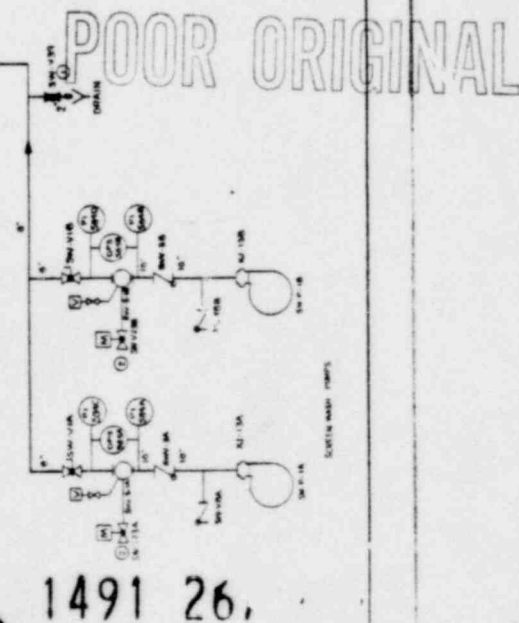




RIVER WATER PUMPS-LUBRICATION SYSTEM



RIVER WATER PUMPS-LUBRICATION SYSTEM



GENERAL NOTES

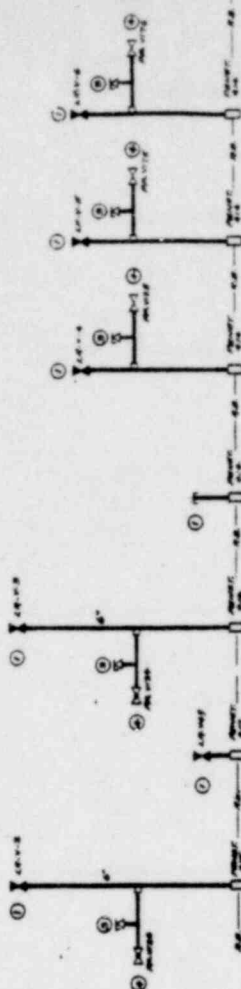
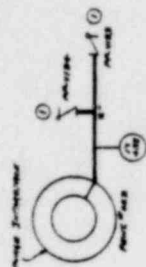
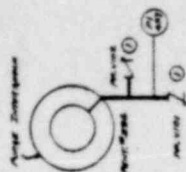
1. ALL PIPING SHOWN ON THIS DRAWING IS 1 1/2" CLASS B.
2. THIS DRAWING REFLECTS THE TIL CLASSIFICATIONS FOR ALL PIPING SHOWN ON THIS DRAWING SEE 109.

SPECIFIC NOTES

1. CLASS III SYSTEM BOUNDARY OF P. RIG. GUIDE NORMALLY CLOSED.
2. VALVES 2M-22A AND 2M-22B ARE NORMALLY CLOSED. THIS IS AN ACCEPTABLE CLASS III BOUNDARY.
3. VALVE 2M-22C IS NOT NORMALLY OPEN.

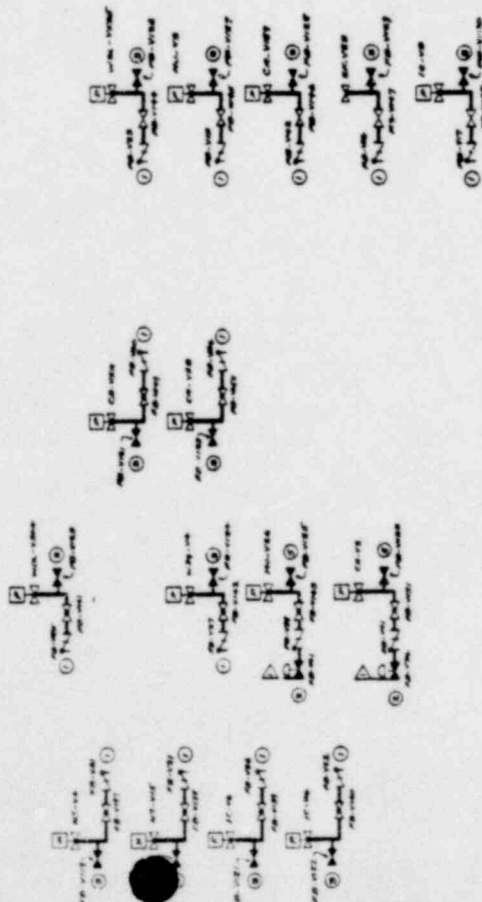
DATE	10/1/77
BY	W. J. HARRIS
CHECKED	W. J. HARRIS
APPROVED	W. J. HARRIS
PROJECT	SCREEN WASH AND SLURRY SYSTEM
CLIENT	SCREEN WASH AND SLURRY SYSTEM
DESIGN	DESIGN
CONSTRUCTION	CONSTRUCTION
OPERATION	OPERATION
MAINTENANCE	MAINTENANCE
REVISIONS	REVISIONS
REVISION NO.	1
REVISION DESCRIPTION	REVISION DESCRIPTION
REVISION DATE	REVISION DATE
REVISION BY	REVISION BY
REVISION CHECKED	REVISION CHECKED
REVISION APPROVED	REVISION APPROVED
REVISION PROJECT	REVISION PROJECT
REVISION CLIENT	REVISION CLIENT
REVISION DESIGN	REVISION DESIGN
REVISION CONSTRUCTION	REVISION CONSTRUCTION
REVISION OPERATION	REVISION OPERATION
REVISION MAINTENANCE	REVISION MAINTENANCE





THESE DIAGRAMS ARE FOR THE USE OF THE ENGINEER AND THE CONTRACTOR. THEY ARE NOT TO BE USED FOR ANY OTHER PURPOSE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF THE DIAGRAMS.

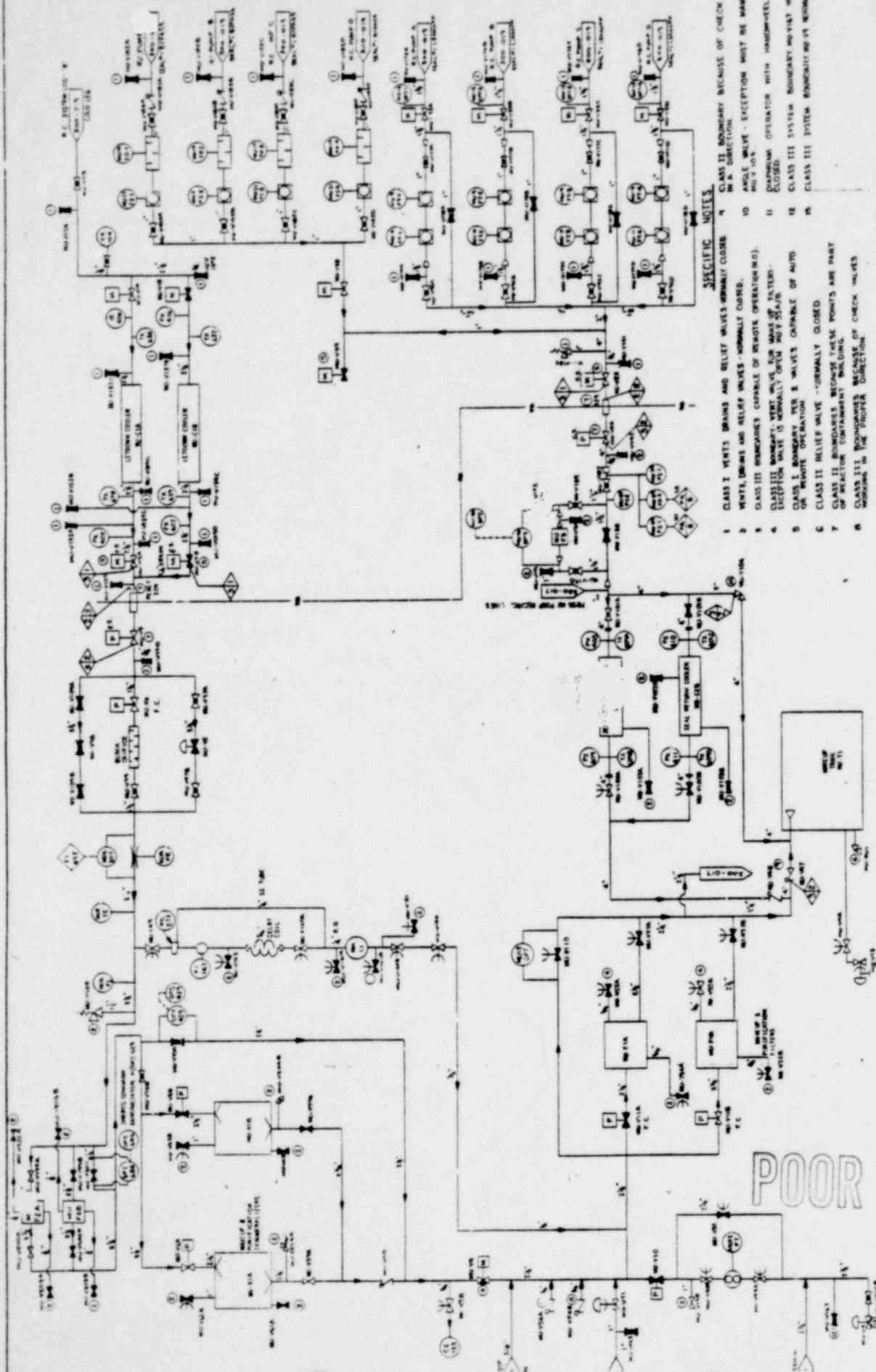
1. Class I transformer - primary winding - 100V, secondary winding - 100V.
2. Class II transformer - primary winding - 100V, secondary winding - 100V.
3. Class III transformer - primary winding - 100V, secondary winding - 100V.
4. Class IV transformer - primary winding - 100V, secondary winding - 100V.
5. Class V transformer - primary winding - 100V, secondary winding - 100V.
6. Class VI transformer - primary winding - 100V, secondary winding - 100V.
7. Class VII transformer - primary winding - 100V, secondary winding - 100V.
8. Class VIII transformer - primary winding - 100V, secondary winding - 100V.
9. Class IX transformer - primary winding - 100V, secondary winding - 100V.
10. Class X transformer - primary winding - 100V, secondary winding - 100V.



POOR ORIGINAL

1491 268

DATE	10/1/77
BY	J.E. HEDGECOCK
CHECKED BY	J.E. HEDGECOCK
APPROVED BY	J.E. HEDGECOCK
REVISION	
DESCRIPTION	SEE DRAWING FOR DETAILS OF TRANSFORMER
PROJECT	SEE DRAWING FOR DETAILS OF TRANSFORMER
CLIENT	SEE DRAWING FOR DETAILS OF TRANSFORMER
ENGINEER	SEE DRAWING FOR DETAILS OF TRANSFORMER
COMPANY	SEE DRAWING FOR DETAILS OF TRANSFORMER
ADDRESS	SEE DRAWING FOR DETAILS OF TRANSFORMER
CITY	SEE DRAWING FOR DETAILS OF TRANSFORMER
STATE	SEE DRAWING FOR DETAILS OF TRANSFORMER
ZIP	SEE DRAWING FOR DETAILS OF TRANSFORMER
PHONE	SEE DRAWING FOR DETAILS OF TRANSFORMER
FAX	SEE DRAWING FOR DETAILS OF TRANSFORMER
E-MAIL	SEE DRAWING FOR DETAILS OF TRANSFORMER
WEBSITE	SEE DRAWING FOR DETAILS OF TRANSFORMER
OTHER	SEE DRAWING FOR DETAILS OF TRANSFORMER



- SPECIFIC NOTES**
- 1 CLASS I VENTS, DRAINS AND RELIEF VALVES NORMALLY CLOSED IN A DIRECTION.
  - 2 VENTS, DRAINS AND RELIEF VALVES NORMALLY CLOSED.
  - 3 CLASS III BONGARDES CAPABLE OF REMOTE OPERATION (NO).
  - 4 CLASS III BONGARDES CAPABLE OF REMOTE OPERATION (NO).
  - 5 CLASS I BONGARDES VENT VALVES FOR MAKE UP SYSTEMS ON REMOTE OPERATION.
  - 6 CLASS I BONGARDES VENT VALVES CAPABLE OF AUTO.
  - 7 CLASS II RELIEF VALVE NORMALLY CLOSED.
  - 8 CLASS II BONGARDES BECAUSE THESE POINTS ARE PART OF REACTOR CONTAMINANT BUILDING.
  - 9 CLASS III BONGARDES BECAUSE OF CHECK VALVES NORMALLY IN THE PROPER DIRECTION.
  - 10 ANGLE VALVE - EXCEPTION MUST BE MANUALLY CLOSED.
  - 11 HANDHELD WITH HANDWHEEL MUST BE CLOSED.
  - 12 CLASS III SYSTEM BONGARDES VENT NORMALLY CLOSED.
  - 13 CLASS III SYSTEM BONGARDES VENT NORMALLY CLOSED.

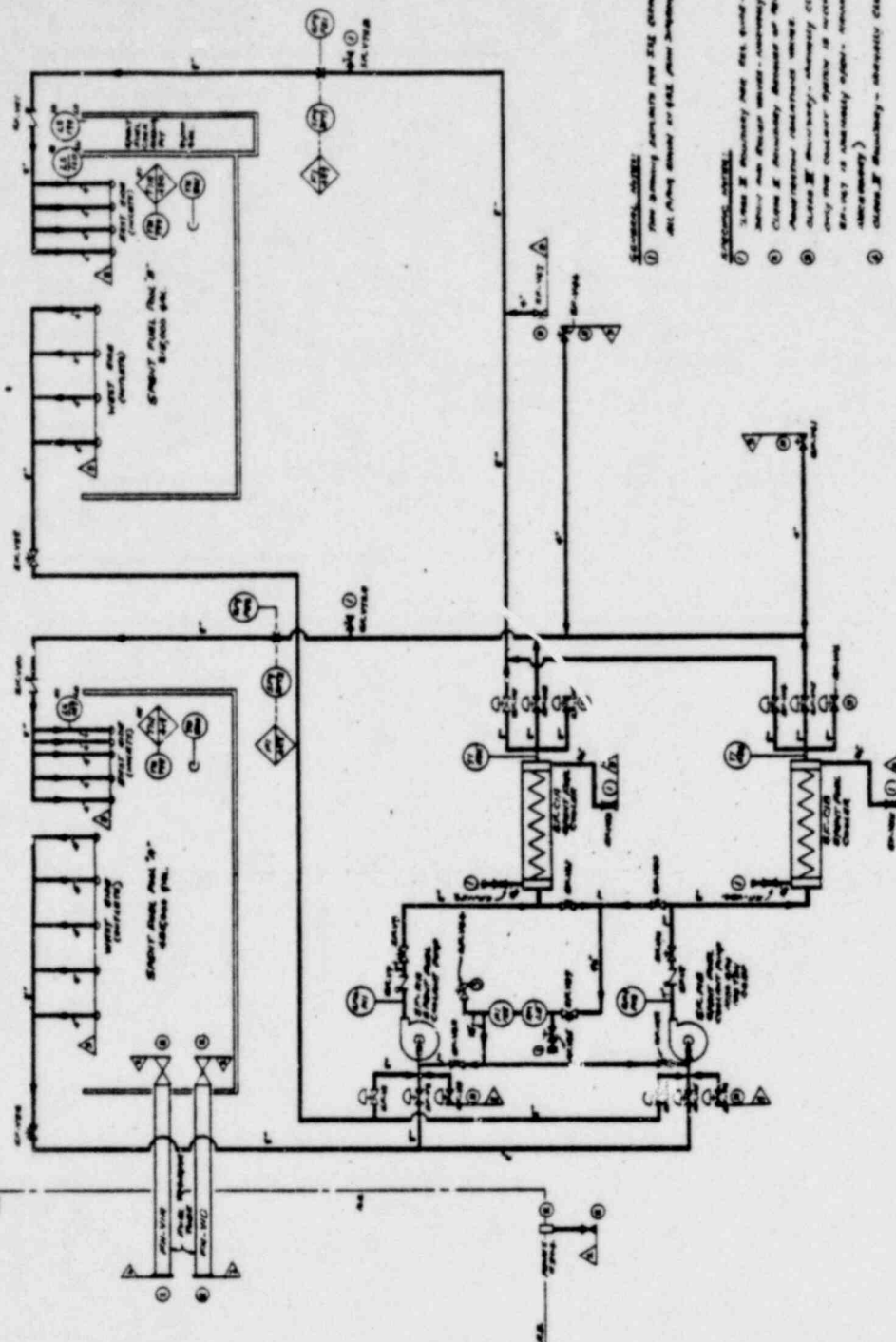
**GENERAL NOTES**

1 THIS DRAWING REFLECTS ILLI CLASSIFICATIONS FOR THE SYSTEM SHOWN ON GAS PIPING DIAGRAM 301-450

DATE	10/1/77	BY	W. J. ALLEN	SCALE	1/2" = 1'	PROJECT	331 PIPING	REVISION	11/11/77
APP'D		CHK'D							
DESIGNED		DESIGNED							
ENGINEER		ENGINEER							
CHECKED		CHECKED							
REVIEWED		REVIEWED							
APPROVED		APPROVED							
DATE	10/1/77	BY	W. J. ALLEN	SCALE	1/2" = 1'	PROJECT	331 PIPING	REVISION	11/11/77
APP'D		CHK'D							
DESIGNED		DESIGNED							
ENGINEER		ENGINEER							
CHECKED		CHECKED							
REVIEWED		REVIEWED							
APPROVED		APPROVED							

POOR ORIGINAL





REMARKS: 1. New wiring installed per E.E. specifications and all wiring done at 600 volt supply 600-0-600

REMARKS: 2. New wiring installed per E.E. specifications and all wiring done at 600 volt supply 600-0-600

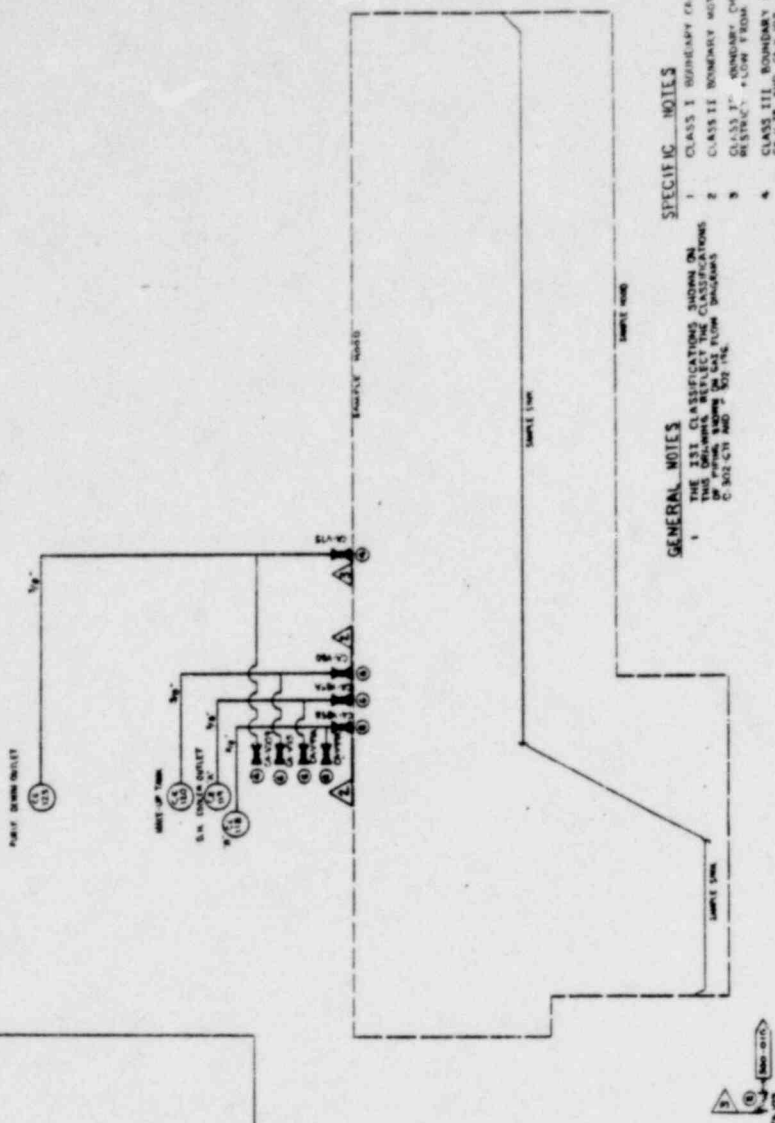
DATE	10/1/27	BY	J. J. J.
PROJECT	E.E. Edison Company		
LOCATION	METROPOLITAN EDISON COMPANY		
READING	READING, PA.		

POOR ORIGINAL

1491 271







## GENERAL NOTES

THE 1ST CLASSIFICATIONS SHOWN ON THIS ORIGINATE REFLECT THE CLASSIFICATIONS OF FIRMS SHOWN IN THE FLOW CHARTS C-302-CH AND C-302-156.

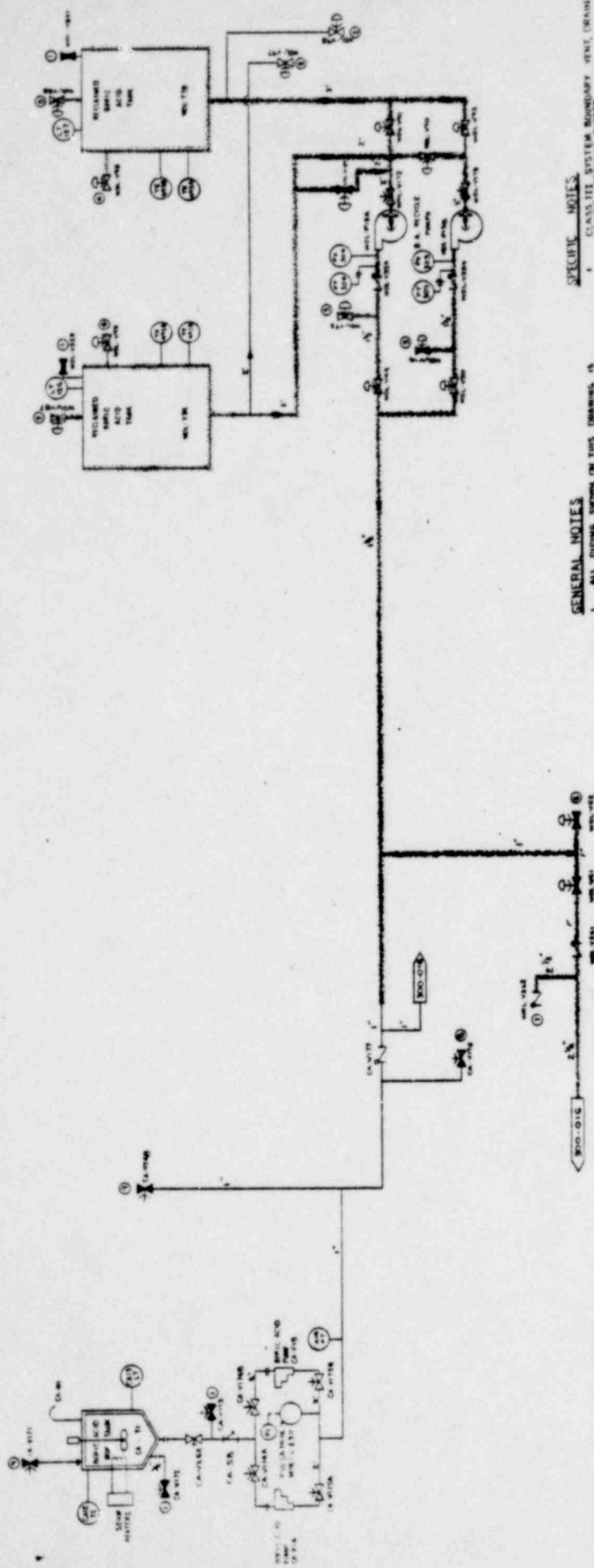
SPECIFIC NOTES

- [illegible]

POOR ORIGINAL

1491 273

DATE	10/10/77	CHLORAL SAMPLING & OTIS, CHEMICAL
TIME	10:00 AM	CLEANING
BY	W. A. M. J.	TEST PITTING DIAGRAM
NO.	1000000000	THE METROPOLITAN EDITION COMPANY
		READING, PA.



# GENERAL NOTES

- 1 ALL PIPING SHOWN ON THIS DRAWING IS
- 2 THIS DRAWING REFLECTS THE TSI CLASSIFICATIONS
- 3 FOR ALL PIPING SHOWN ON THIS DRAWING
- 4 SEE C-70, D-70, E-70 AND S-70

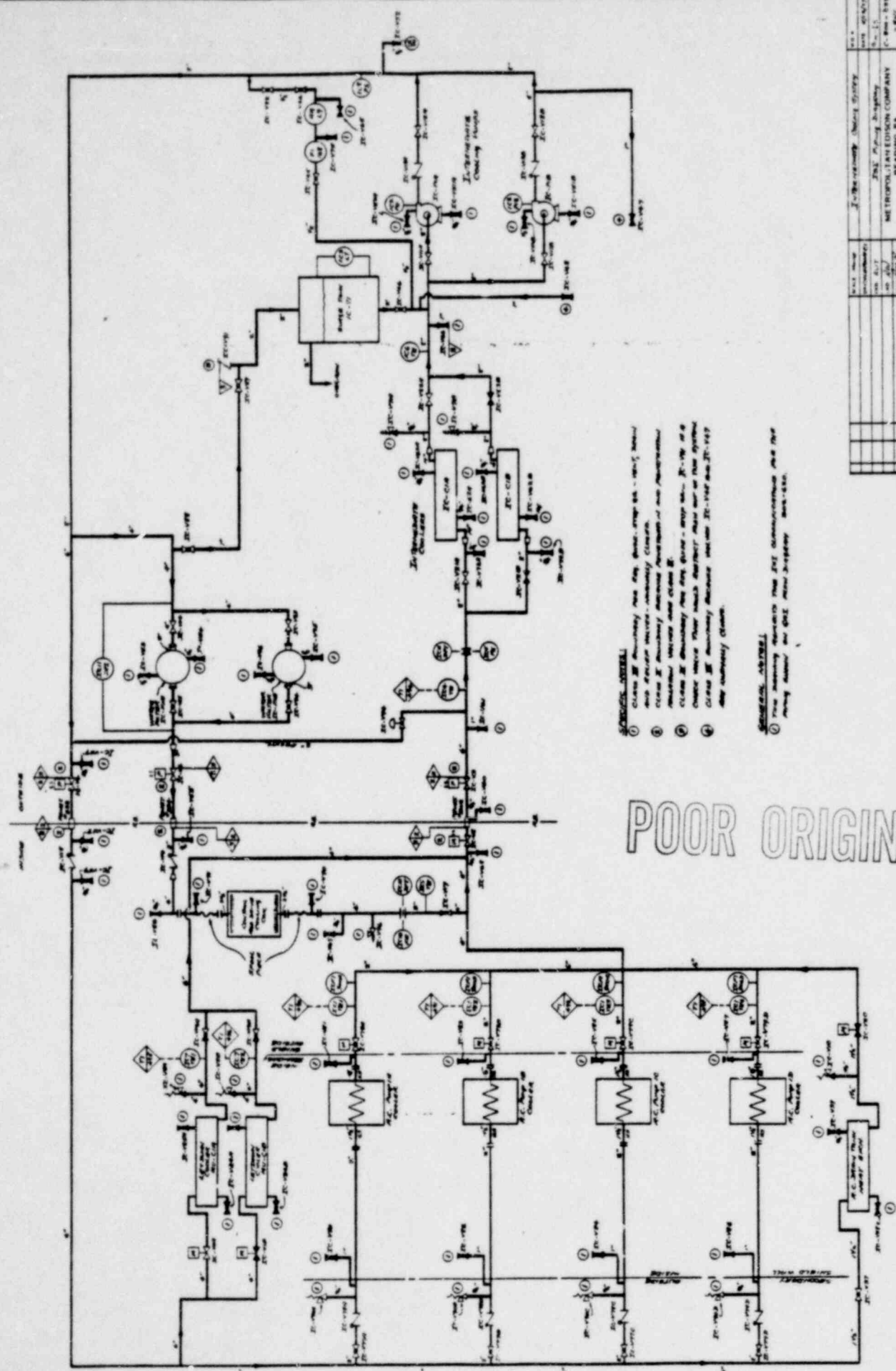
# SPECIFIC NOTES

- 1 CLASS III SYSTEM BOUNDARY WEL-V-12 IS NORMALLY CLOSED
- 2 CLASS III SYSTEM BOUNDARY WEL-V-13 AND WEL-V-14 ARE NORMALLY CLOSED
- 3 CLASS III SYSTEM BOUNDARY WEL-V-15 AND WEL-V-16 ARE NORMALLY CLOSED
- 4 CLASS III SYSTEM BOUNDARY WEL-V-17 AND WEL-V-18 ARE NORMALLY CLOSED
- 5 CLASS III SYSTEM BOUNDARY WEL-V-19 AND WEL-V-20 ARE NORMALLY CLOSED
- 6 CLASS III SYSTEM BOUNDARY WEL-V-21 AND WEL-V-22 ARE NORMALLY CLOSED
- 7 CLASS III SYSTEM BOUNDARY WEL-V-23 AND WEL-V-24 ARE NORMALLY CLOSED
- 8 CLASS III SYSTEM BOUNDARY WEL-V-25 AND WEL-V-26 ARE NORMALLY CLOSED
- 9 CLASS III SYSTEM BOUNDARY WEL-V-27 AND WEL-V-28 ARE NORMALLY CLOSED

POOR ORIGINAL

1491 274

REVISION	DATE	DESCRIPTION	BY	CHKD
1	10/1/77	ISSUED FOR CONSTRUCTION	J. L. HARRIS	J. L. HARRIS
2	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
3	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
4	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
5	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
6	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
7	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
8	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
9	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
10	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
11	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
12	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
13	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
14	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
15	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
16	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
17	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
18	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
19	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS
20	10/1/77	REVISIONS TO PIPING DIAGRAM	J. L. HARRIS	J. L. HARRIS



**GENERAL NOTES:**

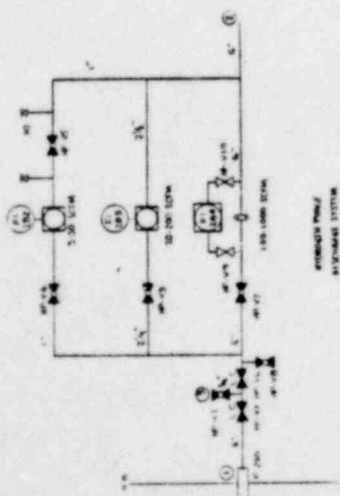
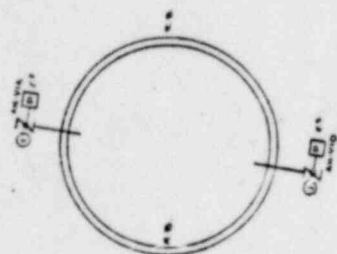
1. Check all assembly and test procedures - step 10 - 100% test.
2. Check all assembly and test procedures - step 10 - 100% test.
3. Check all assembly and test procedures - step 10 - 100% test.
4. Check all assembly and test procedures - step 10 - 100% test.
5. Check all assembly and test procedures - step 10 - 100% test.
6. Check all assembly and test procedures - step 10 - 100% test.
7. Check all assembly and test procedures - step 10 - 100% test.
8. Check all assembly and test procedures - step 10 - 100% test.
9. Check all assembly and test procedures - step 10 - 100% test.
10. Check all assembly and test procedures - step 10 - 100% test.

**GENERAL NOTES:**

1. Check all assembly and test procedures - step 10 - 100% test.
2. Check all assembly and test procedures - step 10 - 100% test.
3. Check all assembly and test procedures - step 10 - 100% test.
4. Check all assembly and test procedures - step 10 - 100% test.
5. Check all assembly and test procedures - step 10 - 100% test.
6. Check all assembly and test procedures - step 10 - 100% test.
7. Check all assembly and test procedures - step 10 - 100% test.
8. Check all assembly and test procedures - step 10 - 100% test.
9. Check all assembly and test procedures - step 10 - 100% test.
10. Check all assembly and test procedures - step 10 - 100% test.

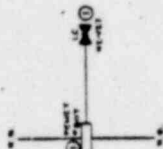
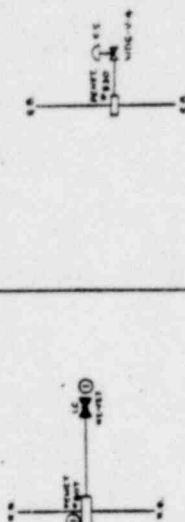
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# REACTOR VENTILATION SYSTEM



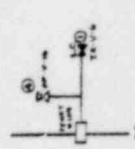
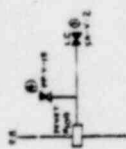
## WASTE GAS SYSTEM PENETRATION 330

## PENETRATION 307 FOR THE NUCLEAR PLANT N2 AND H2 SUPPLIES



## L. WBI DISPOSAL SYSTEM PENETRATION 330

## INSTRUMENT AND SERVICE AIR PENETRATIONS



GENERAL NOTES

1. THIS DRAWING REFLECTS THE 1ST CLASSIFICATION FOR THE SYSTEMS SHOWN IN THE DRAWING. SEE THE 1ST CLASSIFICATION FOR THE SYSTEMS SHOWN IN THE DRAWING.
2. ALL PIPING, SHOWN ON THIS DRAWING IS 1ST CLASS II.

## SPECIFIC NOTES

1. CLASS II BOMBARDMENT VALVES, CONTAINMENT ISOLATION VALVES, AND VALVES NORMALLY CLOSED OR CAPABLE OF BEING CLOSED.
2. EXHAUST PIPE UP CLASSIFICATION REQUIRED.
3. CLASS II BOMBARDMENT VALVE UP 2.3 - NORMALLY CLOSED TEST VALVE.
4. CLASS II BOMBARDMENT ISOLATION VALVE UP 2.3 - NORMALLY CLOSED TEST VALVE.

POOR ORIGINAL

1491 276

DATE	REVISION	BY	CHKD	APP'D	REMARKS
10/1/55	1	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	2	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	3	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	4	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	5	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	6	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	7	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	8	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	9	J. E. H.			REACTOR VENTILATION SYSTEM
10/1/55	10	J. E. H.			REACTOR VENTILATION SYSTEM