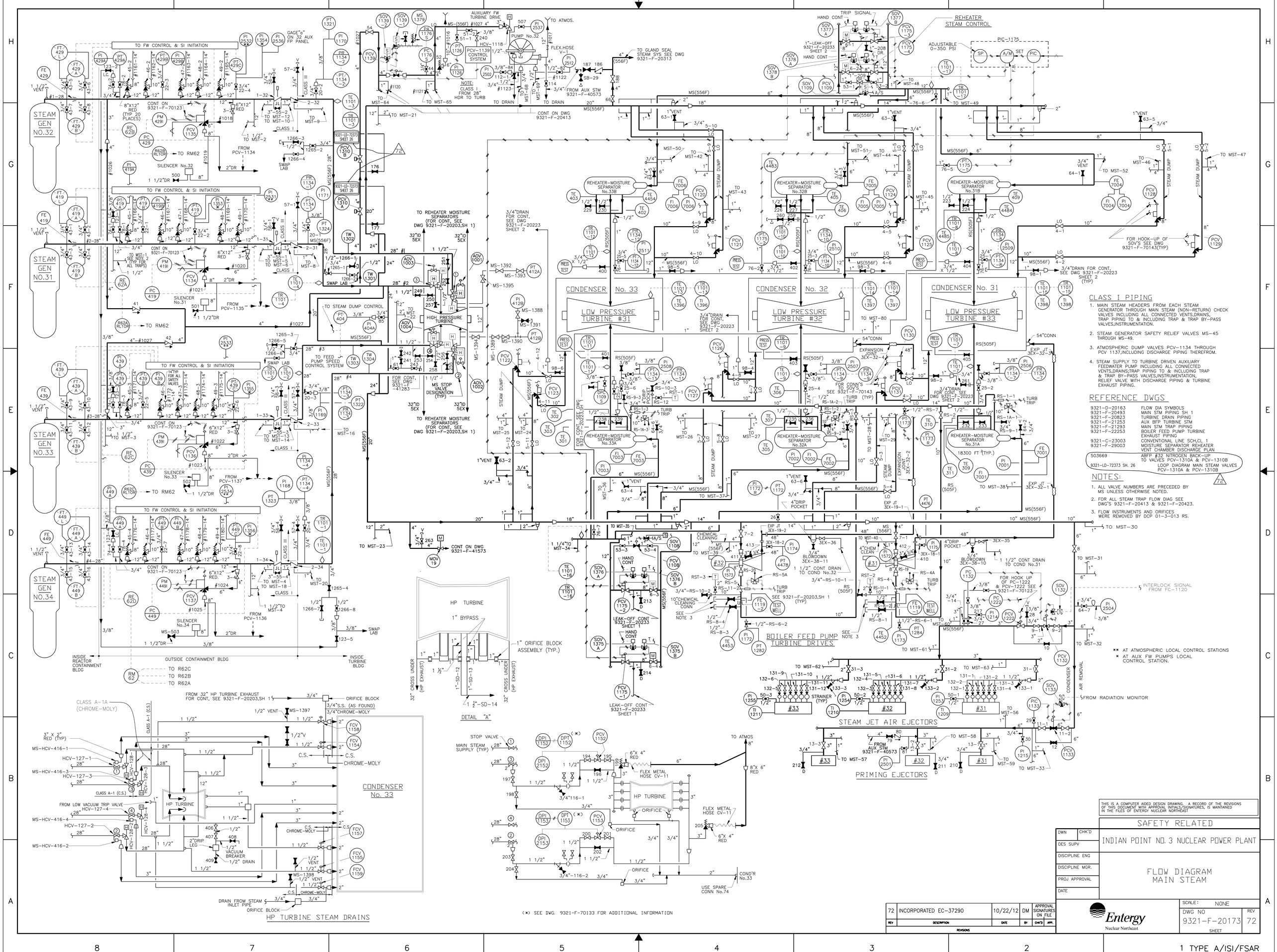

CLASS I PIPING

1. MAIN STEAM HEADERS FROM EACH STEAM GENERATOR THROUGH MAIN STEAM (NON-RETURN) CHECK VALVES INCLUDING ALL CONNECTED VENTS,DRAINS, TRAP PIPING TO & INCLUDING TRAP & TRAP BY-PASS VALVES,INSTRUMENTATION.
2. STEAM GENERATOR SAFETY RELIEF VALVES MS-45 THROUGH MS-49.
3. ATMOSPHERIC DUMP VALVES PCV-1134 THROUGH PCV 1137,INCLUDING DISCHARGE PIPING THEREFROM.
4. STEAM SUPPLY TO TURBINE DRIVEN AUXILIARY FEEDWATER PUMP INCLUDING ALL CONNECTED VENTS,DRAINS,TRAP PIPING TO & INCLUDING TRAP & TRAP BY-PASS VALVES,INSTRUMENTATION, RELIEF VALVE WITH DISCHARGE PIPING & TURBINE EXHAUST PIPING.

REFERENCE DWGS

9321-D-20163	FLOW DIA SYMBOLS
9321-F-20493	MAIN STM PIPING SH 1
9321-F-20823	TURBINE DRAIN PIPING
9321-F-21253	AUX BFP TURBINE STM
9321-F-21293	MAIN STM TRAP PIPING
9321-F-22253	BOILER FEED PUMP TURBINE EXHAUST PIPING
9321-C-23003	CONVENTIONAL LINE SCH,CL 1
9321-F-29003	MOISTURE SEPARATOR REHEATER VENT CHAMBER DISCHARGE PLN
503669	ABFP #32 NITROGEN BACK-UP TO VALVES PCV-1310A & PCV-1310B
9321-LD-72373 SH. 26	LOOP DIAGRAM MAIN STEAM VALVES PCV-1310A & PCV-1310B

NOTES:

1. ALL VALVE NUMBERS ARE PRECEDED BY MS UNLESS OTHERWISE NOTED.
2. FOR ALL STEAM TRAP FLOW DIAG SEE DWG'S 9321-F-20413 & 9321-F-20423.
3. FLOW INSTRUMENTS AND ORIFICES WERE REMOVED BY DCP 01-3-013 RS.

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REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
72	INCORPORATED EC-37290	10/22/12	DM		

REVISIONS

SAFETY RELATED

DWN / CHK'D	
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE MGR.	
PROJ APPROVAL	
DATE	

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

FLOW DIAGRAM MAIN STEAM

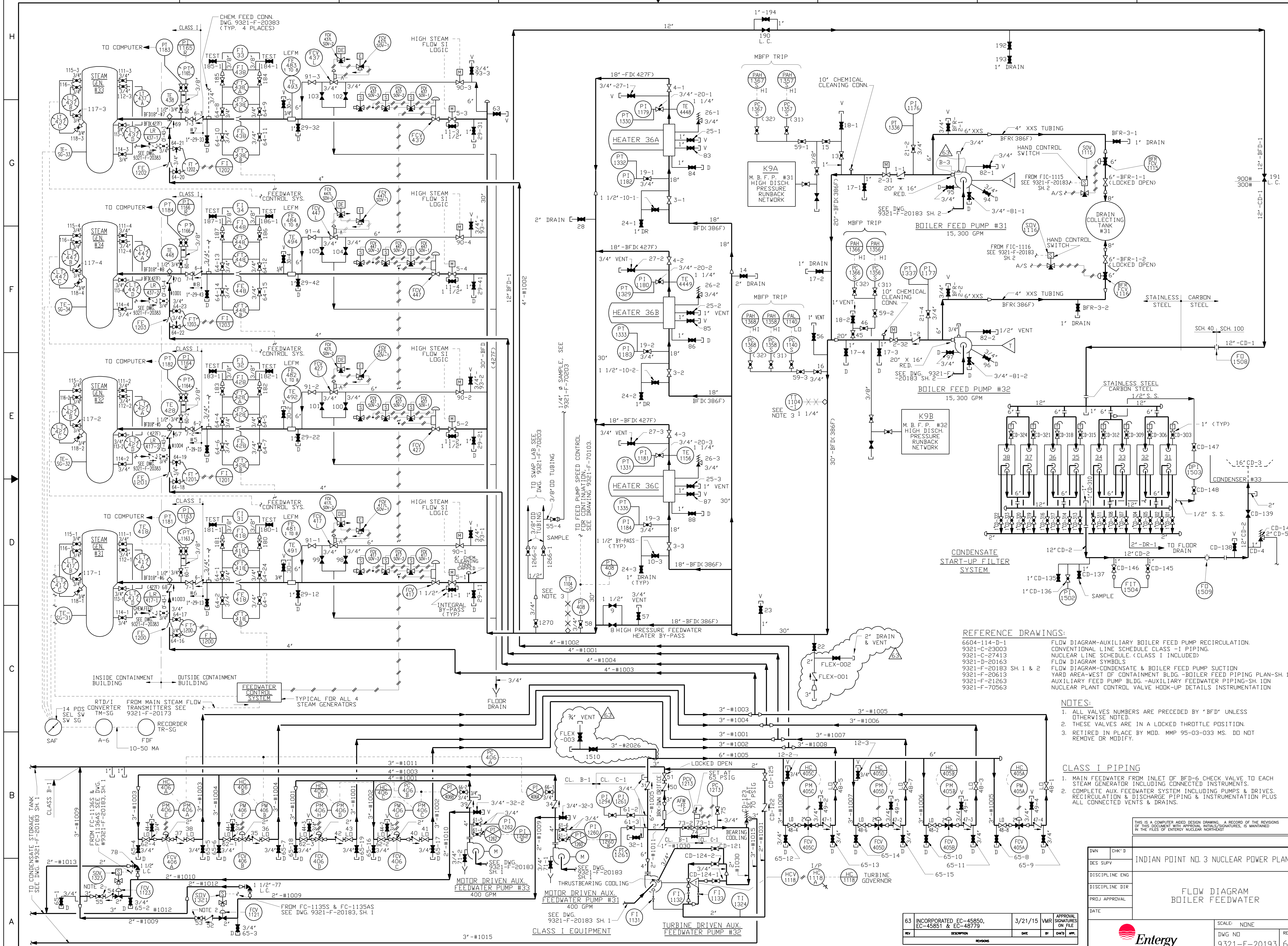
Entergy Nuclear Northeast

SCALE: NONE

DWG NO 9321-F-20173 REV 72

SHEET

1 TYPE A/ISI/FSAR



REFERENCE DRAWINGS:

6604-114-D-1	FLOW DIAGRAM-AUXILIARY BOILER FEED PUMP RECIRCULATION.
9321-C-23003	CONVENTIONAL LINE SCHEDULE CLASS -I PIPING.
9321-C-27413	NUCLEAR LINE SCHEDULE. (CLASS I INCLUDED)
9321-D-20163	FLOW DIAGRAM SYMBOLS
9321-F-20183 SH. 1 & 2	FLOW DIAGRAM-CONDENSATE & BOILER FEED PUMP SUCTION
9321-F-20613	YARD AREA-WEST OF CONTAINMENT BLDG. -BOILER FEED PIPING PLAN-SH. 1
9321-F-21263	AUXILIARY FEED PUMP BLDG. -AUXILIARY FEEDWATER PIPING-SH. 1ON
9321-F-70563	NUCLEAR PLANT CONTROL VALVE HOOK-UP DETAILS INSTRUMENTATION

NOTES:

1. ALL VALVES NUMBERS ARE PRECEDED BY "BFD" UNLESS OTHERWISE NOTED.
2. THESE VALVES ARE IN A LOCKED THROTTLE POSITION.
3. RETIRED IN PLACE BY MOD. MMP 95-03-033 MS. DO NOT REMOVE OR MODIFY.

CLASS I PIPING

1. MAIN FEEDWATER FROM INLET OF BFD-6 CHECK VALVE TO EACH STEAM GENERATOR INCLUDING CONNECTED INSTRUMENTS.
2. COMPLETE AUX. FEEDWATER SYSTEM INCLUDING PUMPS & DRIVES. RECIRCULATION & DISCHARGE PIPING & INSTRUMENTATION PLUS ALL CONNECTED VENTS & DRAINS.

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
63	INCORPORATED EC-45850, EC-45851 & EC-48779	3/21/15	VMR	APPROVAL SIGNATURES ON FILE	

REVISIONS

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DWN | CHK'D
DES SUPV
DISCIPLINE ENG
DISCIPLINE DIR
PROJ APPROVAL
DATE

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

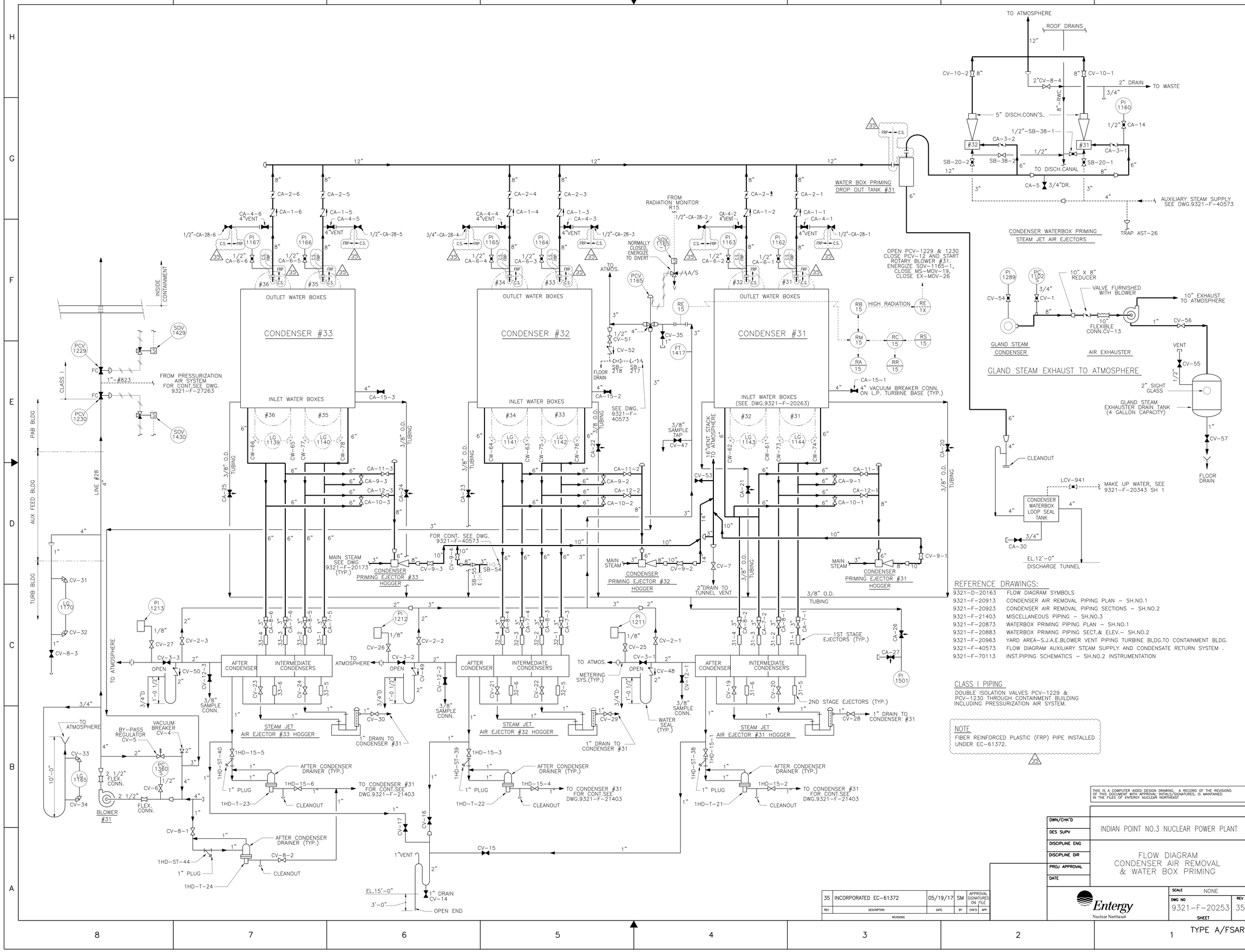
FLOW DIAGRAM BOILER FEEDWATER

Entergy Nuclear Northeast

SCALE: NONE

DWG NO 9321-F-20193 SHEET

REV 63



REFERENCE DRAWINGS:

9321-D-20163	FLOW DIAGRAM SYMBOLS
9321-F-20913	CONDENSER AIR REMOVAL PIPING PLAN – SH.NO.1
9321-F-20923	CONDENSER AIR REMOVAL PIPING SECTIONS – SH.NO.2
9321-F-21403	MISCELLANEOUS PIPING – SH.NO.3
9321-F-20873	WATERBOX PRIMING PIPING PLAN – SH.NO.1
9321-F-20883	WATERBOX PRIMING PIPING SECT.& ELEV.– SH.NO.2
9321-F-20963	YARD AREA–S.J.A.E.BLOWER VENT PIPING TURBINE BLDG.TO CONTAINMENT BLDG.
9321-F-40573	FLOW DIAGRAM AUXILIARY STEAM SUPPLY AND CONDENSATE RETURN SYSTEM .
9321-F-70113	INST.PIPING SCHEMATICS – SH.NO.2 INSTRUMENTATION

CLASS I PIPING

DOUBLE ISOLATION VALVES PCV-1229 & PCV-1230 THROUGH CONTAINMENT BUILDING INCLUDING PRESSURIZATION AIR SYSTEM.

NOTE

FIBER REINFORCED PLASTIC (FRP) PIPE INSTALLED UNDER EC-61372.

35

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
35	INCORPORATED EC-61372	05/19/17	SM	APPROVAL SIGNATURES ON FILE	

REVISIONS

DWN/CHK'D
DES SUPV
DISCIPLINE ENG
DISCIPLINE DIR
PROJ APPROVAL
DATE

INDIAN POINT NO.3 NUCLEAR POWER PLANT

FLOW DIAGRAM
CONDENSER AIR REMOVAL
& WATER BOX PRIMING

Entergy
Nuclear Northeast

SCALE NONE
DWG NO 9321-F-20253
REV 35
SHEET

TYPE A/FSAR

FUEL STORAGE BUILDING

WASTE HOLDUP TANK PITS

PRIMARY AUXILIARY BUILDING

CONTROL BUILDING

FAN ROOM

CONTAINMENT BUILDING

CLASS I PIPING

DOUBLE ISOLATION VALVES THROUGH CONTAINMENT INCLUDING ISOLATION VALVE SEAL WATER SUPPLY

TO PRT EXHAUSTER 9321-F-27193, SH 1

IVSWS SEE DWG 9321-F-27683

3" EMERGENCY CONN. TO INSTRUMENT AIR COMPRESSOR SYSTEM & EMERGENCY INSTRUMENT AIR SYSTEM SEE 9321-F-20363

CONVENTIONAL PLANT (TG BLDG & HTR BAY)

STATION AIR RECEIVER

AFTERCOOLER

INTERCOOLER

INLET AIR FILTER

EXPANSION JT (SA-22)

STATION AIR COMPRESSOR (2-STAGE)

TO COMPRESSOR UNLOADING VALVE (2 SOV'S)

BACK-UP AIR SUPPLY SEE DWG 9321-F-20563

CONVENTIONAL PLANT-STATION AIR HEADER

EQUALIZING LINE

CONNECTION FOR BACK-UP DIESEL COMPRESSOR

AIR DRYER

DIESEL AIR COMPRESSOR

TO H.S.B. ATOM. AIR SEE DWG 9321-F-41283

FROM H.S.B. AIR RECEIVER

SEE DWG. 9321-F-41453

TO 41'-0" EL CHEM LAB

TO DEMINERALIZER SEE 9321-F-24063 ON THE S/G BD REC SYS

AUXILIARY FEED PUMP BUILDING

AIR TO NO. 38 CHEM INJ FEED PUMP SEE DWG 9321-F-20383

INTAKE STRUCTURE

EAST END

WEST END

TUNNEL ACROSS DISCHARGE CANAL

REFERENCE DRAWINGS:

9321-D-20163	FLOW DIAGRAM SYMBOLS.
9321-F-21133	YARD AREA-STA & INSTR AIR PIPING - SH 1.
9321-F-21143	TURB BLDG & HTR BAY-STA & INSTR AIR PIPING - SH 2.
9321-F-21153	TURB BLDG & HTR BAY-STA & INSTR AIR PIPING - SH 3.
9321-F-26553	HOLDUP TANK PIT COMPOSITE PIPING - SH 1.
9321-F-26843	PRIMARY AUXILIARY BLDG-SERVICE AIR & CITY WATER PIPING.
9321-F-26873	CONTAINMENT BUILDING-SERVICE AIR & CITY WATER PIPING
9321-F-26953	FUEL STORAGE BUILDING-SERVICE AIR & CITY WATER PIPING

NOTES:

1. ALL VALVE NO'S. ARE PRECEDED BY AN "SA" SYSTEM DESIGNATION UNLESS OTHERWISE NOTED.
2. ELEVATIONS ARE SHOWN ON THIS DWG AS AN AID IN CROSS REFERENCE TO THE PHYSICAL DWG 9321-F-21143.

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
32	INCORPORATED EC-17353	07/20/12	RM		

REVISIONS

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DWN/CHK'D	INDIAN POINT NO. 3 NUCLEAR POWER PLANT
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE DIR	FLOW DIAGRAM STATION AIR
PROJ APPROVAL	
DATE	

Entergy Nuclear Northeast

SCALE: NONE

DWG NO 9321-F-20353 REV 32

SHEET

WASTE HOLDUP PIT

FUEL STORAGE BUILDING

FAN ROOM

CONTAINMENT BUILDING
(SEE DWG 9321-F-70093)

ALL 1" SOURCE VALVES TO BE IA-40(TYPICAL)

SEE 9321-F-70093

AUXILIARY FEED PUMP HOUSE

SEE PENETRATION & WELD CHANNEL PRESSURIZATION SYSTEM DIAGRAM SEE DWG 9321-F-27263 & 9321-F-70353

ZONE 1
ZONE 2
ZONE 3
ZONE 4

CLASS 1

PRIMARY AUXILIARY BUILDING

CABINET

TO WASTE DISPOSAL-BORON RECYCLE-SYSTEM CONTROL PANEL

FOR CONT. SEE 9321-F-20363 SH. 1

2" EMERGENCY MAKE-UP FROM VALVE NO.55

3" INSTRUMENT AIR FOR NUCLEAR SERVICE

2" FOR OUTSIDE SERVICES

3" EMERGENCY MAKEUP

2" CONVENTIONAL PLANT INSTR. AIR LOOP FROM FE-3444

2" FOR OUTSIDE SERVICES

2"-#1156

2" CONVENTIONAL PLANT INSTRUMENT AIR LOOP

TO H2 GAS DRYER

4" CONVENTIONAL PLANT STATION AIR HEADER LOOP SEE DWG. 9321-F-20353

2" CONVENTIONAL PLANT INSTRUMENT AIR

PARTICULATE FILTER

COOLING WATER

COALESING FILTER

AFTER FILTER

DRYER

NO. 33 IA COMPRESSOR

RECEIVER

STM DUMP

NOTE:
FOR CONTINUATION OF INSTRUMENT AIR PIPING SEE DWG 9321-F-70083

HOUSE SERVICE BOILER BLDG

2" AA LINE TO HOUSE SERVICE BOILER BLDG

SEE DWGS. 9321-F-41453 & 9321-F-84083

TO SERVICE WTR PUMPS SCREEN BY-PASS GATE DWG 9321-F-70323

TO ZURN STRAINER ROOM

TO CHLORINATION F.C. VALVES

IA-414A

IA-414

CLASS 1

INTAKE STRUCTURE

STATION AIR FOR CONT. SEE DWG 9321-F-20353

2" CONVENTIONAL PLANT INSTRUMENT AIR LOOP

CONVENTIONAL PLANT
(TG BLDG & HTR BAY)

FOR CONT. SEE 9321-F-70203

3/8" TUBING

RETIRED IN PLACE

NOTE:
WORK THIS DWG WITH 9321-F-20363, SH. 1.

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST

THIS DWG. WAS PREVIOUSLY 9321-F-20363, REV. 44

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
8	INCORPORATED EC-28998	3/25/15	VMR		

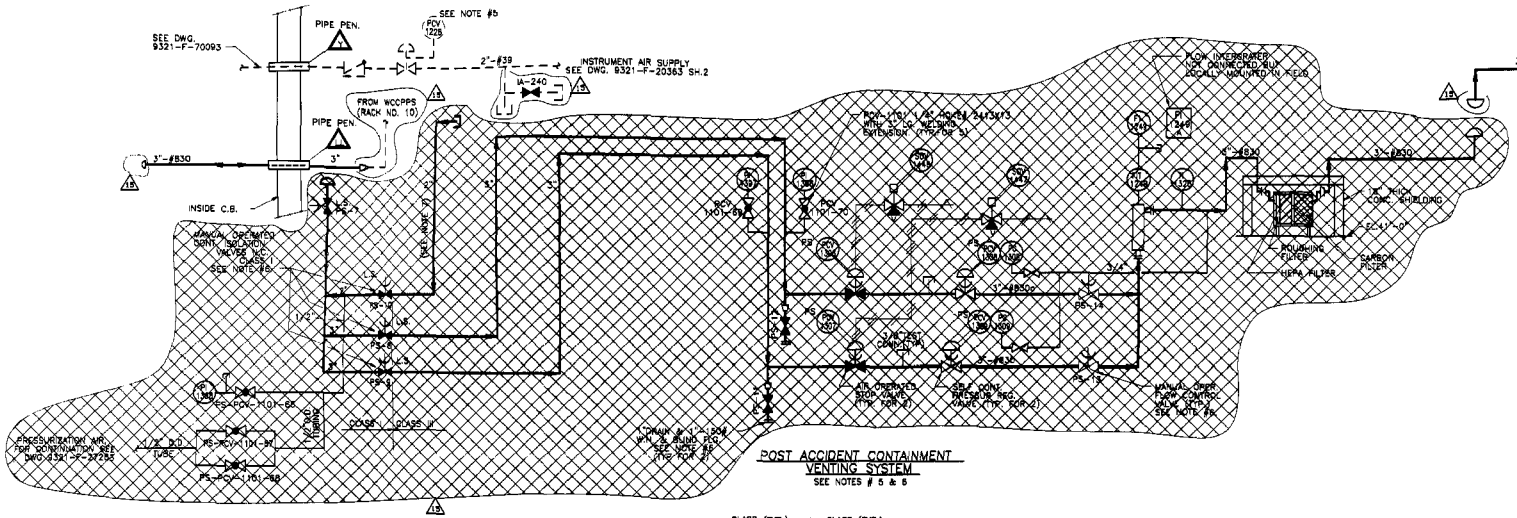
REVISIONS

DWN / CHK'D	INDIAN POINT NO.3 NUCLEAR POWER PLANT
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE MGR.	FLOW DIAGRAM INSTRUMENT AIR
PROJ APPROVAL	
DATE	

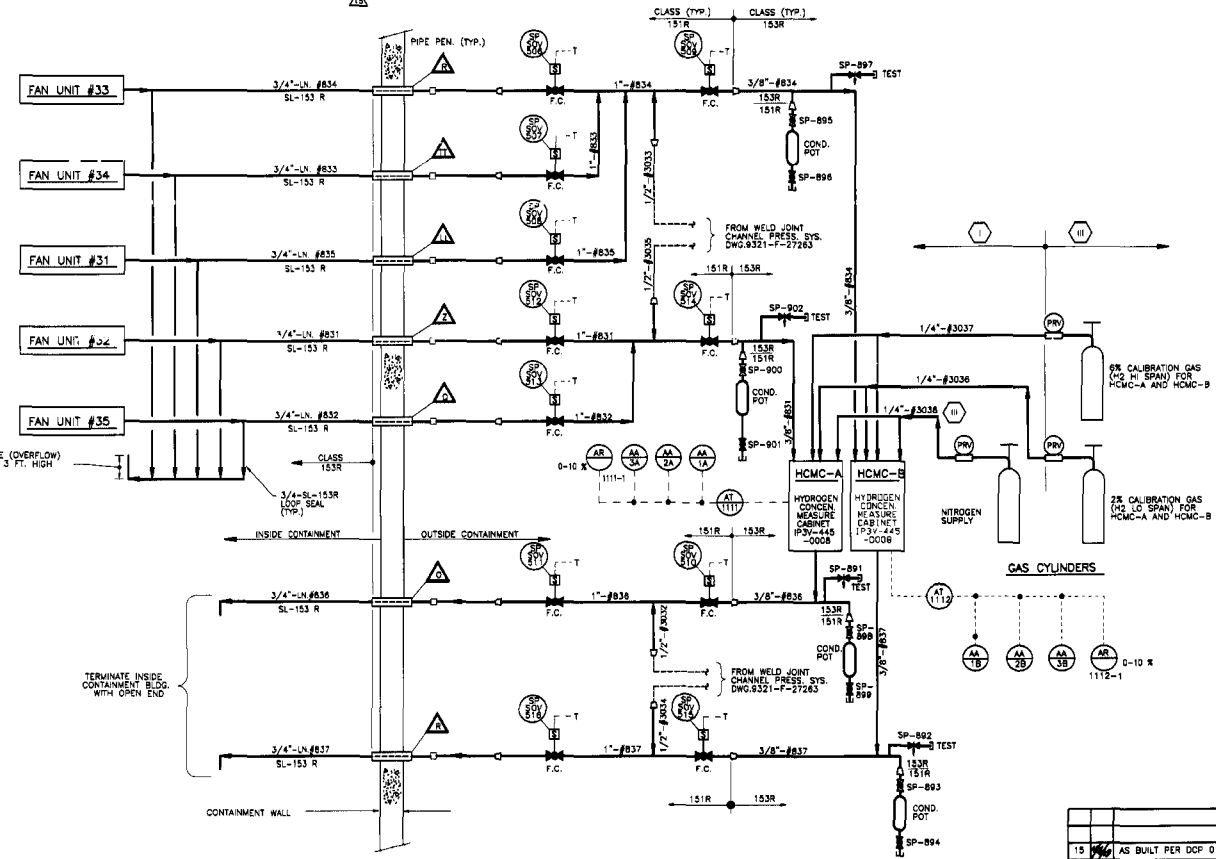
Entergy Nuclear Northeast

SCALE NONE
DWG NO 9321-F-20363
REV 8
SHEET 2

TYPE A/ISI/FSAR



POST ACCIDENT CONTAINMENT VENTING SYSTEM
SEE NOTES # 5 & 6



GENERAL NOTES:

1- ALL PIPING IS IN ACCORDANCE WITH SPEC. 6804-104-248-4 CLASS 151R & 153R AS NOTED.

2- △ DENOTES CONTAINMENT PENETRATION.

3-

4- T / S =CONTAINMENT ISOLATION SIGNAL.

5- HAND OPERATOR SHALL BE ADDED TO AIR SUPPLY VALVE PCV-1226 FOR LOCATION SEE DWG. 9321-F-70093.

6- MANUAL OPERATED VALVES SHALL BE AS PER WESTINGHOUSE SPECIFICATION NO.676281 TAG NO. AS SHOWN.

7- AIR SUPPLY LINE BETWEEN LINE #39 AND INLET TO VALVE PS-10 IS CARBON STEEL.

REFERENCE DRAWINGS:

9321-F-27263 FLOW DIAGRAM PENETRATION & LINER WELD JOINT CHANNEL PRESSURIZATION SYSTEM

9321-F-26863 CONT.BLDG.- POST ACCIDENT CONT.AIR SAMPLING SYSTEM

9321-F-40793 POST ACCIDENT CONTAINMENT VENTING SYSTEM-PLANS,SECTIONS & DETAILS

LEGEND:

——— SUPPLY AIR

– – – – CONTROL AIR

RETIRED IN PLACE

NOTE:
ALL PIPING ON THIS DWG. IS SEISMIC CLASS I EXCEPT AS NOTED

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS BE THEN AGREEMENT WITH THE NUCLEAR REGULATORY COMMISSION, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST.

REV NO.	DATE	DESCRIPTION	DRWN	DES SUPV	DISCIPLINE ENG	DISCIPLINE MGR.	PROJ APPROVAL
15	12/20/00	AS BUILT PER DCF 01-3-033	LP	KAS			
14	11/20/00	AS BUILT PER DCR 100156535	VR	LM	JM		REG
13	7/11/00	AS BUILT PER DCR 100143086	JS	RM	JM		REG

REVISIONS

CHK'D

INDIAN POINT NO.3 NUCLEAR POWER PLANT

FLOW DIAGRAM CONTAINMENT HYDROGEN CONCENTRATION MEASUREMENT & POST ACCIDENT CONTAINMENT VENTING SYSTEM

Entergy Nuclear Northeast

SCALE: NONE

DWG NO 9321-F-26533 REV 15

SHEET

TYPE A/ISI

NOTE:
FOR NOTES, REFERENCES, REFERENCE DRAWINGS AND LEGENDS, SEE 9321-F-27193, SH. 3.

9321-F-27383

LOOP 1 (RCS) | LOOP 2 (RCS) | LOOP 3 (RCS) | LOOP 4 (RCS)

3/8"-H447

508A | 505A | 511A | 515A

508B | 505B | 511B | 515B

SS 316 CL. 151R | CL. 151R SS 316

712 | 711 | 706 | 707

2-WD-151R

2"-H81 2-WD-151R | 2"-H82 2-WD-151R | 2"-H83 2-WD-151R | 2"-H84

2-WD-151R 2"-H71 — 557A — PUMP #31

2-WD-151R 2"-H72 — 557B — PUMP #32

2-WD-151R 2"-H73 — 557C — PUMP #33

2-WD-151R 2"-H74 — 557D — PUMP #34

REACTOR COOLANT PUMP SECONDARY SEAL LEAKAGE 9321-F-27383

3-WD-151R 3"-H82

3" X 2" — ACCUMULATOR DRAIN TANKS 9321-F-27353 — 3/4" 1753 — 3/4"-WD-537 — WD-534

#31 #32 #33 #34

896A 896B 896C 896D

1"-H339 1-WD-151R

3/8" TUBING

1-WD-151R — VALVE LEAK-OFFS 9321-F-26473

EXCESS LETDOWN HEAT EXCHANGER (CVCS) 9321-F-27363

CH-215 — 3/4"-H412 — 3/4-WD-151R — 1"-H98

REACTOR FLANGE LEAKOFF (RCS) 9321-F-27383

3/4"-H445 — 3/4-RC-2501R

2-WD-151R

REFUELING CANAL DRAIN — 6" — 6" X 4" — 4-WD-151R — 1708 — 3" — 4" X 3" — 516

4" BLIND FLANGE TO BE INSTALLED ONLY DURING REFUELING

3-WD-151R — 3" — 1711 — 4" X 3"

RESIDUAL HEAT REMOVAL SPRAY HEADER DRAINS 9321-F-27353 — 1"-H797 — 1-WD-151R

CONTAINMENT SUMP VIA OPEN TRENCH — 2"-H87 — 2-WD-151R — 1712

PT 1004 — WD-255 — 2" — 1714

LT 1003 — TT 1058 — 2" — 1715 — 1683 — 3/4" D

REACTOR COOLANT DRAIN TANK #31 ITEM: WDATRC1

3"-H88 — 1744

3-WD-151R

PRESSURIZER RELIEF TANK 9321-F-27473 — 3"-H85 — 3-WD-151R — RCS-523 — 1608

FC 1609 — 2"-H88 2-WD-151R

3/8" TUBING — WD-533

PI 1018B — 3/8" TUBING 1700B — 3/4"-WD-151R — 1721 — 1738 — 224 — 3/4" D

LCV 1003B — FC — 3"-H88 — RO — #32 — 1-1/2" — 2"

3-WD-151R — 2-WD-151R 2"-H40 — 3"-H40

WD-301 — 3/8" TUBING

PI 1018A — WD-531 — 1700A — 3/4"-WD-151R — 1722 — 1739 — 222 — 3/4" D

LCV 1003A — FC — 3"-H88 — RO — #31 — 1-1/2" — 1"

2"-H40 2-WD-151R

REACTOR COOLANT DRAIN PUMPS

PS 1018 D — 3/4" — 515 — 4-WD-151R 4"H3052 — 4" X 3" — 3" — 2" — 3" X 2" — 3/4" — 513 — 510 — 509 — 2" — 512 — 2" — 511 — 2" B.F.

3-WD-151R — 517

3"-H3060

REFUELING CAVITY DRAIN PUMP

1"-H23 — 3/4-WD-151R — 1713 — 3/4"-H30 — 1717 — 3/4-WD-151R

SS CS

3/4" X 3/8" — STATION AIR 9321-F-20353 — 3/4" — SA-501 — PRT EXHAUSTER

36" C.B. PURGE EXHAUSTER 9321-F-40333 — 2-WD-152R

PI 3100 — 1/4" — 1/2" — 198 — 196 — 1-WD-152R — 8" AIR SEPARATOR

1/2" — 197 — FILL CONN. 47

16" WATER TRAP — 2" — 2-WD-152R — 2-WD-152R

FUTURE CONNECTION — 1"DR. — 2" — 195 — TRENCH

194 — 2" — 2-WD-152R

1-WD-152R — WD-188 — 193 — 92 — PRESSURIZER RELIEF TANK 9321-F-27473

INSIDE CONTAINMENT | OUTSIDE CONTAINMENT

PREVIOUSLY ABANDONED IN PLACE

WD-256 V 3/4" — 1" B.F. WD-257 — 1" B.F. WD-260 — VENT TANK — WD-261 1"-WD — WD-259 — WD-258 3/4" D

36" C.B. PURGE EXHAUSTER 9321-F-40333

PRESSURIZER RELIEF TANK 9321-F-27473 — RCS-516 — 3/4"-H610 — 3/4 -WD-152R — SS CS

3/4"-H3020 — 9321-F-27473

3/8"-WD-2505R — 3/8"-H30 — 3/8-WD-2505R

TEST VENT CONNECTION — 1-WD-152R — T FC — 1668 — 1781 — PCV 1014 — 1610 — 1616 — 1659 — N_2 9321-F-27233 — 152R 152N

1"-H67 — 1-WD-152R

T FC — IVSVS — 1786 — 1787 — 1-WD-152R 1"-H23 — 2-WD-152R LINE#106 (VH) SEE DWG. 9321-F-27303

3/4" X 3/8" — 1788 — 1789 — 3/4" X 3/8" — 3/8-WD -2505R — PCV 1069 D — 1/4" — GA 9321-F-27253

3/4" -WD -151R — 1077

1759 — 3/4" V — 226 — 1760

1757 — 3/4" V — 225 — 1758

2"-H338 2-WD-151R — 1821 — REMOVABLE SPOOL

CLASS I SECTION OF LINE #338 IS FOR CONTAINMENT ISOLATION PURPOSES ONLY. MAKE TRANSITION TO CLASS III AT ANY CONVENIENT LOCATION JUST INSIDE CONTAINMENT

1702 — 1705 — 191 — 3"-H40 3-WD-151R — 1100 — CVCS HOLDUP TANKS 9321-F-27373

IVSVS — 189 — 90 — 3"-H3022 3-WD-151R — 9321-F-27513 SHT. 2

1730 — 1731 — 3"-H418 3-WD-151R — 9321-F-27193 SHT. 3

9321-F-27193 SHT. 2 — 3"-H3058 — 507 — 3"-H127 3-WD-151R — 9321-F-27503 — 1733

1728 — 1723 — 2"-H338 — SEE DWG. 9321-F-27193 SH. 2

SKF 2-5 — SKF 2-6

SJF 4-1 — LS SP 314 — LS 1074 — LS SP 313 — #314 — #313 — 1/2"-H88 — 3/4"-ANTI-SIPHON CONN. (151R)(152R) — LT 1255 — LT 1256 — LS 1076

3"-WD-152R — SUMP PUMP NO. 1 — SUMP PUMP NO. 2 — RX SUMP PUMPS

305 — TRENCH — CONTAINMENT SUMP TANK — CONTAINMENT SUMP — CONTAINMENT SUMP PUMPS

REV	DESCRIPTION	DATE	BY	CHK'D	APPR.
47	INCORPORATED EC-5000021973	9/02/10	DM		APPROVAL SIGNATURES ON FILE

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DWN / CHK'D	
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE DIR	
PROJ APPROVAL	
DATE	

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

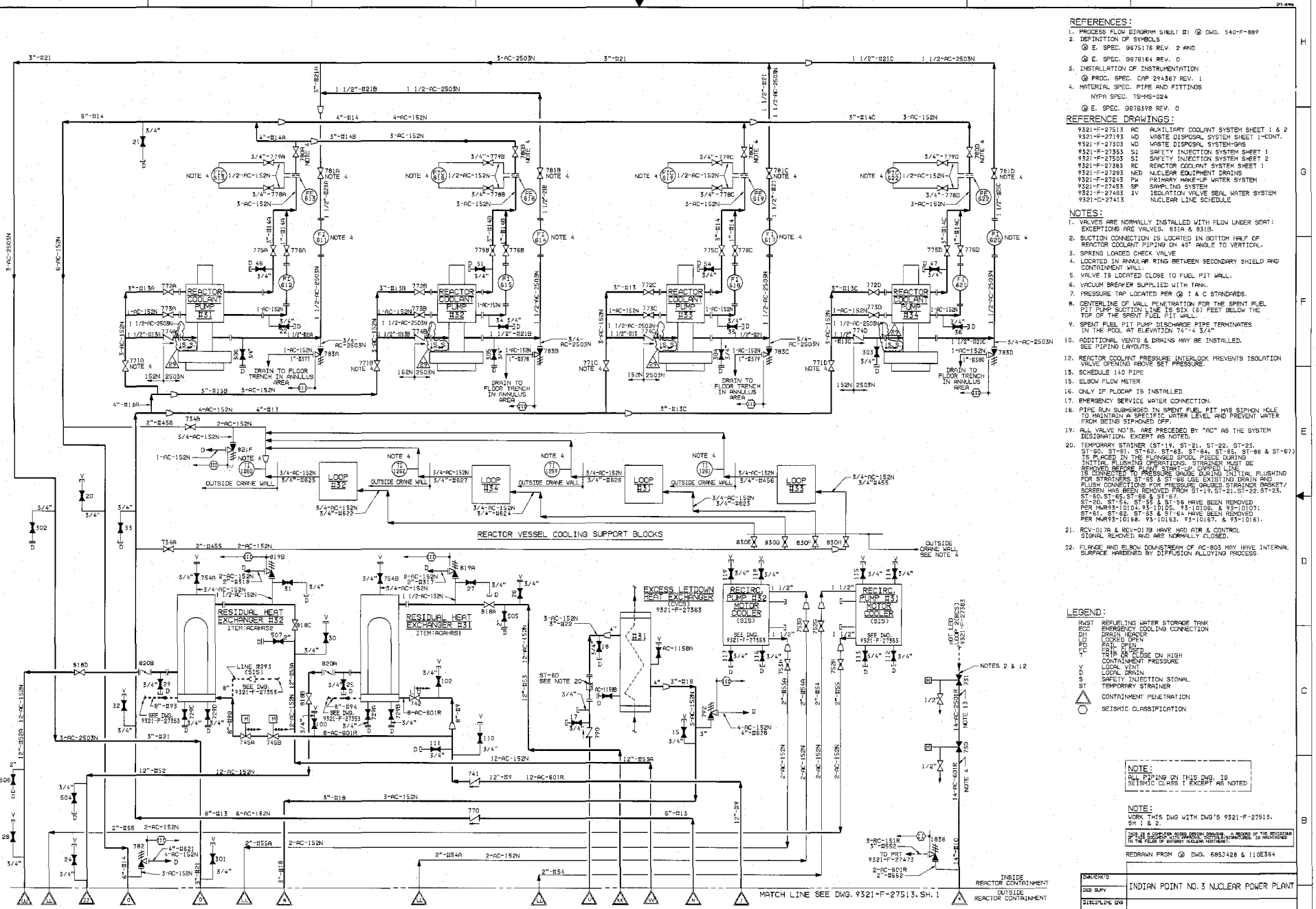
FLOW DIAGRAM
WASTE DISPOSAL SYSTEM
SHEET NO. 1-CONTAINMENT

Entergy Nuclear Northeast

SCALE NONE

DWG NO 9321-F-27193 SHEET 1 — REV 47

TYPE A/ISI/FSAR



REFERENCES:

1. PROCESS FLOW DIAGRAM SHEET #1 Ⓖ DWG. 540-F-889
2. DEFINITION OF SYMBOLS
   - Ⓖ E. SPEC. 9875176 REV. 2 AND
   - Ⓖ E. SPEC. 9878164 REV. 0
3. INSTALLATION OF INSTRUMENTATION
   - Ⓖ PROC. SPEC. CAP 294367 REV. 1
4. MATERIAL SPEC. PIPE AND FITTINGS
   - NYPA SPEC. TS-MS-024
   - Ⓖ E. SPEC. 9878398 REV. 0

REFERENCE DRAWINGS:

9321-F-27513	AC	AUXILIARY COOLANT SYSTEM SHEET 1 & 2
9321-F-27193	WD	WASTE DISPOSAL SYSTEM SHEET 1-CONT.
9321-F-27303	WD	WASTE DISPOSAL SYSTEM-GHS
9321-F-27353	SI	SAFETY INJECTION SYSTEM SHEET 1
9321-F-27503	SI	SAFETY INJECTION SYSTEM SHEET 2
9321-F-27383	RC	REACTOR COOLANT SYSTEM SHEET 1
9321-F-27283	NED	NUCLEAR EQUIPMENT DRAINS
9321-F-27243	PW	PRIMARY MAKE-UP WATER SYSTEM
9321-F-27453	SP	SAMPLING SYSTEM
9321-F-27463	IV	ISOLATION VALVE SEAL WATER SYSTEM
9321-C-27415		NUCLEAR LINE SCHEDULE

NOTES:

1. VALVES ARE NORMALLY INSTALLED WITH FLOW UNDER SEAT: EXCEPTIONS ARE VALVES. 831A & 831B.
2. SUCTION CONNECTION IS LOCATED IN BOTTOM HALF OF REACTOR COOLANT PIPING ON 45° ANGLE TO VERTICAL.
3. SPRING LOADED CHECK VALVE
4. LOCATED IN ANNULAR RING BETWEEN SECONDARY SHIELD AND CONTAINMENT WALL.
5. VALVE IS LOCATED CLOSE TO FUEL PIT WALL.
6. VACUUM BREAKER SUPPLIED WITH TANK.
7. PRESSURE TAP LOCATED PER Ⓖ I & C STANDARDS.
8. CENTERLINE OF WALL PENETRATION FOR THE SPENT FUEL PIT PUMP SUCTION LINE IS SIX (6) FEET BELOW THE TOP OF THE SPENT FUEL PIT WALL.
9. SPENT FUEL PIT PUMP DISCHARGE PIPE TERMINATES IN THE POOL AT ELEVATION 74'-4 3/4"
10. ADDITIONAL VENTS & DRAINS MAY BE INSTALLED. SEE PIPING LAYOUTS.
12. REACTOR COOLANT PRESSURE INTERLOCK PREVENTS ISOLATION VALVE OPENING ABOVE SET PRESSURE.
13. SCHEDULE 140 PIPE
15. ELBOW FLOW METER
16. ONLY IF PLOCAP IS INSTALLED
17. EMERGENCY SERVICE WATER CONNECTION.
18. PIPE RUN SUBMERGED IN SPENT FUEL PIT HAS SIPHON HOLE TO MAINTAIN A SPECIFIC WATER LEVEL AND PREVENT WATER FROM BEING SIPHONED OFF.
19. ALL VALVE NO'S. ARE PRECEDED BY "AC" AS THE SYSTEM DESIGNATION, EXCEPT AS NOTED.
20. TEMPORARY STRAINER (ST-19, ST-21, ST-22, ST-23, ST-60, ST-61, ST-62, ST-63, ST-64, ST-65, ST-66 & ST-67) IS PLACED IN THE FLANGED PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINER MUST BE REMOVED BEFORE PLANT START-UP. CAPPED LINE IS CONNECTED TO PRESSURE GAUGE DURING INITIAL FLUSHING FOR STRAINERS ST-65 & ST-66 USE EXISTING DRAIN AND FLUSH CONNECTIONS FOR PRESSURE GAUGES. STRAINER BASKET/SCREEN HAS BEEN REMOVED FROM ST-19, ST-21, ST-22, ST-23, ST-60, ST-61, ST-62, ST-63, ST-64, ST-65, ST-66 & ST-67. ST-20, ST-54, ST-55 & ST-56 HAVE BEEN REMOVED PER MWR93-10104, 93-10105, 93-10106, & 93-10107; ST-61, ST-62, ST-63 & ST-64 HAVE BEEN REMOVED PER MWR93-10168, 93-10163, 93-10167, & 93-10161).
21. RCV-017A & RCV-017B HAVE HAD AIR & CONTROL SIGNAL REMOVED AND ARE NORMALLY CLOSED.
32. FLANGE AND ELBOW DOWNSTREAM OF AC-803 MAY HAVE INTERNAL SURFACE HARDENED BY DIFFUSION ALLOYING PROCESS.

LEGEND:

RWST	REFUELING WATER STORAGE TANK
ECC	EMERGENCY COOLING CONNECTION
DH	DRAIN HEADER
LO	LOCKED OPEN
FO	FAIL OPEN
FC	FAIL CLOSED
T	TRIP OR CLOSE ON HIGH CONTAINMENT PRESSURE
V	LOCAL VENT
D	LOCAL DRAIN
S	SAFETY INJECTION SIGNAL
ST	TEMPORARY STRAINER
△	CONTAINMENT PENETRATION
⬡	SEISMIC CLASSIFICATION

NOTE:
ALL PIPING ON THIS DWG. IS SEISMIC CLASS 1 EXCEPT AS NOTED

NOTE:
WORK THIS DWG WITH DWG'S 9321-F-27513, SH 1 & 2.

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL NOTATIONS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST.

REDRAWN FROM Ⓖ DWG. 685J428 & 110E364

REVISIONS					
NO	DESCRIPTION	DATE	BY	CHKD	APPR.
29	INCORPORATED DRN-05-03377, ER IP3-05-17486	6/29/05	GH	RAC	VK

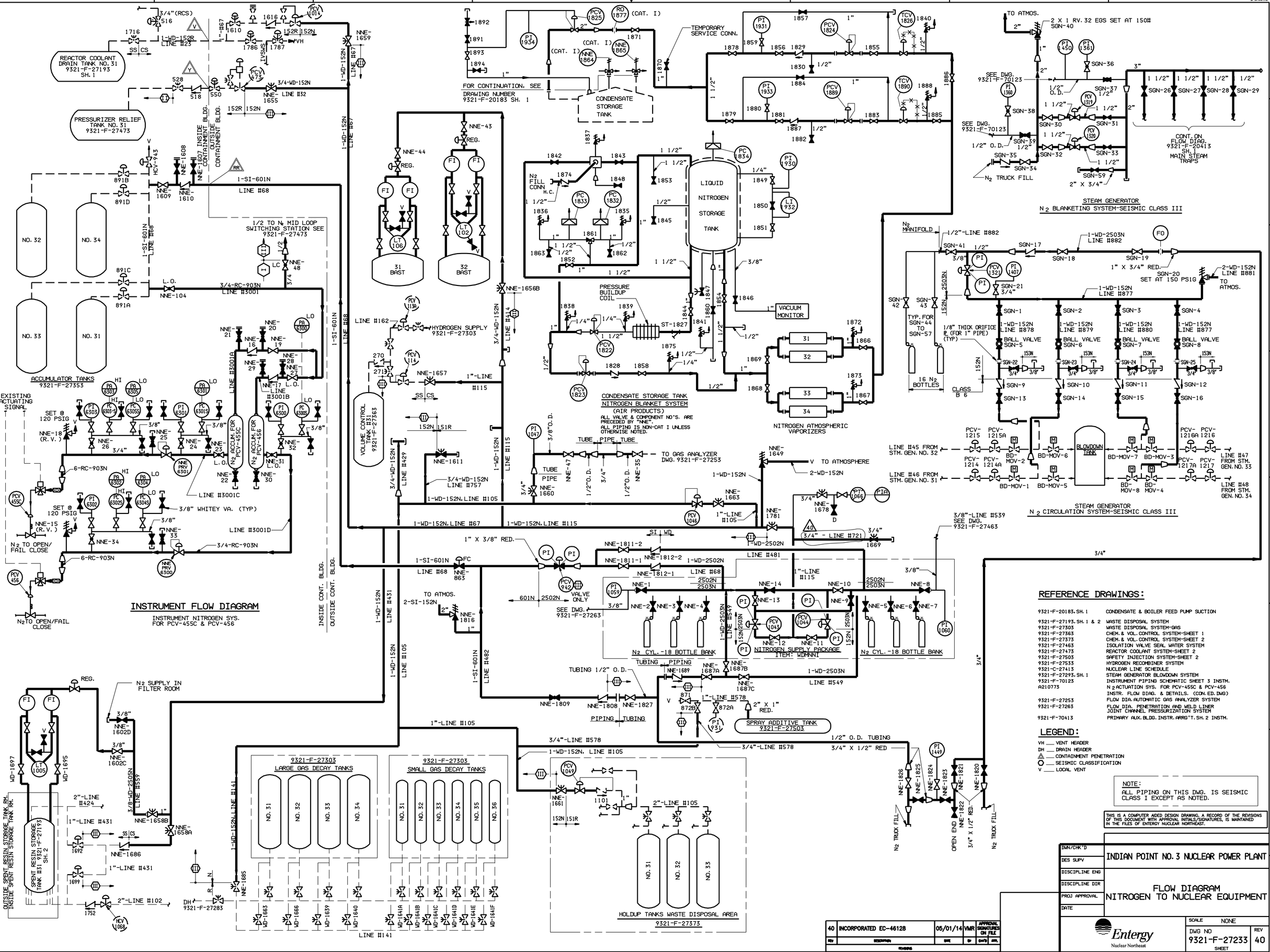
DWN/CHK'D
DES SUPV
DISCIPLINE ENG
DISCIPLINE DIR
PROJ APPROVAL
DATE

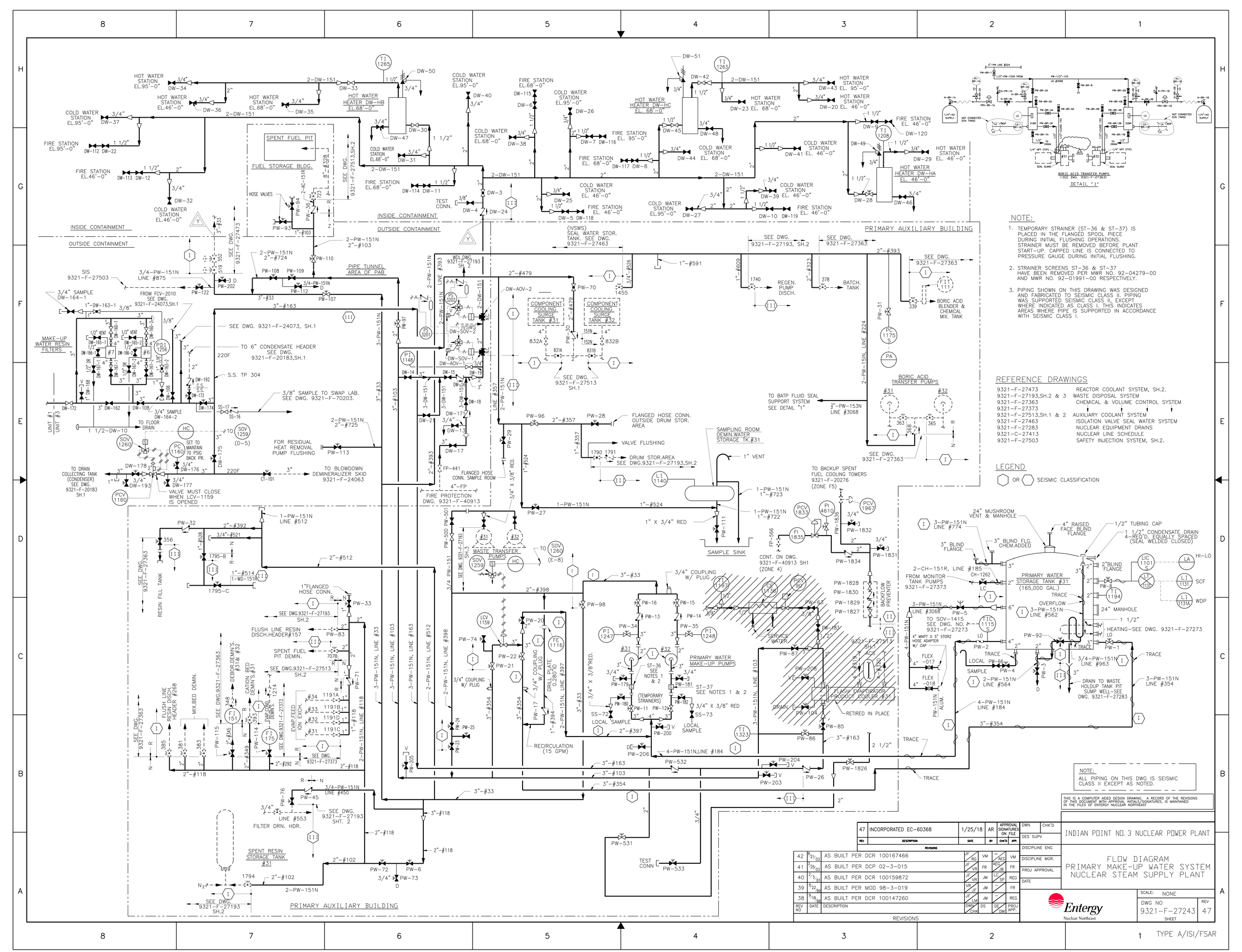
INDIAN POINT NO. 3 NUCLEAR POWER PLANT

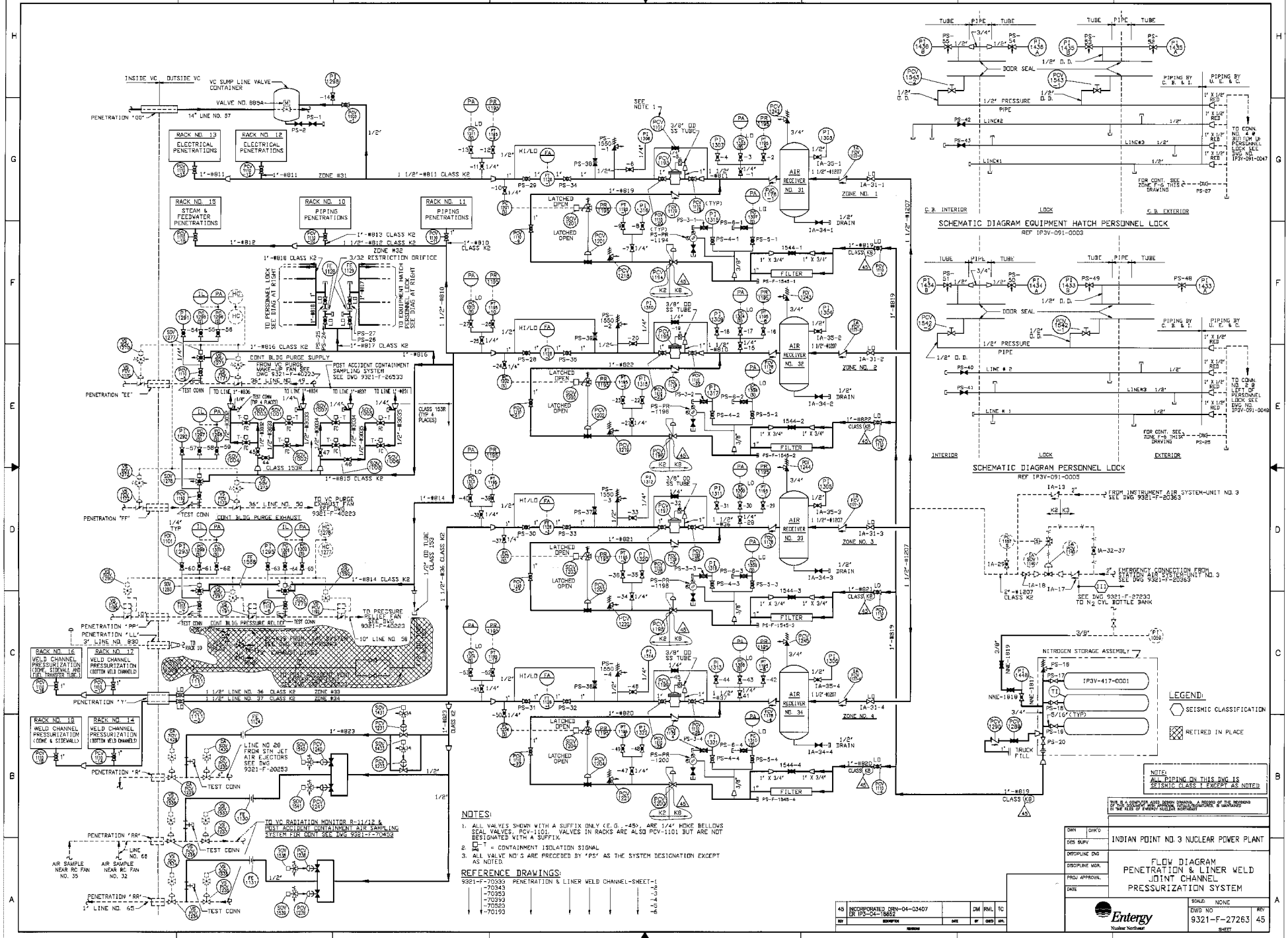
FLOW DIAGRAM
AUXILIARY COOLANT SYSTEM
INSIDE CONTAINMENT

Entergy Nuclear Northeast

SCALE NONE
DWG NO 9321-F-27203
REV 29
SHEET


REACTOR COOLANT DRAIN TANK NO. 31 9321-F-27193 SH. 1
PRESSURIZER RELIEF TANK NO. 31 9321-F-27473
1-WD-152R LINE #23
1-WD-152N LINE #67
3/4-WD-152N NNE- LINE #32 1655
1-SI-601N LINE #68
1-SI-601N LINE #68
1-SI-601N LINE #68
1/2 TO N2 MID LOOP SWITCHING STATION SEE 9321-F-27473
3/4-RC-903N LINE #3001
NO. 32
NO. 34
NO. 33
NO. 31
ACCUMULATOR TANKS 9321-F-27353
EXISTING ACTUATING SIGNAL
SET @ 120 PSIG
LINE #3001A
LINE #3001B
LINE #3001C
LINE #3001D
N2 ACCUM. FOR PCV-455C
N2 ACCUM. FOR PCV-456
3/8" WHITEY VA. (TYP)
6-RC-903N
3/4-RC-903N
N2 TO OPEN/ FAIL CLOSE
N2 TO OPEN/FAIL CLOSE
INSTRUMENT FLOW DIAGRAM
INSTRUMENT NITROGEN SYS. FOR PCV-455C & PCV-456
INSIDE CONT. BLDG.
OUTSIDE CONT. BLDG.
1-WD-152N LINE #431
1-WD-152N LINE #105
1-WD-152N LINE #67
1-WD-152N LINE #115
1-SI-601N LINE #68
1-SI-601N LINE #482
2-SI-152N
TO ATMOS.
601N 2502N
SEE DWG. 9321-F-27263
N2 CYL. -18 BOTTLE BANK
TUBING PIPING
TUBING 1/2" O.D.
PIPING TUBING
NNE-1809
NNE-1808
NNE-1827
NNE-1687A
NNE-1687B
NNE-1687C
1-WD-2503N LINE #549
1"-LINE #578
3/4"-LINE #578
2" X 1" RED.
SPRAY ADDITIVE TANK 9321-F-27503
1"-LINE #105
1-WD-152N, LINE #105
1-WD-152N, LINE #67
1-WD-152N, LINE #115
1" X 3/8" RED.
1-WD-2502N
LINE #481
1"-LINE #115
3/8"-LINE #539 SEE DWG. 9321-F-27463
3/4" - LINE #721
3/4"
1669
1-SI-601N LINE #68
FC
NNE-863
PCV 942 VALVE ONLY
REFERENCE DRAWINGS:
9321-F-20183, SH. 1 CONDENSATE & BOILER FEED PUMP SUCTION
9321-F-27193, SH. 1 & 2 WASTE DISPOSAL SYSTEM
9321-F-27303 WASTE DISPOSAL SYSTEM-GAS
9321-F-27363 CHEM. & VOL. CONTROL SYSTEM-SHEET 1
9321-F-27373 CHEM. & VOL. CONTROL SYSTEM-SHEET 2
9321-F-27463 ISOLATION VALVE SEAL WATER SYSTEM
9321-F-27473 REACTOR COOLANT SYSTEM-SHEET 2
9321-F-27503 SAFETY INJECTION SYSTEM-SHEET 2
9321-F-27533 HYDROGEN RECOMBINER SYSTEM
9321-C-27413 NUCLEAR LINE SCHEDULE
9321-F-27293, SH. 1 STEAM GENERATOR BLOWDOWN SYSTEM
9321-F-70123 INSTRUMENT PIPING SCHEMATIC SHEET 3 INSTM.
A210773 N2 ACTUATION SYS. FOR PCV-455C & PCV-456 INSTR. FLOW DIAG. & DETAILS. (CON. ED. DWG)
9321-F-27253 FLOW DIA. AUTOMATIC GAS ANALYZER SYSTEM
9321-F-27263 FLOW DIA. PENETRATION AND WELD LINER JOINT CHANNEL PRESSURIZATION SYSTEM
9321-F-70413 PRIMARY AUX. BLDG. INSTR. ARRG'T. SH. 2 INSTM.
LEGEND:
VH ___ VENT HEADER
DH ___ DRAIN HEADER
CONTAINMENT PENETRATION
SEISMIC CLASSIFICATION
V ___ LOCAL VENT
NOTE:
ALL PIPING ON THIS DWG. IS SEISMIC CLASS I EXCEPT AS NOTED.
THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST.
40 INCORPORATED EC-46128 05/01/14 VMR APPROVAL SIGNATURES ON FILE
INDIAN POINT NO. 3 NUCLEAR POWER PLANT
FLOW DIAGRAM NITROGEN TO NUCLEAR EQUIPMENT
Entergy Nuclear Northeast
SCALE NONE
DWG NO 9321-F-27233
REV 40
SHEET
CONDENSATE STORAGE TANK NITROGEN BLANKET SYSTEM (AIR PRODUCTS)
ALL VALVE & COMPONENT NO'S. ARE PRECEDED BY "NNE".
ALL PIPING IS NON-CAT I UNLESS OTHERWISE NOTED.
LIQUID NITROGEN STORAGE TANK
NITROGEN ATMOSPHERIC VAPORIZERS
PRESSURE BUILDUP COIL
VACUUM MONITOR
TEMPORARY SERVICE CONN.
CONDENSATE STORAGE TANK
FOR CONTINUATION, SEE DRAWING NUMBER 9321-F-20183 SH. 1
N2 FILL CONN H.C.
TO GAS ANALYZER DWG. 9321-F-27253
TO ATMOSPHERE
2-WD-152N
STEAM GENERATOR N2 BLANKETING SYSTEM-SEISMIC CLASS III
N2 MANIFOLD
1/2"-LINE #882
1-WD-2503N LINE #882
1-WD-152N LINE #877
2-WD-152N LINE #881
SET AT 150 PSIG
TO ATMOS.
16 N2 BOTTLES
1/8" THICK ORIFICE PL (FOR 1" PIPE) (TYP)
CLASS B 6
LINE #45 FROM STM. GEN. NO. 32
LINE #46 FROM STM. GEN. NO. 31
BLOWDOWN TANK
LINE #47 FROM STM. GEN. NO. 33
LINE #48 FROM STM. GEN. NO. 34
STEAM GENERATOR N2 CIRCULATION SYSTEM-SEISMIC CLASS III
2 X 1 RV. 32 EGS SET AT 150#
SEE DWG. 9321-F-70123
CONT. ON FLOW DIAG. 9321-F-20413 SH. 1 MAIN STEAM TRAPS
N2 TRUCK FILL
HYDROGEN SUPPLY 9321-F-27303
VOLUME CONTROL TANK #331 9321-F-27363
SPENT RESIN STORAGE TANK #31 9321-F-27193 SH. 2
OUTSIDE SPENT RESIN STORAGE TANK RM.
INSIDE SPENT RESIN STORAGE TANK RM.
N2 SUPPLY IN FILTER ROOM
9321-F-27303 LARGE GAS DECAY TANKS
9321-F-27303 SMALL GAS DECAY TANKS
HOLDUP TANKS WASTE DISPOSAL AREA 9321-F-27373
LINE #141
DH 9321-F-27283
N2 TRUCK FILL
OPEN END
3/4" X 1/2" RED.


HOT WATER STATION EL.95'-0"
HOT WATER STATION EL.46'-0"
HOT WATER STATION EL.68'-0"
HOT WATER HEATER DW-HB EL.68'-0"
COLD WATER STATION EL.95'-0"
FIRE STATION EL.95'-0"
FIRE STATION EL.46'-0"
SPENT FUEL PIT
FUEL STORAGE BLDG.
HOSE VALVES
COLD WATER STATION EL.68'-0"
FIRE STATION EL.68'-0"
TEST CONN.
INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
PIPE TUNNEL AREA OF PAB
PRIMARY AUXILIARY BUILDING
(IVSWS) SEAL WATER STOR. TANK. SEE DWG. 9321-F-27463
COLD WATER STATION EL. 46'-0"
FIRE STATION EL. 46'-0"
HOT WATER HEATER DW-HC EL. 68'-0"
HOT WATER HEATER DW-HA EL. 46'-0"
FIRE STATION EL. 68'-0"
FIRE STATION EL. 95'-0"
COLD WATER STATION EL. 68'-0"
SIS 9321-F-27503
3/4-PW-151N LINE #875
FROM FCV-2010 SEE DWG. 9321-F-24073,SH.1
3/4" SAMPLE DW-164-1
MAKE-UP WATER RESIN FILTERS
SEE DWG. 9321-F-24073, SH.1
TO 6" CONDENSATE HEADER SEE DWG. 9321-F-20183,SH.1
220F
S.S. TP 304
3/8" SAMPLE TO SWAP LAB. SEE DWG. 9321-F-70203.
3/4" SAMPLE DW-164-2
TO FLOOR DRAIN
SET TO MAINTAIN 70 PSIG BACK PR.
TO DRAIN COLLECTING TANK (CONDENSER) SEE DWG. 9321-F-20183 SH.1
VALVE MUST CLOSE WHEN LCV-1159 IS OPENED
FOR RESIDUAL HEAT REMOVAL PUMP FLUSHING
TO BLOWDOWN DEMINERALIZER SKID 9321-F-24063
FIRE PROTECTION DWG. 9321-F-40913
FLANGED HOSE CONN. OUTSIDE DRUM STOR. AREA
VALVE FLUSHING
DRUM STOR.AREA SEE DWG.9321-F-27193,SH.2
FLANGED HOSE CONN. SAMPLE ROOM
SAMPLING ROOM DEMIN.WATER STORAGE TK.#31
SAMPLE SINK
TO BATP FLUID SEAL SUPPORT SYSTEM SEE DETAIL "1"
TO BACKUP SPENT FUEL COOLING TOWERS 9321-F-20276 (ZONE F5)
CONT. ON DWG. 9321-F-40913 SH1 (ZONE 4)
REGEN. PUMP DISCH.
BATCH. TANK
BORIC ACID BLENDER & CHEMICAL MIX. TANK
BORIC ACID TRANSFER PUMPS
#31
#32
SEE DWG. 9321-F-27363
SEE DWG. 9321-F-27513 SH.1
SEE DWG. 9321-F-27193, SH.2
SEE DWG. 9321-F-27363
WDL DWG. 9321-F-27193 SH. 2
COMPONENT COOLING SURGE TANK #31
COMPONENT COOLING SURGE TANK #32
RESIN FILL TANK
SPENT RESIN STORAGE TANK #31
WASTE TRANSFER PUMPS
SEE DWG.9321-F-27193 SH.2
FLUSH LINE RESIN DISCH.HEADER#157
SPENT FUEL PIT DEMIN.
SEE DWG.9321-F-27513 SH.2
SEE DWG.9321-F-27373
SEE DWG.9321-F-27363
FLUSH LINE RESIN DISCH. HEADER #268
MIX.BED DEMIN.
DEBOR.DEMIN'S. #31& #32
CATION BED DEMIN'S.#31
EVAP.COND. DEMIN'S.
EVAP.FEED ION EXCH.
SEE DWG.9321-F-27373
RECIRCULATION (15 GPM)
PRIMARY WATER MAKE-UP PUMPS
(TEMPORARY STRAINERS)
LOCAL SAMPLE
SERVICE WATER
FLASH EVAPORATOR PRODUCT COOLER #31
RETIRED IN PLACE
PRIMARY WATER STORAGE TANK #31 (165,000 GAL.)
24" MUSHROOM VENT & MANHOLE
4" RAISED FACE BLIND FLANGE
1/2" TUBING CAP
1 1/2" CONDENSATE DRAIN 4-REQ'D. EQUALLY SPACED (SEAL WELDED CLOSED)
3" BLIND FLG. CHEM.ADDED
3" BLIND FLANGE
2" BLIND FLANGE
FROM MONITOR TANK PUMPS 9321-F-27373
OVERFLOW
24" MANHOLE
HEATING-SEE DWG. 9321-F-27273
4" MNPT X 5" STORZ HOSE ADAPTER W/ CAP
SAMPLE
DRAIN TO WASTE HOLDUP TANK PIT SUMP WELL-SEE DWG. 9321-F-27283
TRACE
LOCAL PW-66
PRIMARY AUXILIARY BUILDING
BORIC ACID TRANSFER PUMPS (SEE DWG. 9321-F-27363)
DETAIL "1"
NOT CONNECTED ECN 74650
1/4"-NG SUPPLY
SEAL GLAND
NOTE:
1. TEMPORARY STRAINER (ST-36 & ST-37) IS PLACED IN THE FLANGED SPOOL PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINER MUST BE REMOVED BEFORE PLANT START-UP. CAPPED LINE IS CONNECTED TO PRESSURE GAUGE DURING INITIAL FLUSHING.
2. STRAINER SCREENS ST-36 & ST-37 HAVE BEEN REMOVED PER MWR NO. 92-04279-00 AND MWR NO. 92-01991-00 RESPECTIVELY.
3. PIPING SHOWN ON THIS DRAWING WAS DESIGNED AND FABRICATED TO SEISMIC CLASS II. PIPING WAS SUPPORTED SEISMIC CLASS II, EXCEPT WHERE INDICATED AS CLASS I. THIS INDICATES AREAS WHERE PIPE IS SUPPORTED IN ACCORDANCE WITH SEISMIC CLASS I.
REFERENCE DRAWINGS
9321-F-27473 REACTOR COOLANT SYSTEM, SH.2.
9321-F-27193,SH.2 & 3 WASTE DISPOSAL SYSTEM
9321-F-27363 CHEMICAL & VOLUME CONTROL SYSTEM
9321-F-27373
9321-F-27513,SH.1 & 2 AUXILIARY COOLANT SYSTEM
9321-F-27463 ISOLATION VALVE SEAL WATER SYSTEM
9321-F-27283 NUCLEAR EQUIPMENT DRAINS
9321-C-27413 NUCLEAR LINE SCHEDULE
9321-F-27503 SAFETY INJECTION SYSTEM, SH.2.
LEGEND
OR SEISMIC CLASSIFICATION
NOTE:
ALL PIPING ON THIS DWG IS SEISMIC CLASS II EXCEPT AS NOTED.
THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST
47 INCORPORATED EC-60368 1/25/18 AR
REVISIONS
42 8/21/03 AS BUILT PER DCR 100167466
41 3/25/03 AS BUILT PER DCP 02-3-015
40 2/5/01 AS BUILT PER DCR 100159872
39 9/22/99 AS BUILT PER MOD 98-3-019
38 9/18/98 AS BUILT PER DCR 100147260
APPROVAL SIGNATURES ON FILE
DES SUPV
DISCIPLINE ENG
DISCIPLINE MGR.
PROJ APPROVAL
DATE
INDIAN POINT NO. 3 NUCLEAR POWER PLANT
FLOW DIAGRAM PRIMARY MAKE-UP WATER SYSTEM NUCLEAR STEAM SUPPLY PLANT
Entergy Nuclear Northeast
SCALE: NONE
DWG NO 9321-F-27243
REV 47
SHEET
TYPE A/ISI/FSAR


SCHEMATIC DIAGRAM EQUIPMENT HATCH PERSONNEL LOCK
REF IP3V-091-0003
SCHEMATIC DIAGRAM PERSONNEL LOCK
REF IP3V-091-0005
NOTES:
1. ALL VALVES SHOWN WITH A SUFFIX ONLY (E.G. -45), ARE 1/4" MOKE BELLOWS SEAL VALVES, PCV-1101. VALVES IN RACKS ARE ALSO PCV-1101 BUT ARE NOT DESIGNATED WITH A SUFFIX.
2. T = CONTAINMENT ISOLATION SIGNAL
3. ALL VALVE NO'S ARE PRECEDED BY 'PS' AS THE SYSTEM DESIGNATION EXCEPT AS NOTED.
REFERENCE DRAWINGS:
9321-F-70330 PENETRATION & LINER WELD CHANNEL-SHEET-1
-70343
-70353
-70392
-70583
-70193
LEGEND:
SEISMIC CLASSIFICATION
RETIRED IN PLACE
NOTE:
ALL PIPING ON THIS DWG IS SEISMIC CLASS I EXCEPT AS NOTED
INCORPORATED DRN-04-03407
ER IP3-04-18882
INDIAN POINT NO. 3 NUCLEAR POWER PLANT
FLOW DIAGRAM
PENETRATION & LINER WELD
JOINT CHANNEL
PRESSURIZATION SYSTEM
Entergy
Nuclear Northeast
SCALE NONE
DWG NO 9321-F-27263
REV 45
1 TYPE A/ISI/FSAR

NOTES:

1. VALVES TO CLOSE UPON ENERGIZING AUXILIARY BOILER FEED PUMPS
2. ALL CONTROL VALVES FAIL CLOSED
3. ALL PIPING IS IN ACCORDANCE WITH NYPA SPEC. TS-MS-024
4. ALL PIPING AND VALVES FROM STEAM GENERATORS UP TO AND INCLUDING 2ND ISOLATION VALVE OUTSIDE CONTAINMENT BLDG. IS SEISMIC CLASS I REMAINDER OF PIPING IS SEISMIC CLASS III EXCEPT AS NOTED.
5. ONLY SEISMIC CLASS I PIPING IS NUCLEAR SAFETY RELATED.
6. VALVES TO CLOSE UPON HIGH RADIATION ALARM FROM RTA-019.
7. MOTOR OPERATOR NOT USED, VALVE MANUALLY OPENED VIA HANDWHEEL.

LEGEND

	SIZE	SYMBOL	CLASS	LINE NO.
LINE#	4	- BDR	- B6	- 45

⬡ - SEISMIC CLASSIFICATION
T - CONTAINMENT ISOLATION SIGNAL
WD - WASTE DISPOSAL SYSTEM
F. C. - FAIL CLOSE (AIR OPERATED VALVE)

REFERENCE DRAWINGS

9321-F-24063	FLOW DIAGRAM-S. G. BLOWDOWN RECOVERY SYSTEM
9321-F-27223	FLOW DIAGRAM-SERVICE WATER SYSTEM-NUCLEAR STEAM SUPPLY PLANT
9321-F-20363	FLOW DIAGRAM-INST. AIR
9321-F-27293 SH. 2	FLOW DIAGRAM-S. G. BLOWDOWN SAMPLE PANEL
9321-F-27463	FLOW DIAGRAM-ISOLATION VALVE SEAL WATER SYSTEM
9321-F-27283	FLOW DIAGRAM-NUCLEAR EQUIPMENT DRAINS
9321-C-27413	NUCLEAR LINE SCHEDULE
9321-F-27233	FLOW DIAGRAM-NITROGEN TO NUCLEAR EQUIPMENT
9321-F-20343 SH. 1	FLOW DIAGRAM-CITY WATER

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REV	DESCRIPTION	DATE	BY	CHK'D	APP.
33	INCORPORATED EC-48319	2/18/14	VMR	APPROVAL SIGNATURES ON FILE	

REVISIONS

REV NO	DATE	DESCRIPTION	DWN CHK	DS	DE DD	PROJ MGR
32	4/29/04	INCORP. CLN 9321-F-27223 SH.1 -30C DCP 02-3-018	JF GH	TC	/	TC
31	11/15/02	AS BUILT PER DCP 98-3-074	JF VR	JM	NS FB	FR
30	6/3/02	AS BUILT PER DCR 100164198	JF VR	JM	RSD –	REG
29	5/19/00	AS BUILT PER DCR 100157087	JF LM	JM	– –	REG
28	4/12/00	AS BUILT PER MMP 98-3-074	VR JM	JM	– –	REG

REVISIONS

DWN/CHK'D	
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE DIR	
PROJ APPROVAL	
DATE	

INDIAN POINT NO.3 NUCLEAR POWER PLANT

FLOW DIAGRAM
STEAM GENERATOR
BLOWDOWN
SYSTEM

Entergy
Nuclear Northeast

SCALE NONE
DWG NO 9321-F-27293
REV 33
SHEET 1

TYPE A/ISI/FSAR

IMECH

IP3.SGWd

INSIDE CONTAINMENT STRUCTURE | OUTSIDE CONTAINMENT STRUCTURE

AIR SUPPLY (TYPICAL)

EXPANSION COIL

1/2"-#364-SL-2505R
SEE DWG. #9321-F-27293 SH. 1

PENETRATION "W"

SOV 1523 | PCV 1223 | SOV 1523A | PCV 1223A | IVSWS VA-1545 FROM CHK. VA 9321-F-27463 SEE DWG.

1/2" X 3/8" (TYP)

FT 1241 RETIRED IN PLACE

SS180 | SS174

3/8"

989B

2" A.C.S. #129 FROM DWG. 9321-F-27515. SH. 1

#31

3/8"-#683

AC-817D

2" A.C.S. #133 TO DWG. 9321-F-27513. SH. 1

FOR CONT. SEE 9321-F-27293 SH. 1 (ZONE G-5)

CONT. ON DWG. 9321-F-20343 SH. 1 (ZONE F-6)

3/4" X 1/2" CRT

CLASS J4 CLASS 151R

MW-100-1 | MW-101-1 | MW-102-1 | MW-103-1 | MW-104-1 | MW-105-1

923-1 | 924-1 | 986B | 987-1

31 SG B/D SAMPLE COOLER#1 | 31 SG B/D SAMPLE COOLER#2

T.S.

TO VENT LINE ON BLOWDOWN TANK FROM SAMPLE HTX SEE DWG. 9321-F-27293. SH. 1 (ZONE F-1)

TCV 1201

TI 1274

PCV 154

3/8"-#687

908-1

PI 1243A | PI 1243B

972C | 907-1 | 909-1 | 913-1 | 914-1

BY-PASS FILTER #31

3/8"-#687

PCV 910-1 | PCV 915-1 | 916-1

PI 1243C

922-1

3/8" (TYP)

PI 1243

CE 1111-1 (CATION) | CE 1111-2 (SPECIFIC)

AIT 1111-4 | AE 1111-4 | AE 1111-3

UR 1111-4 | UR 1111-3

CIT 1111-1 | UR 1111-1 | CIT 1111-2 | UR 1111-2

917-1 | 918-1 | 919-1 | 920-1

3/8"-#685 TO SAMPLE SINK EL. 55'-0"

TI 1276

3/8" | 921-1

EXPANSION COIL

1/2"-#366-SL-2505R
SEE DWG. #9321-F-27293 SH. 1

PENETRATION "W"

SOV 1525 | PCV 1225 | SOV 1525A | PCV 1225A | IVSWS VA-1547 FROM CHK. VA 9321-F-27463 SEE DWG.

FT 1243 RETIRED IN PLACE

SS179 | SS175

3/8"

989C

#33

3/8"-#685

AC-817F

CONT. ON DWG. 9321-F-20343 SH. 1 (ZONE F-6)

3/4" X 1/2" CRT

CLASS J4 CLASS 151R

MW-100-3 | MW-101-3 | MW-102-3 | MW-103-3 | MW-104-3 | MW-105-3

923-3 | 924-3 | 986C | 987-3

33 SG B/D SAMPLE COOLER#1 | 33 SG B/D SAMPLE COOLER#2

T.S.

TO VENT LINE ON BLOWDOWN TANK FROM SAMPLE HTX SEE DWG. 9321-F-27293. SH. 1 (ZONE F-1)

TCV 1203

PCV 156

3/8"-#689

908-3

PI 1245A | PI 1245B

972B | 907-3 | 909-3 | 913-3 | 914-3

BY-PASS FILTER #33

3/8"-#689

PCV 910-3 | PCV 915-3 | 916-3

PI 1245C

922-3

3/8" (TYP)

PI 1245

CE 1113-1 (CATION) | CE 1113-2 (SPECIFIC)

AIT 1113-4 | AE 1113-4 | AE 1113-3

UR 1113-4 | UR 1113-3

CIT 1113-1 | UR 1113-1 | CIT 1113-2 | UR 1113-2

917-3 | 918-3 | 919-3 | 920-3

TI 1275

3/8"-#684 TO SAMPLE SINK EL. 55'-0"

3/8" | 921-3

EXPANSION COIL

1/2"-#365-SL-2505R
SEE DWG. #9321-F-27293 SH. 1

PENETRATION "W"

SOV 1524 | PCV 1224 | SOV 1524A | PCV 1224A | IVSWS VA-1546 FROM CHK. VA 9321-F-27463 SEE DWG.

FT 1242 RETIRED IN PLACE

SS181 | SS176

3/8"

989A

#32

3/8"-#684

AC-817E

CONT. ON DWG. 9321-F-20343 SH. 1 (ZONE F-6)

3/4" X 1/2" CRT

CLASS J4 CLASS 151R

MW-100-2 | MW-101-2 | MW-102-2 | MW-103-2 | MW-104-2 | MW-105-2

923-2 | 924-2 | 986A | 987-2

32 SG B/D SAMPLE COOLER#1 | 32 SG B/D SAMPLE COOLER#2

T.S.

TO VENT LINE ON BLOWDOWN TANK FROM SAMPLE HTX SEE DWG. 9321-F-27293. SH. 1 (ZONE F-1)

TCV 1202

PCV 155

3/8"-#688

908-2

PI 1244A | PI 1244B

972D | 907-2 | 909-2 | 913-2 | 914-2

BY-PASS FILTER #32

3/8"-#688

PCV 910-2 | PCV 915-2 | 916-2

PI 1244C

922-2

3/8" (TYP)

PI 1244

CE 1112-1 (CATION) | CE 1112-2 (SPECIFIC)

AIT 1112-4 | AE 1112-4 | AE 1112-3

UR 1112-4 | UR 1112-3

CIT 1112-1 | UR 1112-1 | CIT 1112-2 | UR 1112-2

917-2 | 918-2 | 919-2 | 920-2

TI 1277

3/8"-#686 TO SAMPLE SINK EL. 55'-0"

3/8" | 921-2

PENETRATION "W"

1/2"-#367-SL-2505R
SEE DWG. #9321-F-27293 SH. 1

EXPANSION COIL

SOV 1526 | PCV 1226 | SOV 1526A | PCV 1226A | IVSWS VA-1548 FROM CHK. VA 9321-F-27463 SEE DWG.

FT 1244 RETIRED IN PLACE

SS178 | SS177

3/8"

989D

#34

SG SAMPLE HEAT EXCHANGER (TYPICAL)

3/8"-#686

AC-817G

CONT. ON DWG. 9321-F-20343 SH. 1 (ZONE F-6)

3/4" X 1/2" CRT

MW-100-4 | MW-101-4 | MW-102-4 | MW-103-4 | MW-104-4 | MW-105-4

923-4 | 924-4 | 986D | 987-4

34 SG B/D SAMPLE COOLER#1 | 34 SG B/D SAMPLE COOLER#2

T.S.

TO VENT LINE ON BLOWDOWN TANK FROM SAMPLE HTX SEE DWG. 9321-F-27293. SH. 1 (ZONE F-1)

TCV 1204

PCV 157

3/8"-#690

908-4

PI 1246A | PI 1246B

972A | 907-4 | 909-4 | 913-4 | 914-4

BY-PASS FILTER #34

3/8"-#690

PCV 910-4 | PCV 915-4 | 916-4

PI 1246C

922-4

3/8" (TYP)

PI 1246

CE 1114-1 (CATION) | CE 1114-2 (SPECIFIC)

AIT 1114-4 | AE 1114-4 | AE 1114-3

UR 1114-4 | UR 1114-3

CIT 1114-1 | UR 1114-1 | CIT 1114-2 | UR 1114-2

917-4 | 918-4 | 919-4 | 920-4

3/8" | 921-4

TO ION CHROMATOGRAPH 9321-F-20332

912-2 | 912-3 | 912-1

TO SOV-1317 (NOTE 1)
TO SOV-1316 (NOTE 1)
TO SOV-1314 (NOTE 1)
TO SOV-1315 (NOTE 1)
TO SOV-1317A (NOTE 1)
TO SOV-1316A (NOTE 1)
TO SOV-1314A (NOTE 1)
TO SOV-1315A (NOTE 1)

SEE DWG. 9321-F-27293. SHEET 1

19 | I | II

3/8"-SL-250R | 3/8"-SL-2505R | 3/8"-SL-2505R | 3/8"-SL-2505R

253-4 | 253-2 | 253-5 | 253-1

FT 1248 | FT 1246 | FT 1247 | FT 1245

254-4 | 254-2 | 254-3 | 254-1

PT 1332

922-5

BD-20

1/2"-2505R

1" CLASS 151R

LOCAL DRAIN

1/2"-BD-46

1/2"-#691

1/2"-BD-45 | 1/2"-BD-47

1/2"-BD-44

151R | 2505R

TO SAMPLE INLET R19 SKID

FROM SAMPLE/PURGE OUTLET R19 SKID

1/2"-#691 TO 1/2" HEADER TO BLOWDOWN TANK SEE DWG. 9321-F-27293. SH. 1 (ZONE E-1)

COLLECTION TANK NO. 31

2"-#618

COLLECTION TANK NO. 31 TRANSFER PUMPS

#31 | #32

BD-37 | BD-38

3/4"-#745 CLASS 152R

1"- #745

1"- #691 CLASS 152R

II TO BLOWDOWN FLASH TANK SEE DWG. 9321-F-27293. SH. 1

DRAIN

1 1/2"

1-AC-152N-#3041 AUX. COOLANT 9321-F-27513. SH. 1

1-AC-152N-#3042 AUX. COOLANT 9321-F-27513. SH. 1

SAMPLE INLET

BD-247 | 3/4" | TS 20 | TI 19 | BD-248 | FIS 19 | #31 | BD-249

1 1/2" | 1 1/2" | COOLING WATER HEAT EXCHANGER #31

1/4" O.D. | BD-250 | PT 21

BD-252 | BD-SOV-251 | BD-254 | BD-SOV-255 | BD-253 DR. | BD-257

CALIBRATION PORTS | RE-19A

BD-SOV-256

BD-SOV-262 | BD-SOV-263 | BD-SOV-258 | BD-259 | BD-260 | BD-261

CALIBRATION PORTS | RE-19B

PURGE INLET

3/4" CITY WATER DWG. 9321-F-20343. SH. 1 (ZONE F-6)

SAMPLE PURGE OUTLET

3/4"

RM 19 | FROM FT-538 DWG. 9321-F-27293. SH. 1

RADIATION MONITOR R19 SKID

CLOSE VALVES ON HIGH RADIATION (NOTE 1)

NOTES:

1. VALVES TO CLOSE UPON HIGH RADIATION ALARM.
2. ALL VALVE NO'S. ARE PRECEDED BY A "BD" SYSTEM DESIGNATION UNLESS OTHERWISE NOTED.

REFERENCE DRAWINGS:

9321-F-27293. SH. 1-STEAM GENERATOR BLOWDOWN SYSTEM-FLOW DIAGRAM.

9321-F-27453-SAMPLING SYSTEM-FLOW DIAGRAM.

9321-F-27463-ISOLATION VALVE SEAL WATER SYSTEM-FLOW DIAGRAM.

9321-F-27513. SH. 1-AUX COOLANT SYSTEM IN PAB & FSB-FLOW DIAGRAM.

9321-F-27513. SH. 2-AUX COOLANT SYSTEM IN PAB & FSB-FLOW DIAGRAM.

9321-F-20332-ION CHROMATOGRAPHY ANALYZER

LEGEND:

IVSWS	ISOLATION VALVE SEAL WATER SYSTEM
L.O.	LOCKED OPEN VALVE
L.C.	LOCKED CLOSED VALVE
T	CONTAINMENT ISOLATION SIGNAL
F.C.	FAIL CLOSE (AIR OPERATED VALVE)
⬡	SEISMIC CLASSIFICATION
⬭	LOCAL CONTROL PANEL

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES. IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST.

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
19	INCORPORATED EC-71388	4/20/17	SM		

REVISIONS

DWN	CHK'D
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE MGR.	
PROJ APPROVAL	
DATE	

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

FLOW DIAGRAM STEAM GENERATOR BLOWDOWN SAMPLE PANEL

Entergy Nuclear Northeast

SCALE: NONE

DWG NO 9321-F-27293 SHEET 2

REV 19

TYPE A/ISI/FSAR

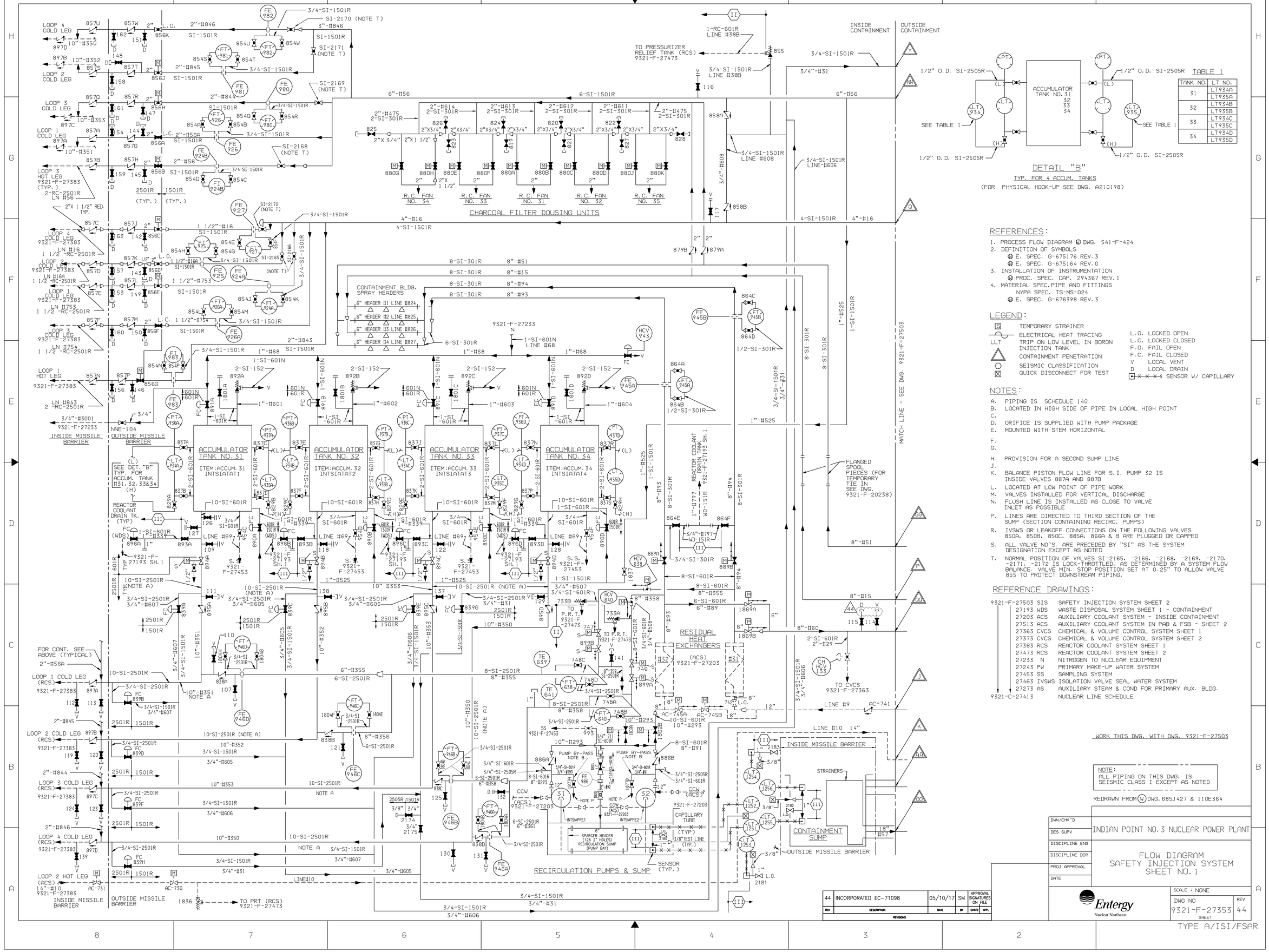


TABLE 1	
TANK NO.	LT NO.
31	LT934A
	LT935A
32	LT934B
	LT935B
33	LT934C
	LT935C
34	LT934D
	LT935D

REFERENCES:

1. PROCESS FLOW DIAGRAM (W) DWG. 541-F-424
2. DEFINITION OF SYMBOLS
   (W) E. SPEC. G-675176 REV. 3
   (W) E. SPEC. G-675164 REV. 0
3. INSTALLATION OF INSTRUMENTATION
   (W) PROC. SPEC. CAP. 294367 REV. 1
4. MATERIAL SPEC. PIPE AND FITTINGS
   NYPA SPEC. TS-MS-024
   (W) E. SPEC. G-676398 REV. 3

LEGEND:

- [S] TEMPORARY STRAINER
- ELECTRICAL HEAT TRACING
- LLT TRIP ON LOW LEVEL IN BORON INJECTION TANK
- CONTAINMENT PENETRATION
- SEISMIC CLASSIFICATION
- QUICK DISCONNECT FOR TEST
- L.O. LOCKED OPEN
- L.C. LOCKED CLOSED
- F.O. FAIL OPEN
- F.C. FAIL CLOSED
- V LOCAL VENT
- D LOCAL DRAIN
- SENSOR W/ CAPILLARY

NOTES:

A. PIPING IS SCHEDULE 140
B. LOCATED IN HIGH SIDE OF PIPE IN LOCAL HIGH POINT
C.
D. ORIFICE IS SUPPLIED WITH PUMP PACKAGE
E. MOUNTED WITH STEM HORIZONTAL
F.
G.
H. PROVISION FOR A SECOND SUMP LINE
J.
K. BALANCE PISTON FLOW LINE FOR S.I. PUMP 32 IS INSIDE VALVES 887A AND 887B
L. LOCATED AT LOW POINT OF PIPE WORK
M. VALVES INSTALLED FOR VERTICAL DISCHARGE
N. FLUSH LINE IS INSTALLED AS CLOSE TO VALVE INLET AS POSSIBLE
P. LINES ARE DIRECTED TO THIRD SECTION OF THE SUMP (SECTION CONTAINING RECIRC. PUMPS)
R. IVSWS OR LEAKOFF CONNECTIONS ON THE FOLLOWING VALVES 850A, 850B, 850C, 885A, 866A & B ARE PLUGGED OR CAPPED
S. ALL VALVE NO'S. ARE PRECEDED BY "SI" AS THE SYSTEM DESIGNATION EXCEPT AS NOTED
T. NORMAL POSITION OF VALVES SI-2165, -2166, -2168, -2169, -2170, -2171, -2172 IS LOCK-THROTTLED, AS DETERMINED BY A SYSTEM FLOW BALANCE. VALVE MIN. STOP POSITION SET AT 0.25" TO ALLOW VALVE 855 TO PROTECT DOWNSTREAM PIPING.

REFERENCE DRAWINGS:

9321-F-27503	SIS	SAFETY INJECTION SYSTEM SHEET 2
27193	WDS	WASTE DISPOSAL SYSTEM SHEET 1 - CONTAINMENT
27203	ACS	AUXILIARY COOLANT SYSTEM - INSIDE CONTAINMENT
27513	ACS	AUXILIARY COOLANT SYSTEM IN PAB & FSB - SHEET 2
27363	CVCS	CHEMICAL & VOLUME CONTROL SYSTEM SHEET 1
27373	CVCS	CHEMICAL & VOLUME CONTROL SYSTEM SHEET 2
27383	RCS	REACTOR COOLANT SYSTEM SHEET 1
27473	RCS	REACTOR COOLANT SYSTEM SHEET 2
27233	N	NITROGEN TO NUCLEAR EQUIPMENT
27243	PW	PRIMARY MAKE-UP WATER SYSTEM
27453	SS	SAMPLING SYSTEM
27463	IVSWS	ISOLATION VALVE SEAL WATER SYSTEM
27273	AS	AUXILIARY STEAM & COND FOR PRIMARY AUX. BLDG.
9321-C-27413		NUCLEAR LINE SCHEDULE

WORK THIS DWG. WITH DWG. 9321-F-27503

NOTE:
ALL PIPING ON THIS DWG. IS SEISMIC CLASS I EXCEPT AS NOTED

REDRAWN FROM (W) DWG. 685J427 & 110E364

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
44	INCORPORATED EC-71098	05/10/17	SM	APPROVAL SIGNATURES ON FILE	

REVISIONS

DWN/CHK'D
DES SUPV
DISCIPLINE ENG
DISCIPLINE DIR
PROJ APPROVAL
DATE

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

FLOW DIAGRAM
SAFETY INJECTION SYSTEM
SHEET NO. 1

Entergy
Nuclear Northeast

SCALE : NONE

DWG NO 9321-F-27353 SHEET

REV 44

TYPE A/ISI/FSAR

IP3_SCAN1

REFERENCES:

1. PROCESS FLOW DIAGRAM (W) DWG.
2. DEFINITION OF SYMBOLS
   (W) E SPEC. 6675176 REV. 2 AND
   (W) E SPEC. 6675164 REV. 0
3. INSTALLATION OF INSTRUMENTATION
   (W) PROC. SPEC. CAP 294367 REV. 1
4. MATERIAL SPEC. PIPE AND FITTINGS
   (W) E. SPEC. G569866 REV. 2 AND
   (W) E. SPEC G676398 REV. 0

REFERENCE DRAWINGS:

9321-F-27193 WDS -WASTE DISPOSAL SYSTEM (SH. 1 & SH. 2)
27303 WDS -WASTE DISPOSAL SYSTEM - GAS
27383 RCS -REACTOR COOLANT SYSTEM
27473 RCS -REACTOR COOLANT SYSTEM
27353 SIS -SAFETY INJECTION SYSTEM
27503 SIS -SAFETY INJECTION SYSTEM
27203 ACS -AUXILIARY COOLANT SYSTEM
27513 ACS -AUXILIARY COOLANT SYSTEM (SHT. 1)
27373 CVCS -CHEMICAL & VOLUME CONTROL SYSTEM
27233 N -NITROGEN TO NUCLEAR EQUIP.
27243 PW -PRIMARY MAKE-UP WATER SYSTEM.
27283 DH -NUCLEAR EQUIPMENT DRAINS
27453 SS -SAMPLING SYSTEM
27273 AS -AUX. STEAM & CONDENSATE FOR P. A. BLDG.
27253 GA -AUTOMATIC GAS ANALYZER SYSTEM
9321-C-27413 -NUCLEAR LINE SCHEDULE

LEGEND:

V -LOCAL VENT
PW -PRIMARY MAKE-UP WATER
VH -VENT HEADER (WDS)
DH -DRAIN HEADER (WDS)
T -CONTAINMENT ISOLATION SIGNAL
D -LOCAL DRAIN
DT -REACTOR COOLANT DRAIN TANK (WDS)
HSC -HAND SPEED CONTROL
GA -GAS ANALYZER (WDS)
FAI -FAIL AS IS
FC -FAIL CLOSED
FO -FAIL OPEN
LO -LOCKED OPEN
LC -LOCKED CLOSED
ATM -ATMOSPHERE
IVSWS -ISOLATION VALVE SEAL WATER SYSTEM
PRT -PRESSURIZER RELIEF TANK
WHT -WASTE HOLDUP TANK
ST -TEMPORARY STRAINER
SRST -SPENT RESIN STORAGE TANK
HUT -HOLDUP TANK
WGCP -WASTE GAS COMPRESSOR PACKAGE (WDS)
△ -CONTAINMENT PENETRATIONS
⬡ -SEISMIC CLASSIFICATION

NOTES:

A. VALVE FAILS WITH FLOW TO VOLUME CONTROL TANK
B. VALVE FUNCTIONS AS ISOLATION VALVE ONLY. OVER PRESSURE PROTECTION FOR THE REGENERATIVE HEAT EXCHANGER PROVIDED BY CH-8282.
C. SPECIAL SPRING LOADED CHECK VALVE
D. DIAPHRAGM SEAL
E. ELECTROMAGNETIC-METER LOCATED IN VERT. PIPE RUN
F. .06" DIA. HOLE IN CLAPPER OR CUP
G. ADDITIONAL VENTS & DRAINS MAY BE INSTALLED SEE PIPING LAYOUT.
H. GLOBE VALVES ARE NORMALLY INSTALLED WITH FLOW UNDER THE SEAT. EXCEPTIONS ARE VALVES NO. 230, 232, 233, 235, 236, 238, 240A THRU D INCL, AND 333
J.
K. LOOP SEAL EXTENDS 12" BELOW AND ABOVE OVERFLOW NOZZLE
M. CHECK VALVES 251E, F, G, ARE LOCATED NEAR CONTAINMENT WALL
N. CHECK VALVES 251A, B, C, ARE LOCATED NEAR REACTOR COOLANT PUMPS
P. TEMPORARY (START-UP) STRAINER ST-764, ST-765, ST-3, ST-4 & ST-5 WERE INSTALLED FOR INITIAL FLUSH. STRAINER BASKETS HAVE BEEN REMOVED UNDER MWR'S 93-10097, 93-10098, 93-10101, 93-10102, & 93-10103.
R. FE-156, FE-157, FE-158 AND FE-159 ARE FLOW RESTRICTING ORIFICES INSTALLED PER EC-54478

NOTE:
ALL PIPING ON THIS DRAWING IS SEISMIC CLASS I EXCEPT AS NOTED

NOTE:
ALL VALVE NO'S ARE PRECEDED BY 'CH' AS THE SYSTEM DESIGNATION EXCEPT AS NOTED

REDRAWN FROM (W) DWG. 685J398

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
55	INCORPORATED EC-60368	1/24/18	AR		

REVISIONS

DWN | CHK'D
DES SUPV
DISCIPLINE ENG
DISCIPLINE MGR.
PROJ APPROVAL
DATE

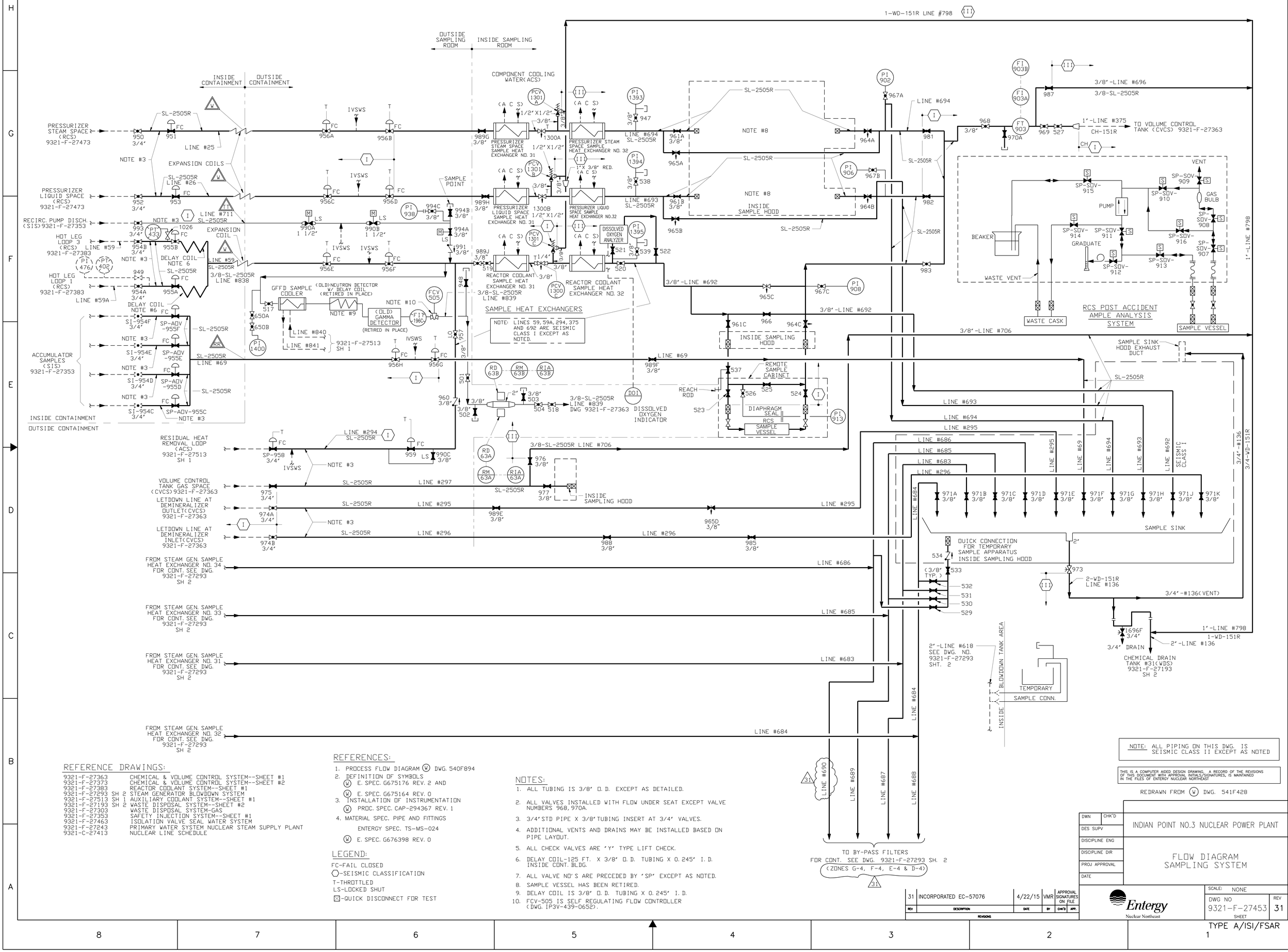
INDIAN POINT NO.3 NUCLEAR POWER PLANT

FLOW DIAGRAM
CHEMICAL & VOLUME CONTROL SYSTEM
SHEET NO.1

Entergy
Nuclear Northeast

SCALE: NONE

DWG NO 9321-F-27363 SHEET | REV 55



REFERENCE DRAWINGS:

9321-F-27363	CHEMICAL & VOLUME CONTROL SYSTEM--SHEET #1
9321-F-27373	CHEMICAL & VOLUME CONTROL SYSTEM--SHEET #2
9321-F-27383	REACTOR COOLANT SYSTEM--SHEET #1
9321-F-27293 SH 2	STEAM GENERATOR BLOWDOWN SYSTEM
9321-F-27513 SH 1	AUXILIARY COOLANT SYSTEM--SHEET #1
9321-F-27193 SH 2	WASTE DISPOSAL SYSTEM--SHEET #2
9321-F-27303	WASTE DISPOSAL SYSTEM-GAS
9321-F-27353	SAFETY INJECTION SYSTEM--SHEET #1
9321-F-27463	ISOLATION VALVE SEAL WATER SYSTEM
9321-F-27243	PRIMARY WATER SYSTEM NUCLEAR STEAM SUPPLY PLANT
9321-C-27413	NUCLEAR LINE SCHEDULE

REFERENCES:

1. PROCESS FLOW DIAGRAM (W) DWG. 540F894
2. DEFINITION OF SYMBOLS
   (W) E. SPEC. G675176 REV. 2 AND
   (W) E. SPEC. G675164 REV. 0
3. INSTALLATION OF INSTRUMENTATION
   (W) PROC. SPEC. CAP-294367 REV. 1
4. MATERIAL SPEC. PIPE AND FITTINGS
   ENTERGY SPEC. TS-MS-024
   (W) E. SPEC. G676398 REV. 0

LEGEND:

FC-FAIL CLOSED
⬡-SEISMIC CLASSIFICATION
T-THROTTLED
LS-LOCKED SHUT
☒-QUICK DISCONNECT FOR TEST

NOTES:

1. ALL TUBING IS 3/8" O.D. EXCEPT AS DETAILED.
2. ALL VALVES INSTALLED WITH FLOW UNDER SEAT EXCEPT VALVE NUMBERS 968, 970A.
3. 3/4"STD PIPE X 3/8"TUBING INSERT AT 3/4" VALVES.
4. ADDITIONAL VENTS AND DRAINS MAY BE INSTALLED BASED ON PIPE LAYOUT.
5. ALL CHECK VALVES ARE 'Y' TYPE LIFT CHECK.
6. DELAY COIL-125 FT. X 3/8" O.D. TUBING X 0.245" I.D. INSIDE CONT. BLDG.
7. ALL VALVE NO'S ARE PRECEDED BY 'SP' EXCEPT AS NOTED.
8. SAMPLE VESSEL HAS BEEN RETIRED.
9. DELAY COIL IS 3/8" O.D. TUBING X 0.245" I.D.
10. FCV-505 IS SELF REGULATING FLOW CONTROLLER (DWG. IP3V-439-0652).

NOTE: ALL PIPING ON THIS DWG. IS SEISMIC CLASS II EXCEPT AS NOTED

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST

REDRAWN FROM (W) DWG. 541F428

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
31	INCORPORATED EC-57076	4/22/15	VMR	APPROVAL SIGNATURES ON FILE	

REVISIONS

DWN	CHK'D
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE DIR	
PROJ APPROVAL	
DATE	

INDIAN POINT NO.3 NUCLEAR POWER PLANT

FLOW DIAGRAM SAMPLING SYSTEM

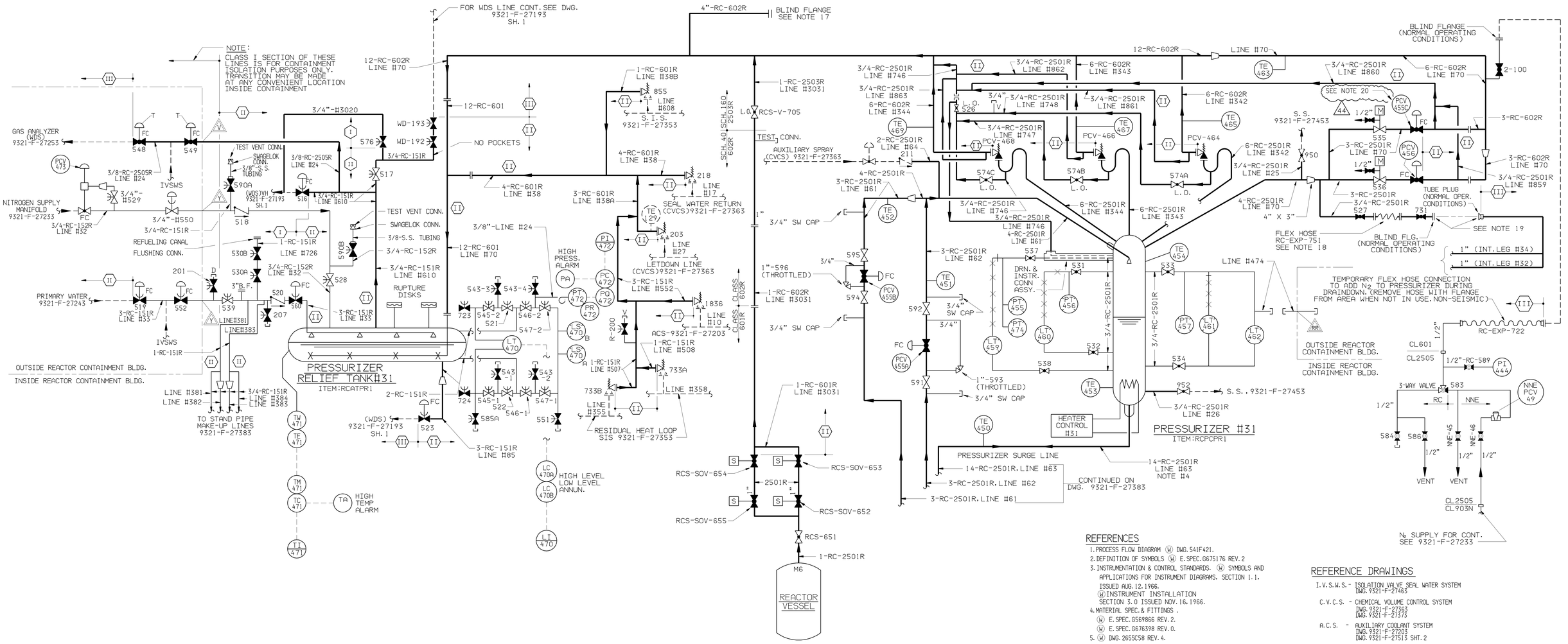
Entergy Nuclear Northeast

SCALE: NONE

DWG NO 9321-F-27453 SHEET

REV 31

TYPE A/ISI/FSAR



REFERENCES

1. PROCESS FLOW DIAGRAM (W) DWG. 541F421.
2. DEFINITION OF SYMBOLS (W) E. SPEC. G675176 REV. 2
3. INSTRUMENTATION & CONTROL STANDARDS. (W) SYMBOLS AND APPLICATIONS FOR INSTRUMENT DIAGRAMS. SECTION 1.1. ISSUED AUG. 12. 1966.
   (W) INSTRUMENT INSTALLATION SECTION 3.0 ISSUED NOV. 16. 1966.
4. MATERIAL SPEC. & FITTINGS .
   (W) E. SPEC. G569866 REV. 2.
   (W) E. SPEC. G676398 REV. 0.
5. (W) DWG. 2655C58 REV. 4.

NOTES

1-29"INSIDE DIAMETER
2-31"INSIDE DIAMETER.
3-27.5"INSIDE DIAMETER.
4-SCHEDULE 140 PIPE.
5-GLOBE VALVES NORMALLY INSTALLED WITH FLOW UNDER SEAT.
6-LOCATED OUTSIDE SECONDARY SHIELD WALL.
VALVE NO. 501 IS FROM INNER O-RING.
VALVE NO. 502 IS FROM OUTER O-RING.
7-SPRAY LINE SCOOP.
8-ELBOW FLOW METERS.
9-7FT. LG. . 6"DIA. SCHEDULE 10S STAND PIPE. BOTH ENDS CAPPED.
10-PIPE SLOPED DOWNHILL TO DRAIN TANK.
11-ALL SCOOPS LOCATED IN THE SAME CROSS-SECTIONAL PLANE.
12-ROOT VALVE IS LOCATED ABOVE ELEVATION OF REACTOR VESSEL NOZZLES.
13-VESSEL VENT LINE AND GASKET MONITORING LINES FURNISHED WITH VESSEL.
14-VALVES 539. 540. 541 & 542 ARE LOCATED BELOW HOT LEG PIPING.
15-FOR SEAL LEAKOFF SEE DWG. 9321-F-26473 FOR VALVES 535. 536. 455A & B.
16-ALL VALVE NO'S. ARE PRECEDED BY "RC" UNLESS OTHERWISE NOTED.
17-THIS CONNECTION SHALL BE USED FOR THE RCS VACUUM REFILL CONNECTION. SEE OPERATING PROCEDURE NO. SOP-RCS-017
18-FLEX HOSE RC-EXP-751 IS A SPECIALTY ITEM NOT GOVERNED BY PIPE CLASS 2501 AND IS RATED FOR THE PRESSURIZER DESIGN CONDITIONS.
19-THESE CONNECTIONS ARE USED WITH LT-390 DURING REDUCED INVENTORY OPERATIONS.
20-FOR OPERATING CYCLE 19, THE ACOUSTIC MONITOR FOR RC-PCV-455C IS NOT FUNCTIONAL. REFER TO EC-56516 FOR THE EVALUATION THAT JUSTIFIES THE ACCEPTABILITY OF USING ALTERNATE INDICATION TO IDENTIFY VALVE POSITION OF RC-PCV-455C

REFERENCE DRAWINGS

I. V. S. W. S. - ISOLATION VALVE SEAL WATER SYSTEM DWG. 9321-F-27465
C. V. C. S. - CHEMICAL VOLUME CONTROL SYSTEM DWG. 9321-F-27363 DWG. 9321-F-27373
A. C. S. - AUXILIARY COOLANT SYSTEM DWG. 9321-F-27203 DWG. 9321-F-27513 SHT. 2
S. I. S. - SAFETY INJECTION SYSTEM DWG. 9321-F-27353 DWG. 9321-F-27503
S. S. - SAMPLING SYSTEM DWG. 9321-F-27453
W. D. S. - WASTE DISPOSAL SYSTEM DWG. 9321-F-27193 SHT. 1 DWG. 9321-F-27303
R. C. S. - REACTOR COOLANT SYSTEM DWG. 9321-F-27385
NUCLEAR LINE LIST DWG. 9321-C-27413
REACTOR HEAD VENT SYSTEM DWG. 6604-171-F-1

LEGEND

D T - DRAIN TANK (WDS)
V - VENT TO ATMOSPHERE
F O - FAIL OPEN
F C - FAIL CLOSED
T - TRIP ON CONTAINMENT ISOLATION SIGN
V H - VENT HEADER
D - LOCAL DRAIN
△ CONTAINMENT PENETRATION
⬡ SEISMIC CLASSIFICATION

NOTE:
ALL PIPING ON THIS DWG. IS SEISMIC CLASS I EXCEPT AS NOTED.

REDRAWN FROM (W) DWG. 685J413

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
44	INCORPORATED EC-56516	4/1/15	VMR	APPROVAL SIGNATURES ON FILE	

REVISIONS

DWN/CHK'D	
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE DIR	
PROJ APPROVAL	
DATE	

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

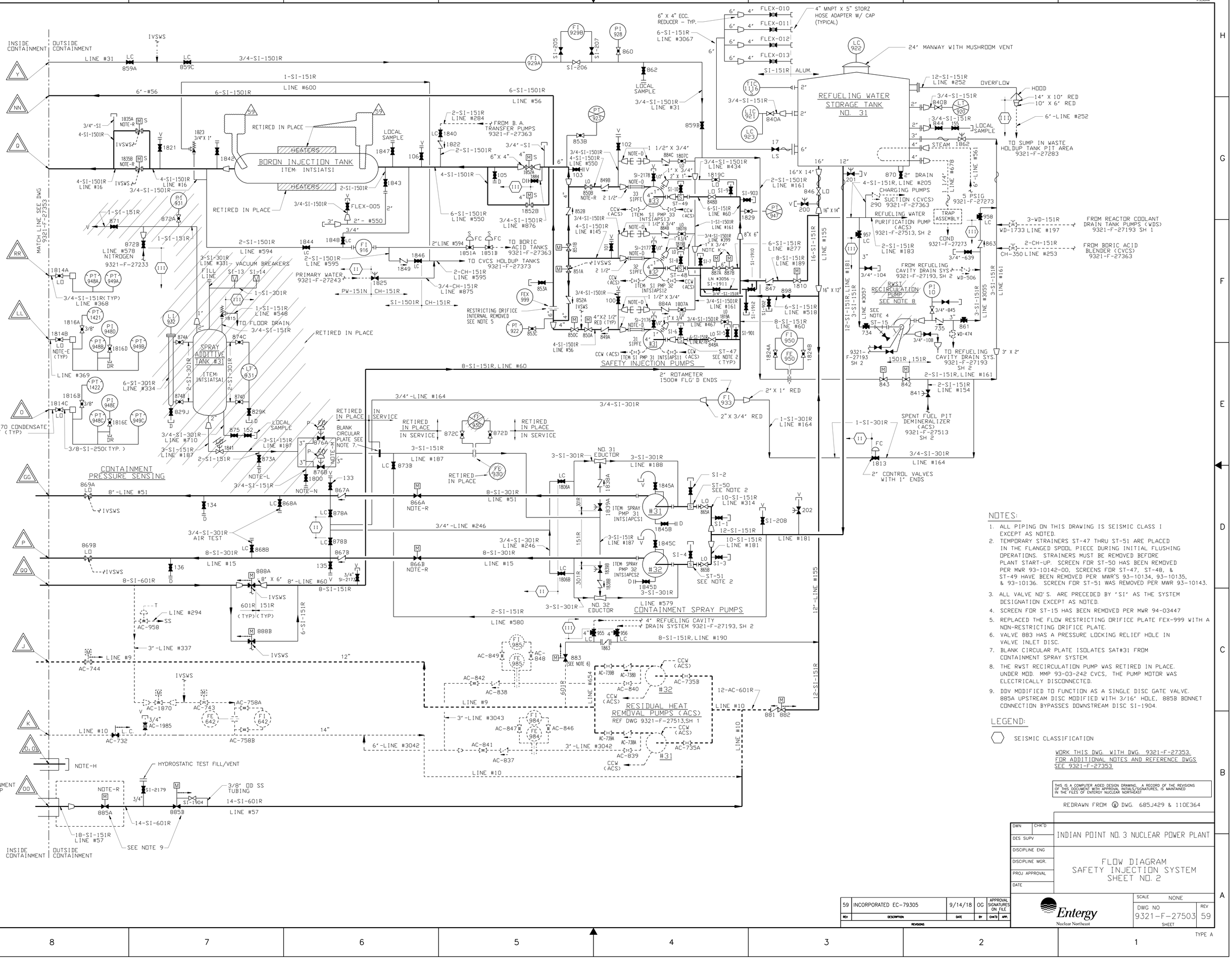
FLOW DIAGRAM
REACTOR COOLANT SYSTEM
SHEET NO. 2

Entergy Nuclear Northeast

SCALE NONE
DWG NO 9321-F-27473
REV 44
SHEET

TYPE A/ISI/FSAR

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES. IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST.



NOTES:

1. ALL PIPING ON THIS DRAWING IS SEISMIC CLASS I EXCEPT AS NOTED.
2. TEMPORARY STRAINERS ST-47 THRU ST-51 ARE PLACED IN THE FLANGED SPOOL PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINERS MUST BE REMOVED BEFORE PLANT START-UP. SCREEN FOR ST-50 HAS BEEN REMOVED PER MWR 93-10142-00, SCREENS FOR ST-47, ST-48, & ST-49 HAVE BEEN REMOVED PER MWR'S 93-10134, 93-10135, & 93-10136. SCREEN FOR ST-51 WAS REMOVED PER MWR 93-10143.
3. ALL VALVE NO'S. ARE PRECEDED BY "SI" AS THE SYSTEM DESIGNATION EXCEPT AS NOTED.
4. SCREEN FOR ST-15 HAS BEEN REMOVED PER MWR 94-03447
5. REPLACED THE FLOW RESTRICTING ORIFICE PLATE FEX-999 WITH A NON-RESTRICTING ORIFICE PLATE.
6. VALVE 883 HAS A PRESSURE LOCKING RELIEF HOLE IN VALVE INLET DISC.
7. BLANK CIRCULAR PLATE ISOLATES SAT#31 FROM CONTAINMENT SPRAY SYSTEM.
8. THE RWST RECIRCULATION PUMP WAS RETIRED IN PLACE. UNDER MOD. MMP 93-03-242 CVCS, THE PUMP MOTOR WAS ELECTRICALLY DISCONNECTED.
9. DDV MODIFIED TO FUNCTION AS A SINGLE DISC GATE VALVE. 885A UPSTREAM DISC MODIFIED WITH 3/16" HOLE, 885B BONNET CONNECTION BYPASSES DOWNSTREAM DISC SI-1904.

LEGEND:

⬡ SEISMIC CLASSIFICATION

WORK THIS DWG. WITH DWG. 9321-F-27353. FOR ADDITIONAL NOTES AND REFERENCE DWGS SEE 9321-F-27353

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITIALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST

REDRAWN FROM Ⓦ DWG. 685J429 & 110E364

REV	DESCRIPTION	DATE	BY	APPROVAL SIGNATURES ON FILE CHK'D	APP.
59	INCORPORATED EC-79305	9/14/18	OG		

REVISIONS

DWN / CHK'D	
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE MGR.	
PROJ APPROVAL	
DATE	

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

FLOW DIAGRAM
SAFETY INJECTION SYSTEM
SHEET NO. 2

Entergy Nuclear Northeast

SCALE NONE

DWG NO 9321-F-27503 REV 59

SHEET

TYPE A

INSIDE REACTOR CONTAINMENT

OUTSIDE REACTOR CONTAINMENT

MATCH LINE SEE DWG. 9321-F-27203

AUXILIARY COMPONENT COOLING PUMPS

STEAM GENERATOR SAMPLE HEAT EXCHANGERS

RESIDUAL HEAT REMOVAL PUMPS

NON-REGENERATIVE HEAT EXCHANGER (CVCS)

SEAL WATER HEAT EXCHANGER (CVCS)

CHARGING PUMPS FLUID DRIVE COOLER (CVCS)

COMPONENT COOLING PUMPS

COMPONENT COOLING HEAT EXCHANGERS

SAFETY INJECTION PUMPS

PRESSURIZER STEAM SAMPLE HEAT EXCHANGERS

PRESSURIZER LIQUID SAMPLE HEAT EXCHANGERS

REACTOR COOLANT SAMPLE HEAT EXCHANGERS

NOTE:

FOR GENERAL NOTES, REFERENCES & REFERENCE DWGS SEE DWG 9321-F-27203

* LOCKED THROTTLED

LEGEND:

SEISMIC CLASSIFICATION

NOTE:
ALL PIPING ON THIS DRAWING IS SEISMIC CLASS I EXCEPT AS NOTED

THIS IS A COMPUTER AIDED DESIGN DRAWING. A RECORD OF THE REVISIONS OF THIS DOCUMENT WITH APPROVAL INITALS/SIGNATURES, IS MAINTAINED IN THE FILES OF ENTERGY NUCLEAR NORTHEAST.

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
34	INCORPORATED EC-73147	8/09/17	AR	APPROVAL SIGNATURES ON FILE	

REVISIONS

DWN	CHK'D
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE MGR.	
PROJ APPROVAL	
DATE	

INDIAN POINT NO. 3 NUCLEAR POWER PLANT

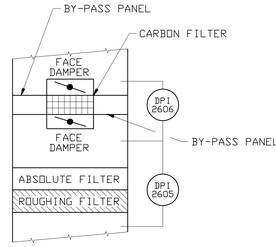
FLOW DIAGRAM
AUXILIARY COOLANT SYSTEM
IN PAB & FSB SHEET NO. 1

Entergy
Nuclear Northeast

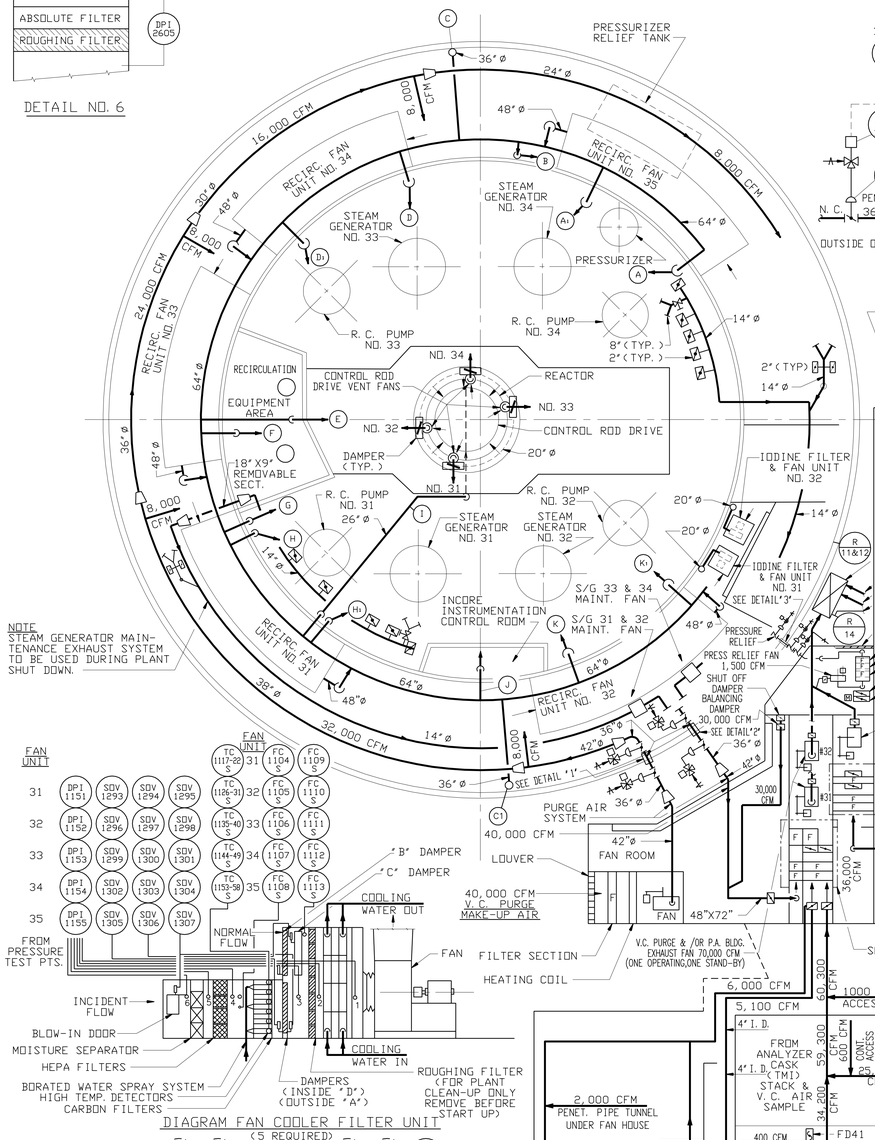
SCALE: NONE

DWG NO 9321-F-27513 REV 34

SHEET 1

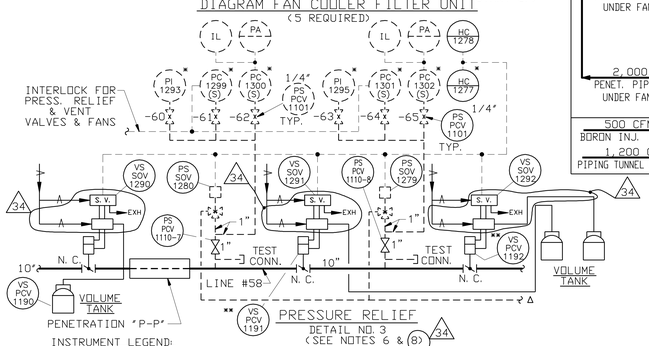


DETAIL NO. 6



NOTE
STEAM GENERATOR MAINTENANCE EXHAUST SYSTEM TO BE USED DURING PLANT SHUT DOWN.

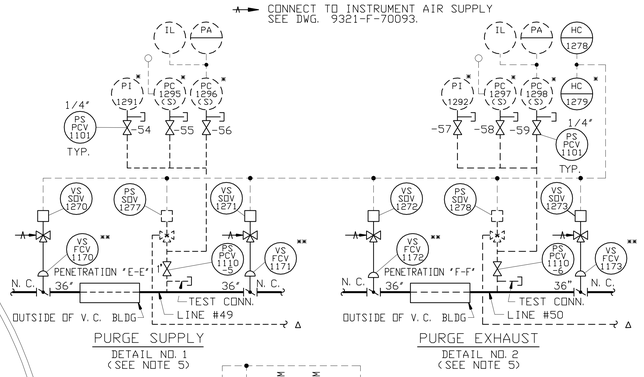
DIAGRAM FAN COOLER FILTER UNIT (5 REQUIRED)



PRESSURE RELIEF
DETAIL NO. 3
(SEE NOTES 6 & 8)

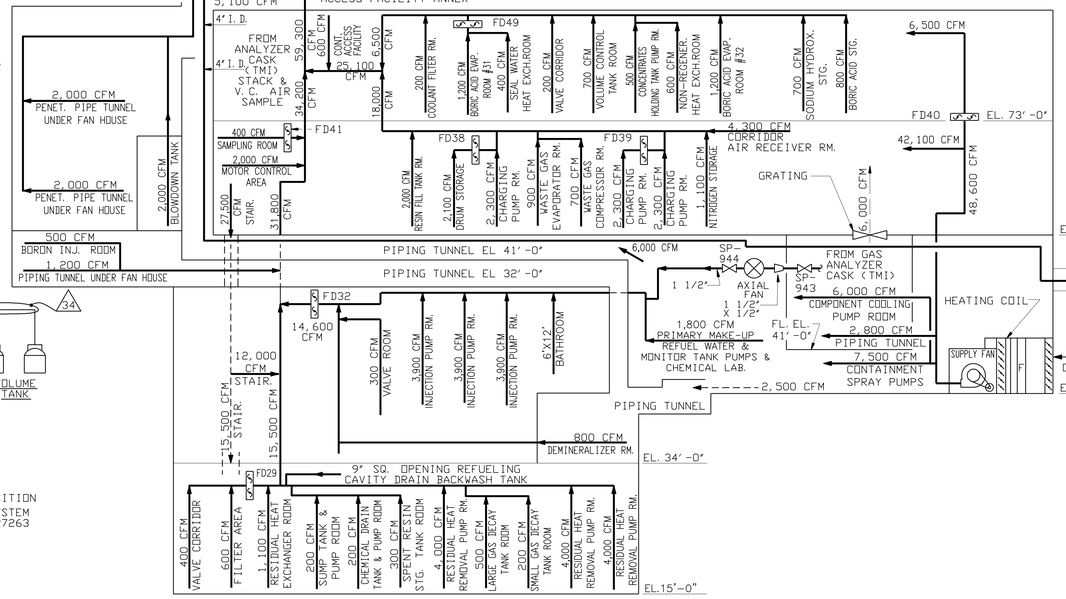
INSTRUMENT LEGEND:
- (IL) - INDICATING LIGHT
- (HC) - HAND CONTROLLER
- (PA) - PRESSURE ALARM
- (PI) - PRESSURE INDICATOR
- (PC) - PRESSURE CONTROLLER
- (PCV) - PRESSURE CONTROL VALVE
- (SDV) - SOLENOID VALVE
- (FCV) - FLOW CONTROL VALVE

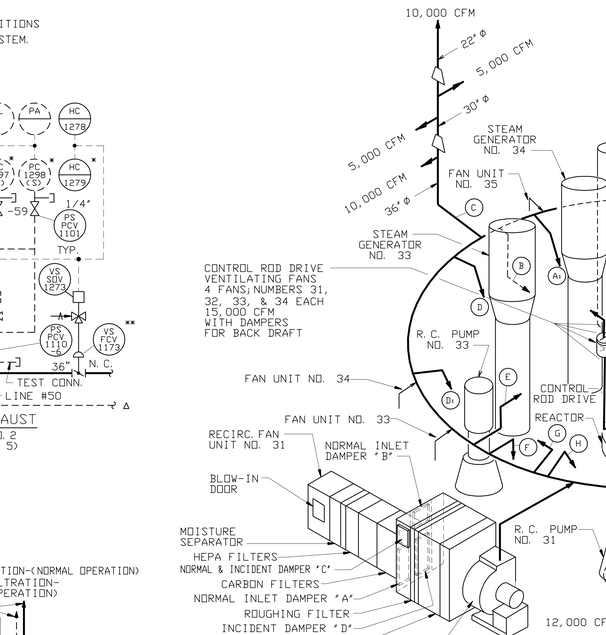
- * LOCATE IN FAN ROOM
- ** VALVES FURNISHED WITH DPDT LIMIT SWITCHES IN OPENED AND CLOSED POSITION
- Δ CONNECT TO V. C. PRESSURIZATION SYSTEM SEE DWGS. 9321-F-70523 & 9321-F-27263
- CONNECT TO INSTRUMENT AIR SUPPLY SEE DWG. 9321-F-70093
- CONNECT TO V. C. PURGE SYSTEM SEE DWG. 9321-F-70523
- O INTERLOCK FOR PURGE VENT VALVES & FANS



PURGE SUPPLY
DETAIL NO. 1
(SEE NOTE 5)

PURGE EXHAUST
DETAIL NO. 2
(SEE NOTE 5)



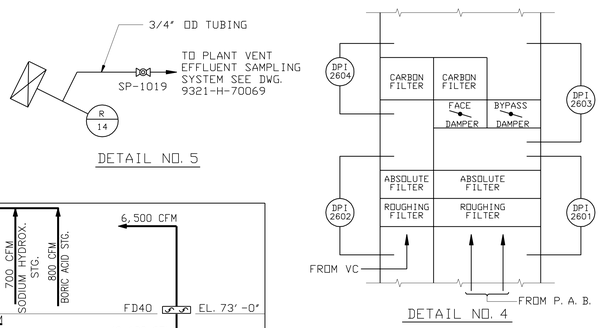


FAN-COOLER-FILTER UNIT (TYPICAL)

DIAGRAM OF CONTAINMENT AIR RECIRCULATION SYSTEM
PURGE SYSTEM NOT SHOWN.

FAN COOLER FILTER UNIT DAMPER & GAGE SCHEDULE				
FAN COOLER UNIT	DAMPER 'A' &'B' (NORMAL INLET)	DAMPER 'C' (NORMAL & INCIDENT)	DAMPER 'D' & BLOW-IN DOOR	DIFFERENTIAL PRESS. INDICATOR
	SOLENOID	SOLENOID	SOLENOID	
31	SOV-1293	SOV-1294	SOV-1295	DPI-1151
32	SOV-1296	SOV-1297	SOV-1298	DPI-1152
33	SOV-1299	SOV-1300	SOV-1301	DPI-1153
34	SOV-1302	SOV-1303	SOV-1304	DPI-1154
35	SOV-1305	SOV-1306	SOV-1307	DPI-1155

AIR FLOW THRU FAN COOLER FILTER UNITS
(TYPICAL FOR EACH UNIT)
DAMPERS A+B+C=70,000 CFM UNDER NORMAL CONDITIONS
DAMPER D = 8,000 CFM UNDER INCIDENT CONDITIONS
DAMPER C = 26,000 CFM UNDER INCIDENT CONDITIONS
BLOW-IN DOOR = 8,000 CFM UNDER INCIDENT CONDITIONS



DETAIL NO. 5

DETAIL NO. 4

AIR DISTRIBUTION SCHEDULE:

- (A) + (A1) = 58,675 CFM TO R. C. PUMP, STM. GEN. & PRESSURIZER AREA
- (B) = 2,000 CFM TO PRESS. RELIEF TANK AREA
- (C) + (C1) = 60,000 CFM TO DOME AREA
- (D) + (D1) = 51,275 CFM TO R. C. PUMP & STM. GEN. AREA
- (E) = 17,500 CFM ACROSS REFUELING POOL AREA
- (F) = 10,000 CFM TO RECIRCULATION EQUIPMENT AREA
- (G) = 5,000 CFM TO PASSAGE AREA
- (H) + (H1) = 51,275 CFM TO R. C. PUMP & STM. GEN. AREA
- (I) = 12,000 CFM TO AREA UNDER REACTOR
- (J) = 5,000 CFM TO INCORE INSTRUMENTATION CONTROL ROOM
- (K) + (K1) = 52,275 CFM TO R. C. PUMPS & STM. GEN. AREA

LEGEND

- AIR FLOW DURING ACCIDENT
- NORMAL AIR FLOW
- ROUGHING FILTER
- HEPA FILTER
- CARBON FILTER
- AIRFOIL BLADE DAMPERS
- DAMPERS
- L LIMIT SWITCH
- FD__ -FIRE DAMPERS
- (M) AIR OPERATED MOTOR
- (A) HIGH RADIATION ALARM
- N. O. NORMALLY OPEN
- N. C. NORMALLY CLOSED
- ELECT. SUPPLY
- ELECT. SIGNAL
- S. V. SOLENOID VALVE
- (FC) FLOW SWITCH
- (FM) FAN MOTOR
- SW SWITCH FOR MANUALLY PLACING SYSTEM IN EMERGENCY MODE OF OPERATION.
- (R.I.) RADIATION INDICATOR
- PNEUMATIC SIGNAL
- INST. AIR SUPPLY

NOTES

1. 3" FROM POST ACCIDENT CONTAINMENT VENTING SYSTEM
2. 2" #131, FROM GAS DECAY TANKS
3. ALL VALVE NO'S ARE PRECEDED BY 'VS' AS THE SYSTEM DESIGNATION EXCEPT AS NOTED.
4. ALL HVAC SYSTEMS ARE SEISMIC CLASS I EXCEPT PAB SUPPLY HEATING COILS, WASTE HOLD-UP AIR TEMPERING UNIT, FSB STEAM SUPPLY AND CONDENSATE.
5. CONTAINMENT ISOLATION VALVES FCV-1170 & FCV-1171 (PURGE SUPPLY) AND FCV-1172 & FCV-1173 (PURGE EXHAUST) ARE CLOSED DURING NORMAL OPERATIONS.
6. CONTAINMENT ISOLATION VALVES PCV-1190, PCV-1191 & PCV-1192 (PRESSURE RELIEF) ARE CLOSED DURING NORMAL OPERATIONS. THESE VALVES MAY BE OPENED INTERMITTENTLY DURING NORMAL OPERATIONS FOR PRESSURE RELIEF.
7. THE VC PURGE AIR SYSTEM WAS DESIGNED FOR 40,000 CFM. THE MEASURED FLOW RATE WAS APPROXIMATELY 28,000 CFM.
8. REFER TO DRAWING A210844 FOR PNEUMATIC CONTROLS FOR VS-PCV-1190, VS-PCV-1191 & VS-PCV-1192.

SPECIFICATION:

9321-05-45-24 PLANT HEATING, VENTILATING & AIR CONDITIONING SYSTEMS. (REFERENCE ONLY)

REV	DESCRIPTION	DATE	BY	CHK'D	APP.
34	INCORPORATED EC-33393 & EC-43615	3/26/13	RM		APPROVAL SIGNATURES ON FILE

REVISIONS

DWN/CHK'D	INDIAN POINT NO. 3 NUCLEAR POWER PLANT
DES SUPV	
DISCIPLINE ENG	
DISCIPLINE DIR	FLOW DIAGRAM VENTILATION SYSTEM FOR CONTAINMENT, PRIMARY AUXILIARY AND FUEL STORAGE BUILDINGS
PROJ APPROVAL	
DATE	

Entergy Nuclear Northeast

SCALE: NONE
DWG NO 9321-F-40223
REV 34
SHEET

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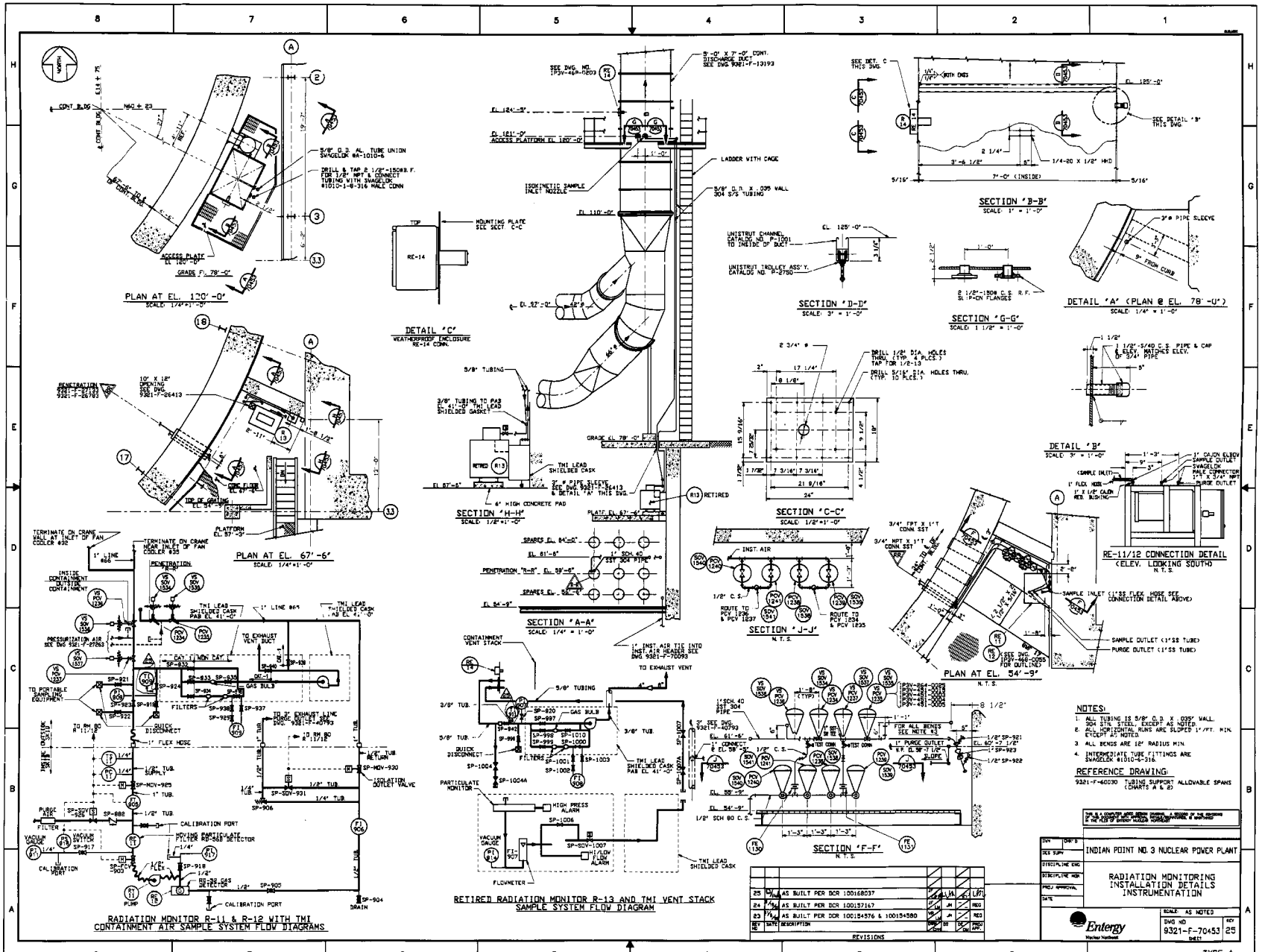
PLAN AT EL. 120'-0"
SCALE: 1/4"=1'-0"
PLAN AT EL. 67'-6"
SCALE: 1/4"=1'-0"
DETAIL 'C'
WEATHERPROOF ENCLOSURE RE-14 CONN.
SECTION 'H-H'
SCALE: 1/2"=1'-0"
SECTION 'A-A'
SCALE: 1/4" = 1'-0"
SECTION 'C-C'
SCALE: 1/2"=1'-0"
SECTION 'J-J'
N.T.S.
SECTION 'D-D'
SCALE: 3" = 1'-0"
SECTION 'G-G'
SCALE: 1 1/2" = 1'-0"
SECTION 'B-B'
SCALE: 1" = 1'-0"
DETAIL 'A' (PLAN @ EL. 78'-0")
SCALE: 1/4" = 1'-0"
DETAIL 'B'
SCALE: 3" = 1'-0"
RE-11/12 CONNECTION DETAIL
(ELEV. LOOKING SOUTH)
N.T.S.
PLAN AT EL. 54'-9"
N.T.S.
SECTION 'F-F'
N.T.S.
RADIATION MONITOR R-11 & R-12 WITH TMI
CONTAINMENT AIR SAMPLE SYSTEM FLOW DIAGRAMS
RETIRED RADIATION MONITOR R-13 AND TMI VENT STACK
SAMPLE SYSTEM FLOW DIAGRAM
NOTES:
1. ALL TUBING IS 5/8" O.D. X .035" WALL, 304 STN. STEEL, EXCEPT AS NOTED.
2. ALL HORIZONTAL RUNS ARE SLOPED 1"/FT. MIN. EXCEPT AS NOTED.
3. ALL BENDS ARE 12" RADIUS MIN.
4. INTERMEDIATE TUBE FITTINGS ARE SWAGELOK #1010-6-316.
REFERENCE DRAWING:
9321-F-60030 TUBING SUPPORT ALLOWABLE SPANS (CHARTS A & B)
REVISIONS
25 AS BUILT PER DCR 100168037
24 AS BUILT PER DCR 100157167
23 AS BUILT PER DCR 100154576 & 100154580
INDIAN POINT NO. 3 NUCLEAR POWER PLANT
RADIATION MONITORING INSTALLATION DETAILS INSTRUMENTATION
Entergy
DWG NO 9321-F-70453 SHT 25 REV
SCALE AS NOTED
TYPE A