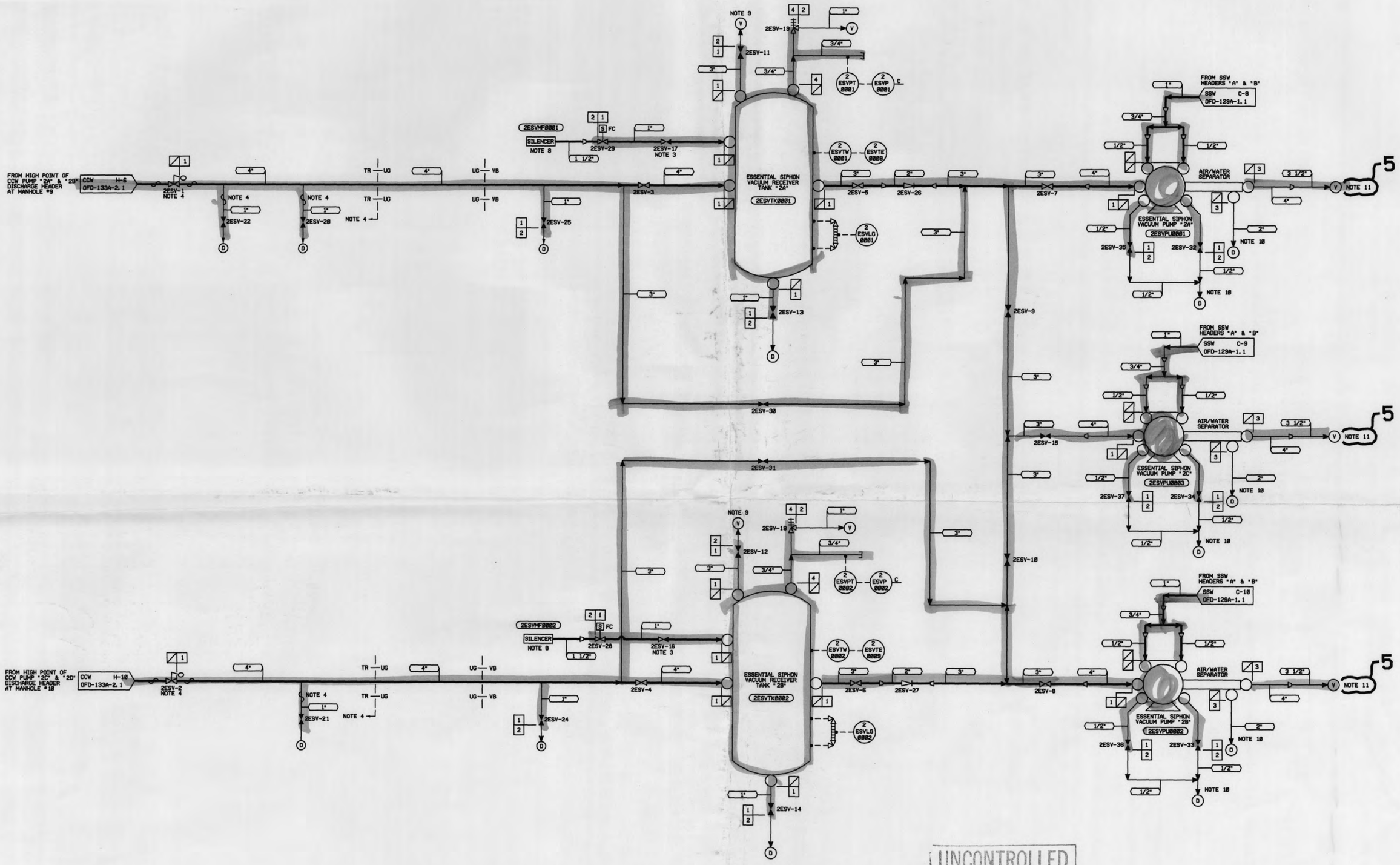
DWG. NO. OFD-130A-2.1 REV. 5



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Docket # 50-269
Accession # 9905ST0128
Date 12/21/99 of Ltr
Regulatory Docket File

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: NORMAL ESV PUMP ALIGNMENT TO MAINTAIN SIPHON READINESS.

3. MINIMUM FLOW LINE THROTTLE VALVES (1ESV-16, 17) LOCKED THROTTLED TO ALLOW GREATER THAN 85#/HR. OF DRY AIR FLOW FOR ESV PUMP PROTECTION.
4. LINE TO BE HEAT TRACED AROUND THE FLOAT VALVE AND AT LOW POINTS TO PREVENT FLUID FROM FREEZING.
5. ALL 4" PIPING IN TRENCHES SHALL HAVE 2 1/2 " FIBERGLASS INSULATION. OTHER INSULATION SHALL BE IN ACCORDANCE WITH OSS-0241.00-00-0004.
6. THE HEAT TRACED PIPING TEMPERATURE CAN APPROACH THE HIGH DESIGN TEMPERATURE DURING HOT WEATHER, AT THE FLOAT VALVES AND AT THE LOW POINTS. ESV FLOAT VALVE HEAT TRACE IS SELF REGULATING. ESV LOW POINTS REQUIRE A FAILURE OF BOTH THE AMBIENT AIR THERMOSTAT AND LOCAL CONTROLLER TO REACH HIGHER TEMPERATURES. PIPING LOCATED INSIDE THE VACUUM BUILDING CAN REACH 125°F DURING HOT WEATHER WITH THE EXHAUST FANS OFF.
7. NORMAL OPERATING TEMPERATURE WILL BE APPROXIMATELY 20-30°F ABOVE LAKE WATER TEMPERATURE.
8. TEMPORARILY REMOVE SILENCER & REPLACE WITH ROTAMETER TO SET MIN. FLOW VALVE.
9. ROTAMETER TO BE ATTACHED AT VENT TO MEASURE PUMP CAPACITY DURING PERIODIC PERFORMANCE TESTING. ALL OTHER VALVES ENTERING TANK SHALL BE CLOSED DURING TESTS.
10. STAINLESS STEEL (PS-151.4a) MAY BE SUBSTITUTED FOR 2" AIR/WATER SEPARATOR DRAINS AND 1/2" PUMP SEAL DRAINS.
11. PUMP DISCHARGE COVERS ARE NON-QA 5

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIALS	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	35 PSIG	100°F/125°F/130°F (NOTE 6)	SS	151.4(a)	40	C
2	G	ATM	100°F/125°F/130°F (NOTE 6)	SS	151.4	40	-
3	F	ATM	170°F (NOTE 7)	SS	151.4	40	C
4	F	35 PSIG	100°F/125°F/130°F (NOTE 6)	SS	151.4	40	C

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC	MECH
5	REV. PER NSM ON-53000/00, PT. CM3	BKB	6-16-99	TEH	6-16-99	PMS	6-17-99	AKP	SCA	HEH
4	REV. PER NSM ON-53000/00, PT. CM3	BKB	3-31-99	TEH	3-31-99	RLB	3-31-99	AKP	EHM	HEH
3	REV. PER NSM ON-53000/00, PT. CM3	BKB	11-23-98	TEH	11-23-98	PMS	11-24-98	AKP	MHM	HEH
2	REV. PER NSM ON-53000/00, PT. CM3	TEH	5-13-98	BKB	5-13-98	PMS	5-13-98	AKP	SCA	ESF
1	REV. PER NSM ON-52932/00, PT. AM3,	BKB	4-24-98	TEH	4-24-98	PMS	4-24-98	GLA	MHM	HEH
--	NSM ON-23000/00, PT. CM1,	--	--	--	--	--	--	--	--	--
--	NSM ON-53000/00, PT. CK1,	--	--	--	--	--	--	--	--	--
--	AND ON-53000/00, PT. CM2 & CM3	--	--	--	--	--	--	--	--	--
0	REL. PER NSM ON-53000/00, PT. CM1	BKB	9-23-97	TEH	9-23-97	PMS	9-23-97	GLA	SCA	HEH

INSPECTED

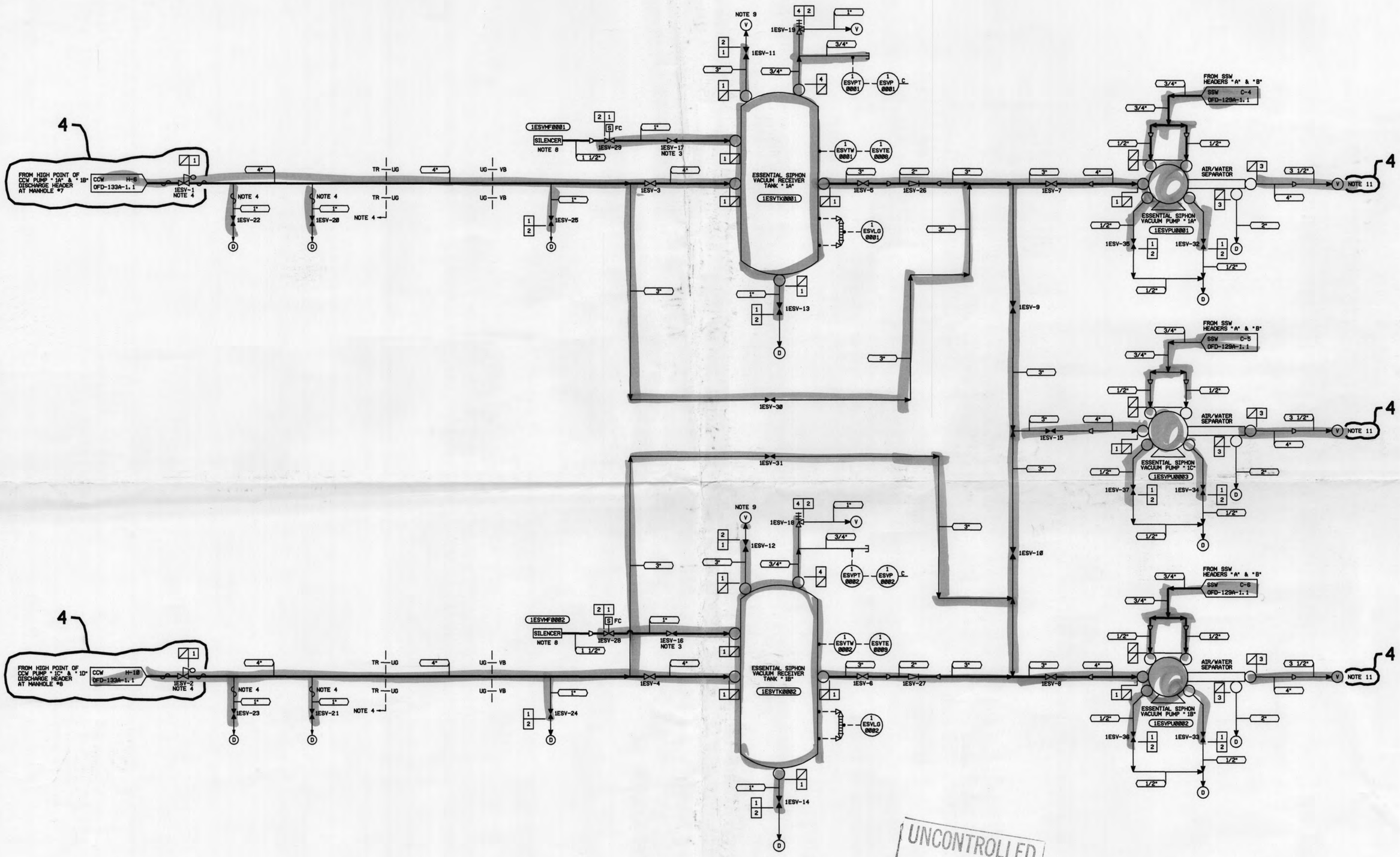
DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 2

FLOW DIAGRAM OF ESSENTIAL SIPHON VACUUM (ESV) SYSTEM

DESIGNER BK BYRUM DATE 7-25-96 INSP. SC ARNOLD DATE 7-26-96
DRAWN BK BYRUM DATE 7-25-96 INSP. GL ARMENTROUT DATE 7-26-96
CHECKED TE HUGHES DATE 7-25-96 APPR. PM STREET DATE 7-29-96

SCALE N/A DWG. NO. OFD-130A-2.1 REV. 5

ERN: OX00905V



NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: NORMAL ESV PUMP ALIGNMENT TO MAINTAIN SIPHON READINESS.

3. MINIMUM FLOW LINE THROTTLE VALVES (1ESV-16, 17) LOCKED THROTTLED TO ALLOW GREATER THAN 85#/HR. OF DRY AIR FLOW FOR ESV PUMP PROTECTION.
4. LINE TO BE HEAT TRACED AROUND THE FLOAT VALVE AND AT LOW POINTS TO PREVENT FLUID FROM FREEZING.
5. ALL 4" PIPING IN TRENCHES SHALL HAVE 2 1/2" FIBERGLASS INSULATION. OTHER INSULATION SHALL BE IN ACCORDANCE WITH OSS-0241.00-00-0004.
6. THE HEAT TRACED PIPING TEMPERATURE CAN APPROACH THE HIGH DESIGN TEMPERATURE DURING HOT WEATHER, AT THE FLOAT VALVES AND AT THE LOW POINTS. ESV FLOAT VALVE HEAT TRACE IS SELF REGULATING. ESV LOW POINTS REQUIRE A FAILURE OF BOTH THE AMBIENT AIR THERMOSTAT AND LOCAL CONTROLLER TO REACH HIGHER TEMPERATURES. PIPING LOCATED INSIDE THE VACUUM BUILDING CAN REACH 125°F DURING HOT WEATHER WITH THE EXHAUST FANS OFF.
7. NORMAL OPERATING TEMPERATURE WILL BE APPROXIMATELY 28-38°F ABOVE LAKE WATER TEMPERATURE.
8. TEMPORARILY REMOVE SILENCER & REPLACE WITH ROTAMETER TO SET MIN. FLOW VALVE.
9. ROTAMETER TO BE ATTACHED AT VENT TO MEASURE PUMP CAPACITY DURING PERIODIC PERFORMANCE TESTING. ALL OTHER VALVES ENTERING TANK SHALL BE CLOSED DURING TESTS.
10. STAINLESS STEEL (PS-151.4a) MAY BE SUBSTITUTED FOR 2" AIR/WATER SEPARATOR DRAINS AND 1/2" PUMP SEAL DRAINS.
11. PUMP DISCHARGE COVERS ARE NON-QA. 4

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIALS	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	35 PSIG	100°F/125°F/130°F (NOTE 6)	SS	151.4(a)	40	C
2	O	ATM	100°F/125°F/130°F (NOTE 6)	SS	151.4	40	-
3	F	ATM	170°F (NOTE 7)	SS	151.4	40	C
4	F	35 PSIG	100°F/125°F/130°F (NOTE 6)	SS	151.4	40	C

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Docket # 50-269
Accession # 9933870128
Date 12/21/99 of Ltr
Regulatory Docket File

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
4	REV. PER NSM ON-13000/00, PT. CM1	BKB	6-16-99	TEH	6-16-99	PMS	6-17-99	AKP	SCA	HEH
--	AND NSM ON-53000/00, PT. CM3									
3	REV. PER NSM ON-53000/00, PT. CM3	BKB	3-31-99	TEH	3-31-99	RLB	3-31-99	AKP	EHM	HEH
2	REV. PER NSM ON-52932/00, PT. AM3	BKB	11-23-98	TEH	11-23-98	PMS	11-24-98	AKP	MHM	HEH
--	AND NSM ON-53000/00, PT. CK1 & CM3									
1	REV. PER ON-53000/00, PT. CM2	BKB	4-27-98	TEH	4-27-98	PMS	4-28-98	GLA	EHM	HEH
0	REL. PER NSM ON-53000/00, PT. CM1	BKB	9-23-97	TEH	9-23-97	PMS	9-23-97	GLA	SCA	HEH

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 1

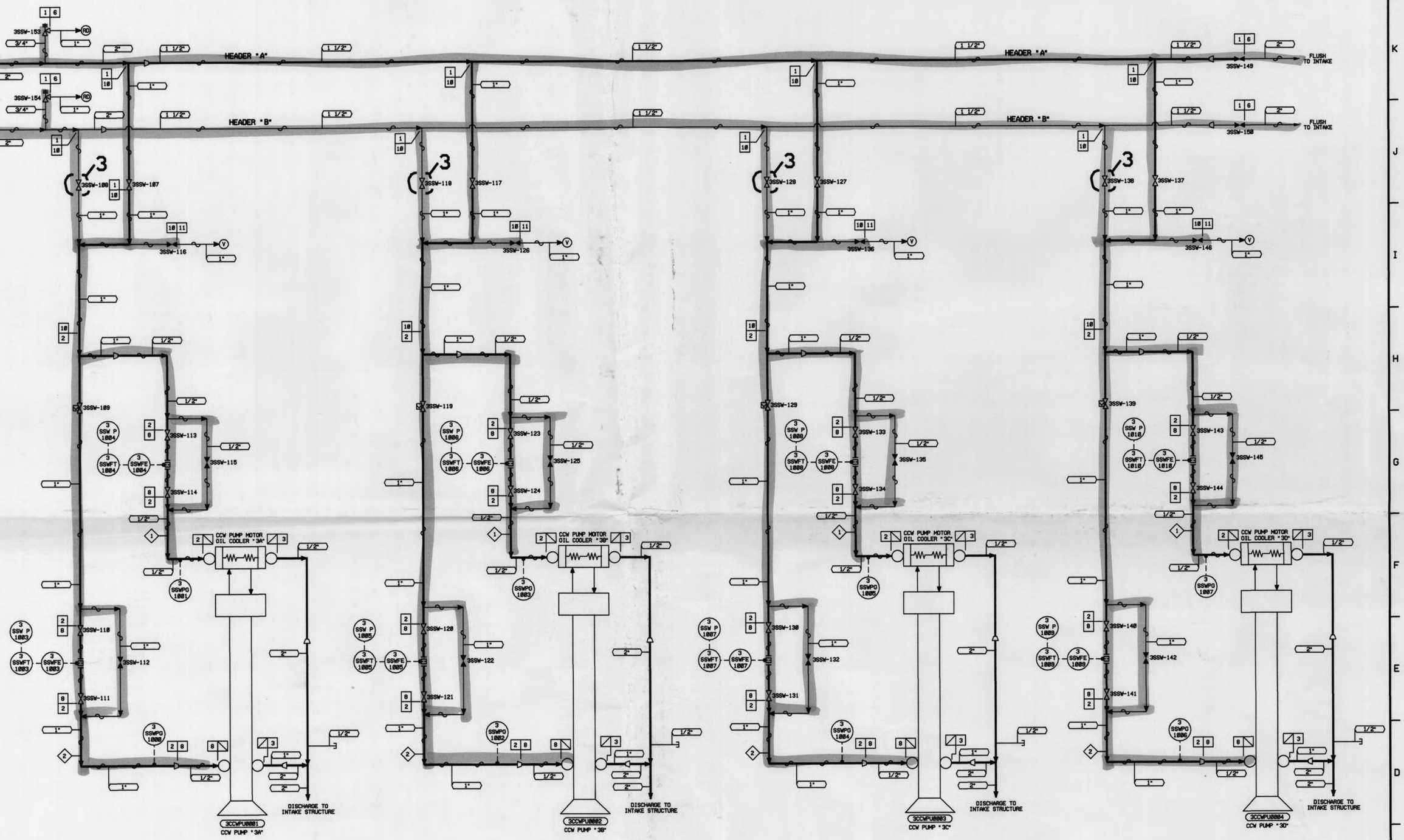
FLOW DIAGRAM OF ESSENTIAL SIPHON VACUUM (ESV) SYSTEM

DESIGNER BK BYRUM DATE 7-25-96 INSP. SC ARNOLD DATE 7-26-96
DRAWN BK BYRUM DATE 7-25-96 INSP. GL ARMENTROUT DATE 7-26-96
CHECKED TE HUGHES DATE 7-25-96 APPR. PM STREET DATE 7-29-96

SCALE N/A DWG. NO. OFD-130A-1.1 REV. 4

ERN: OX00905U

DWG. NO. OFD-129A-3.2 REV. 3



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Docket # 50-269
Accession # 9903170128
Date 12/21/99 of Ltr
Regulatory Docket File

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: CCW PUMP AND MOTOR COOLING SUPPLIED BY SSW HEADER "A".
2. 3
3. DUE TO CORROSION & FOULING S.S. MATERIALS (PS-151.4) MAY BE SUBSTITUTED FOR C.S. MATERIALS WHEN NECESSARY.
4. INSULATION ON TUBING (PROCESS AND INSTRUMENTATION) SHALL BE 1" THICK FIBEROLASS.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	150 PSIG	100°F	SS	151.4(a)	40	C
2	F	150 PSIG	130°F	SS	2781.2	-	C
3	G	150 PSIG	100°F	CS (NOTE 3)	150.6	40	-
4	G	150 PSIG	100°F	SS	151.4	40	-
6	G	ATM	100°F	SS	151.4	40	-
8	F	150 PSIG	130°F	SS	151.4	40	C
10	F	150 PSIG	130°F	SS	151.4(a)	40	C
11	G	150 PSIG	130°F	SS	151.4	40	-

3

DESIGN FLOW

NO.	FLOW
1	2.5 GPM
2	5 GPM

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
3	REV. PER ED. EX. M.9 & G.6	MSI	3-8-99	LER	3-9-99	PMS	3-11-99	RCL	JAK	HEH
2	REV. PER NSM ON-32932/00, PT. AL2	TEH	1-8-99	BKB	1-8-99	PMS	1-12-99	AKP	EHM	ESF
1	REV. PER NSM ON-32932/00, PT. AM1	BKB	11-9-98	TEH	11-9-98	PMS	11-18-98	AKP	SCA	ESF
0	REL. PER NSM ON-52932/00, PT. AM7	BKB	4-24-98	TEH	4-24-98	PMS	4-24-98	GLA	MHM	HEH

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 3

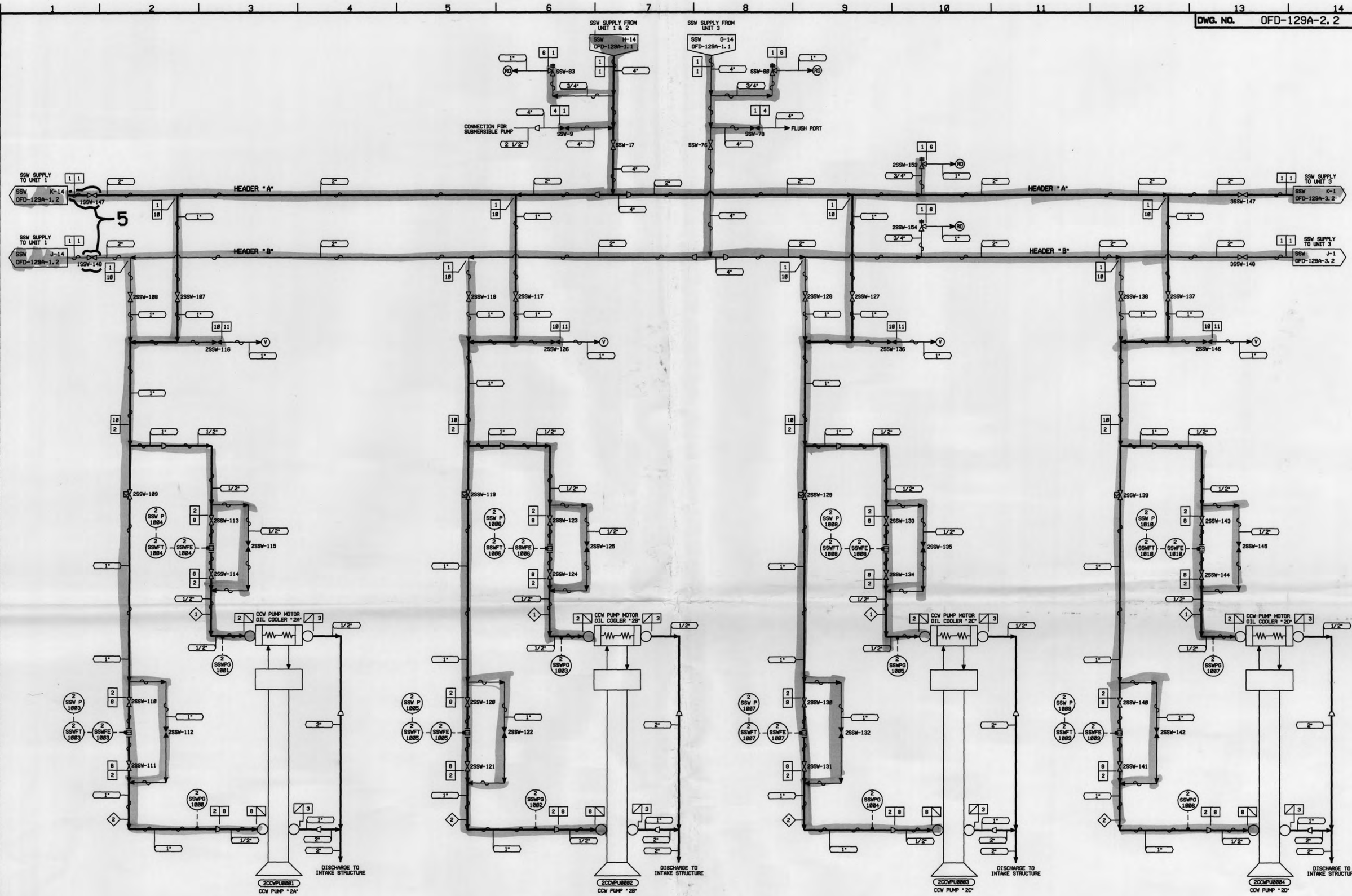
FLOW DIAGRAM OF
SIPHON SEAL WATER SYSTEM
(CCW PUMP COOLING)

DESIGNER TE HUGHES DATE 3-3-97 INSP. GL ARMENTROUT DATE 3-4-97
DRAWN BK BYRUM DATE 3-3-97 INSP. SC ARNOLD DATE 3-4-97
CHECKED TE HUGHES DATE 3-3-97 APPR. PM STREET DATE 3-4-97
SCALE

DWG. NO. OFD-129A-3.2 REV. 3

ERN: OX009054

DWG. NO. OFD-129A-2.2 REV. 5



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Docket # 50-269
Accession # 9933701128
Date 12/21/99 of Ltr
Regulatory Docket File

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: CCW PUMP AND MOTOR COOLING SUPPLIED BY SSW HEADER "A".

3. DUE TO CORROSION & FOULING S.S. MATERIALS (PS-151.4) MAY BE SUBSTITUTED FOR C.S. MATERIALS WHEN NECESSARY.
4. INSULATION ON TUBING (PROCESS AND INSTRUMENTATION) SHALL BE 1" THICK FIBERGLASS.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	150 PSIG	100°F	SS	151.4(a)	40	C
2	F	150 PSIG	130°F	SS	2701.2	-	C
3	G	150 PSIG	100°F	CS (NOTE 3)	150.6	40	-
4	G	150 PSIG	100°F	SS	151.4	40	-
6	G	ATM	100°F	SS	151.4	40	-
8	F	150 PSIG	130°F	SS	151.4	40	C
10	F	150 PSIG	130°F	SS	151.4(a)	40	C
11	G	150 PSIG	130°F	SS	151.4	40	-

DESIGN FLOW

NO.	FLOW
1	2.5 GPM
2	5 GPM

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
5	REV. PER NSM ON-12932/00, PT. AM1	BKB	6-15-99	TEH	6-15-99	PMS	6-16-99	AKP	SCA	HEH
4	REV. PER OE-13190	BKB	4-26-99	TEH	4-27-99	PMS	4-27-99	AKP	SCA	HEH
3	REV. PER ED. EX. M.9 & G.6	MSI	3-8-99	LER	3-9-99	PMS	3-11-99	RCL	JAK	HEH
2	REV. PER NSM ON-22932/00, PT. AL2	TEH	1-8-99	BKB	1-8-99	PMS	1-12-99	AKP	EHM	ESF
1	REV. PER NSM ON-32932/00, PT. AM1	BKB	11-9-98	TEH	11-9-98	PMS	11-10-98	AKP	SCA	ESF
0	REL. PER NSM ON-22932/00, PT. AM1	BKB	4-24-98	TEH	4-24-98	PMS	4-24-98	GLA	MHM	HEH
--	AND ON-52932/00, PT. AM4 & AM7									

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 2

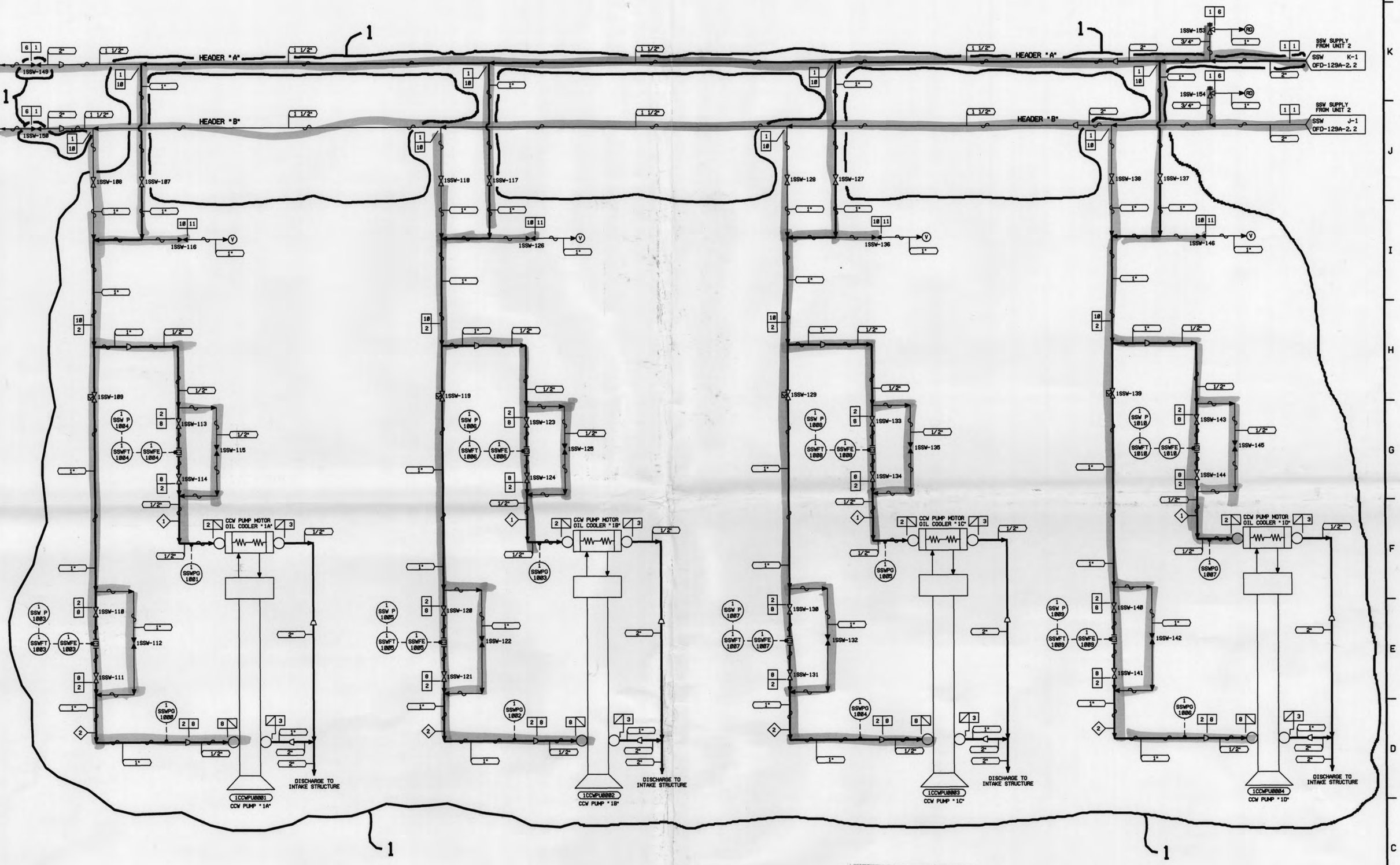
FLOW DIAGRAM OF
SIPHON SEAL WATER SYSTEM
(CCW PUMP COOLING)

DESIGNER ES FISK DATE 2-3-98
DRAWN BK BYRUM DATE 2-3-98
CHECKED TE HUGHES DATE 2-3-98
INSP. GL ARMENTROUT DATE 2-3-98
INSP. SC ARNOLD DATE 2-4-98
APPR. PM STREET DATE 2-5-98

SCALE DWG. NO. OFD-129A-2.2 REV. 5

ERN: OX009041

DWG. NO. OFD-129A-1.2 REV. 1



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Docket # 50-269
Accession # 9903570128
Date 12/21/99 of Ltr
Regulatory Docket File

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: CCW PUMP AND MOTOR COOLING SUPPLIED BY SSW HEADER "A".
2. TUBING:
   3/8" 0.035" WALL THK.
   1/2" 0.065" WALL THK.
   5/8" 0.065" WALL THK.
   1" 0.095" WALL THK.
3. DUE TO CORROSION & FOULING S.S. MATERIALS (PS-151.4) MAY BE SUBSTITUTED FOR C.S. MATERIALS WHEN NECESSARY.
4. INSULATION ON TUBING (PROCESS AND INSTRUMENTATION) SHALL BE 1" THICK FIBERGLASS.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	150 PSIG	100°F	SS	151.4(a)	40	C
2	F	150 PSIG	130°F	SS	2781.2	NOTE 2	C
3	G	150 PSIG	100°F	CS (NOTE 3)	150.6	40	-
4	G	150 PSIG	100°F	SS	151.4	40	-
6	G	ATM	100°F	SS	151.4	40	-
8	F	150 PSIG	130°F	SS	151.4	40	C
10	F	150 PSIG	130°F	SS	151.4(a)	40	C
11	G	150 PSIG	130°F	SS	151.4	40	-

DESIGN FLOW

NO.	FLOW
1	2 1/2 GPM
2	5 GPM

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE
1	REV. PER NSM ON-12932/00, PT. AM1	BKB	6-15-99	TEH	6-15-99	PMS	6-16-99
0	REL. PER NSM ON-52932/00, PT. AM7	BKB	4-24-98	TEH	4-24-98	PMS	4-24-98

INSPECTED: AKP SCA HEH; GLA MHM HEH; CIVIL ELEC. MECH.

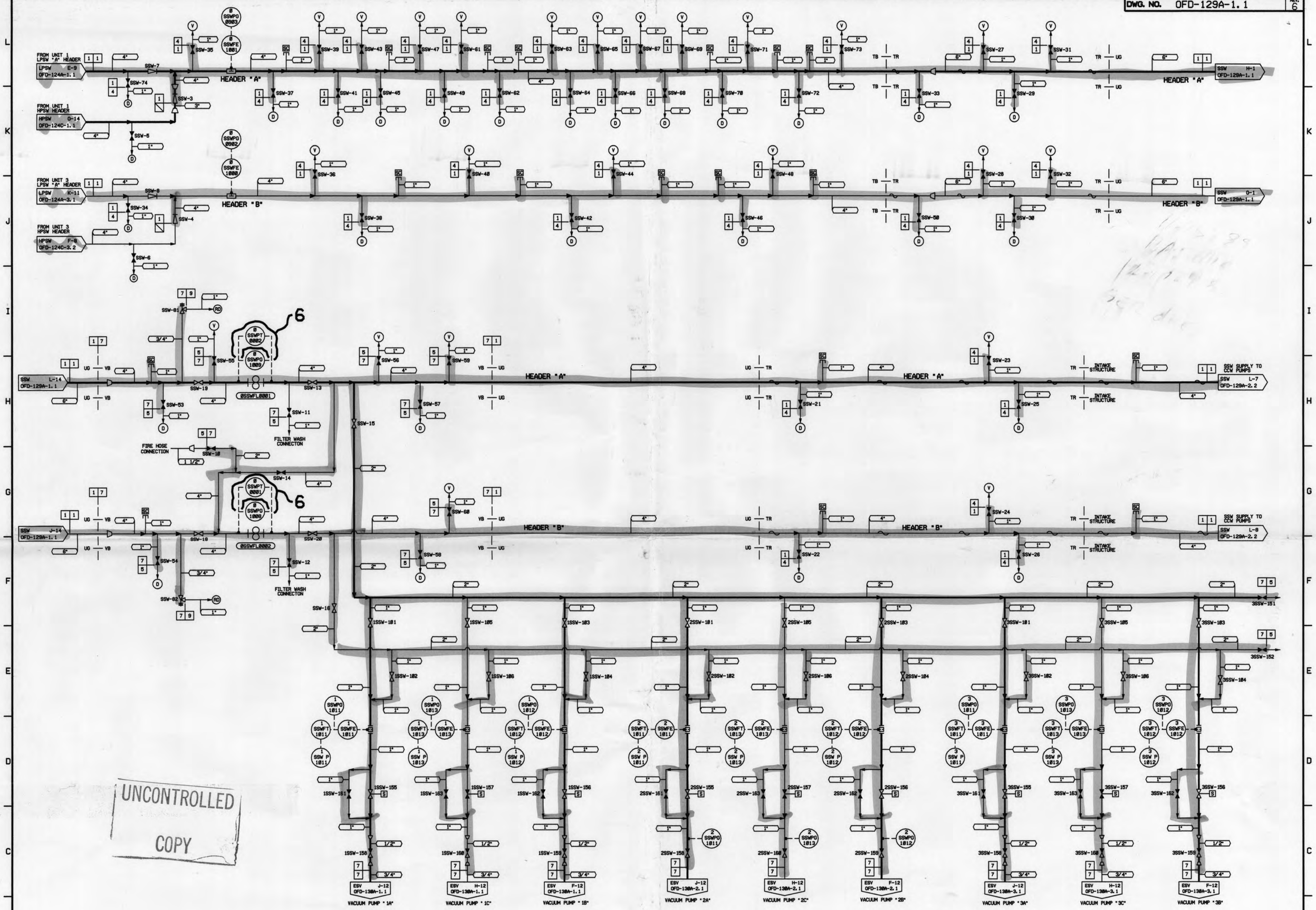
DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 1

FLOW DIAGRAM OF
SIPHON SEAL WATER SYSTEM
(CCW PUMP COOLING)

DESIGNER TE HUGHES DATE 3-3-97 INSP. GL ARMENTROUT DATE 3-4-97
DRAWN BK BYRUM DATE 3-3-97 INSP. SC ARNOLD DATE 3-4-97
CHECKED TE HUGHES DATE 3-3-97 APPR. PM STREET DATE 3-4-97
SCALE DWG. NO. OFD-129A-1.2 REV. 1

ERN: OX009053

DWG. NO. OFD-129A-1.1 REV. 6



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Docket # 50-269
Accession # 9933570128
Date 12/21/99 of Ltr
Regulatory Docket File

QA CONDITION 1

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: ESV PUMP COOLING SUPPLIED BY SSW HEADER "A".

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESSURE	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	150 PSIG	100°F	SS	151.4(a)	40	C
4	G	150 PSIG	100°F	SS	151.4	40	-
5	G	150 PSIG	125°F	SS	151.4	40	-
7	F	150 PSIG	125°F	SS	151.4(a)	40	C
9	G	ATM.	100°F	SS	151.4	40	-

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	INSPECTED CIVIL	ELEC.	MECH.
6	REV. PER OE-13340	BKB	6-24-99	TEH	6-24-99	PMS	6-24-99	AKP	SCA	HEH
5	REV. PER ED. EXEMPTION G.5	BKB	6-14-99	TEH	6-14-99	PMS	6-14-99	AKP	SCA	HEH
4	REV. PER ED. EX. M.9 & G.6	MSI	3-9-99	LER	3-9-99	PMS	3-11-99	RCL	JAK	HEH
3	REV. PER NSM ON-52932/00, PT. AM3	BKB	11-29-98	TEH	11-29-98	PMS	11-24-98	AKP	MHM	HEH
2	REV. PER NSM ON-52932/00, PT. AM3	BKB	11-11-98	TEH	11-11-98	PMS	11-11-98	AKP	SCA	HEH
1	REV. PER NSM ON-52932/00, PT. AM1,	BKB	4-24-98	TEH	4-24-98	PMS	4-24-98	GLA	MHM	HEH
--	AM3, AM4 & AM5	--	--	--	--	--	--	--	--	--
0	REL. PER NSM ON-52932/00, PT. AM2	BKB	10-1-97	TEH	10-1-97	LML	10-1-97	GLA	SCA	ESF

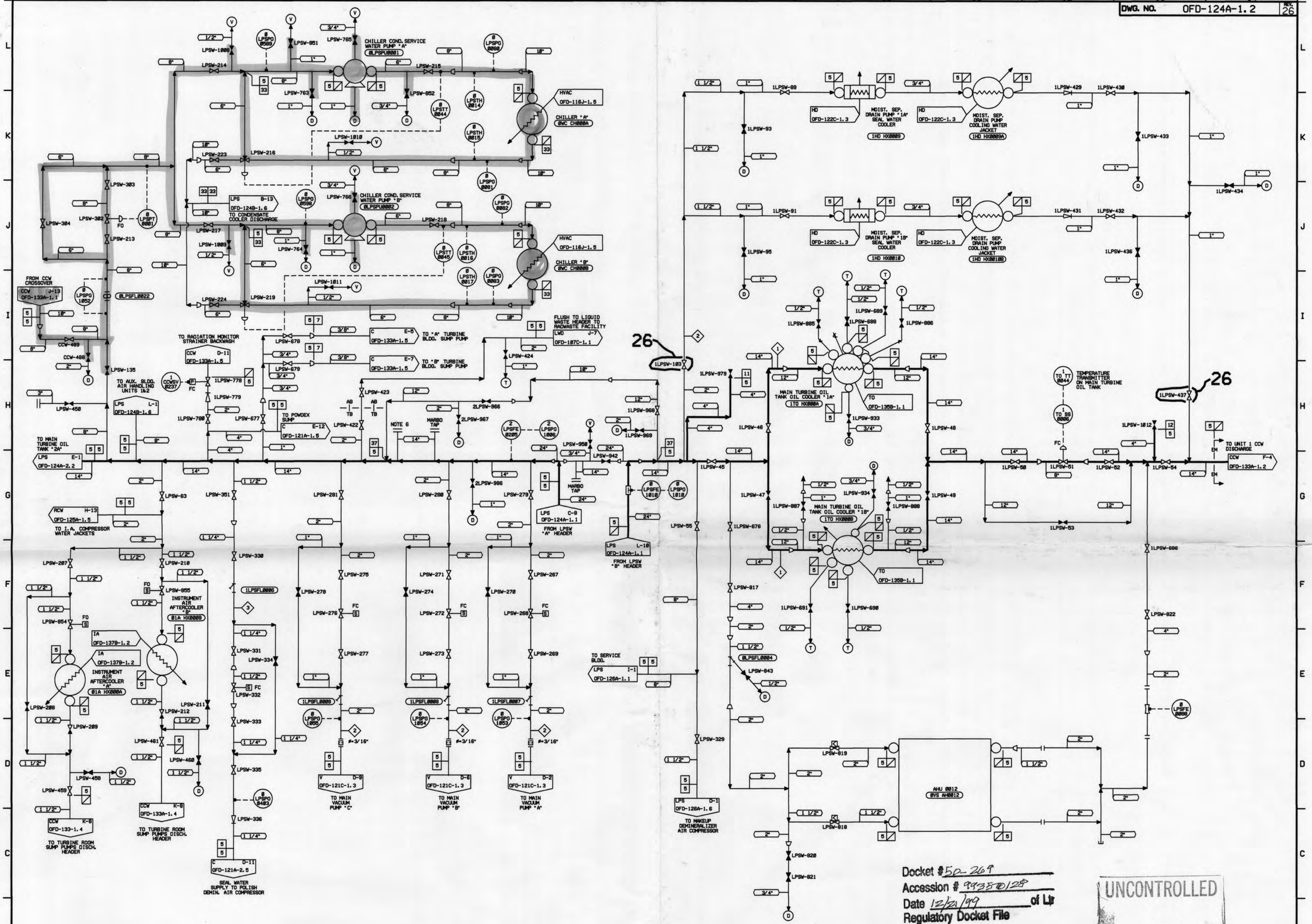
DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 1-3

FLOW DIAGRAM OF
SIPHON SEAL WATER SYSTEM

DESIGNER ES FISK DATE 10-1-97 INSP. GL ARMENTROUT DATE 10-1-97
DRAWN BK BYBUM DATE 10-1-97 INSP. SC ARNOLD DATE 10-1-97
CHECKED TE HUGHES DATE 10-1-97 APPR. LM LI IBBE DATE 10-1-97

SCALE N/A DWG. NO. OFD-129A-1.1 REV. 6

ERN: OX009052



Docket # 50-269
Accession # 9933501128
Date 12/21/99 of Ltr
Regulatory Docket File

UNCONTROLLED COPY

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: LPSW SUPPLY TO MISC. TURBINE BLDG. SERVICES.
2. THE ORIGINAL ISSUE OF THIS DRAWING IS BASED ON PO-124A-1, REV. 7, PO-115E, REV. 21, PO-124F, REV. 1, & PO-115G, REV. 8.
3. 1/2" THRU 2" SCH. 80
   2 1/2" THRU 10" SCH. 40
   12" THRU 48" STD.
4. STAINLESS STEEL (PS-151.4) MAY BE SUBSTITUTED FOR PIPE SIZES 1/2" THRU 6".
5. MAIN TURBINE OIL TANK OIL COOLER DRAINS (1LPSW-933, 1LPSW-934) ORIGINALLY INSTALLED AS A MAINTENANCE ITEM. MATERIAL CURRENTLY UNKNOWN.
6. MARBO TAP LOCATION (FITTINGS INSTALLED BUT 14" HEADER IS NOT TAPPED, WILL REQUIRE SPECIAL EQUIPMENT).

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
5	G	100 PSIG	100°F	CS (NOTE 4,5)	150.6 (NOTE 4)	NOTE 3	-
7	G	100 PSIG	100°F	CU	160	-	-
11	G	100 PSIG	100°F	SS	151.4(a)	NOTE 3	-
12	G	100 PSIG	115°F	SS	151.4(a)	NOTE 3	-
33	G	100 PSIG	150°F	CS (NOTE 4)	150.6 (NOTE 4)	NOTE 3	-
37	G	100 PSIG	100°F	CS (NOTE 4)	150.4 (NOTE 4)	NOTE 3	-

DESIGN FLOW

NO.	FLOW
1	3,000 GPM
2	40 GPM
3	45 GPM
4	14 GPM

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
26	REV. PER ED. EXEMPTION M.9	LER	10-28-99	BKB	10-28-99	RLB	10-28-99	RCL	JAK	HEH
25	REV. PER OE-12968	MSI	6-17-99	LER	6-17-99	PMS	6-21-99	CWP	JAK	RGB
24	REV. PER OE-11669	AES	1-19-99	LER	1-28-99	PMS	1-21-99	-W-	JAK	ESF
23	REV. PER NSM ON-53001/00, PT. BM1	TEH	12-15-98	BKB	12-15-98	PMS	12-15-98	AKP	SCA	ESF
22	REV. PER NSM ON-53001/00, PT. BM1	TEH	12-12-98	DGW	12-12-98	PMS	12-12-98	-W-	WAB	JDS
21	REV. PER NSM ON-53001/00, PT. BM1	BKB	9-18-98	TEH	9-18-98	PMS	9-18-98	AKP	SCA	HEH
20	REV. PER OE-12075	RLS	7/9/98	LER	7-9-98	PMS	7/9/98	-W-	GDC	JBB
ORIG.	ORIGINAL DRAWING RETIRED.	--	--	--	--	--	--	--	--	--

INSPECTED

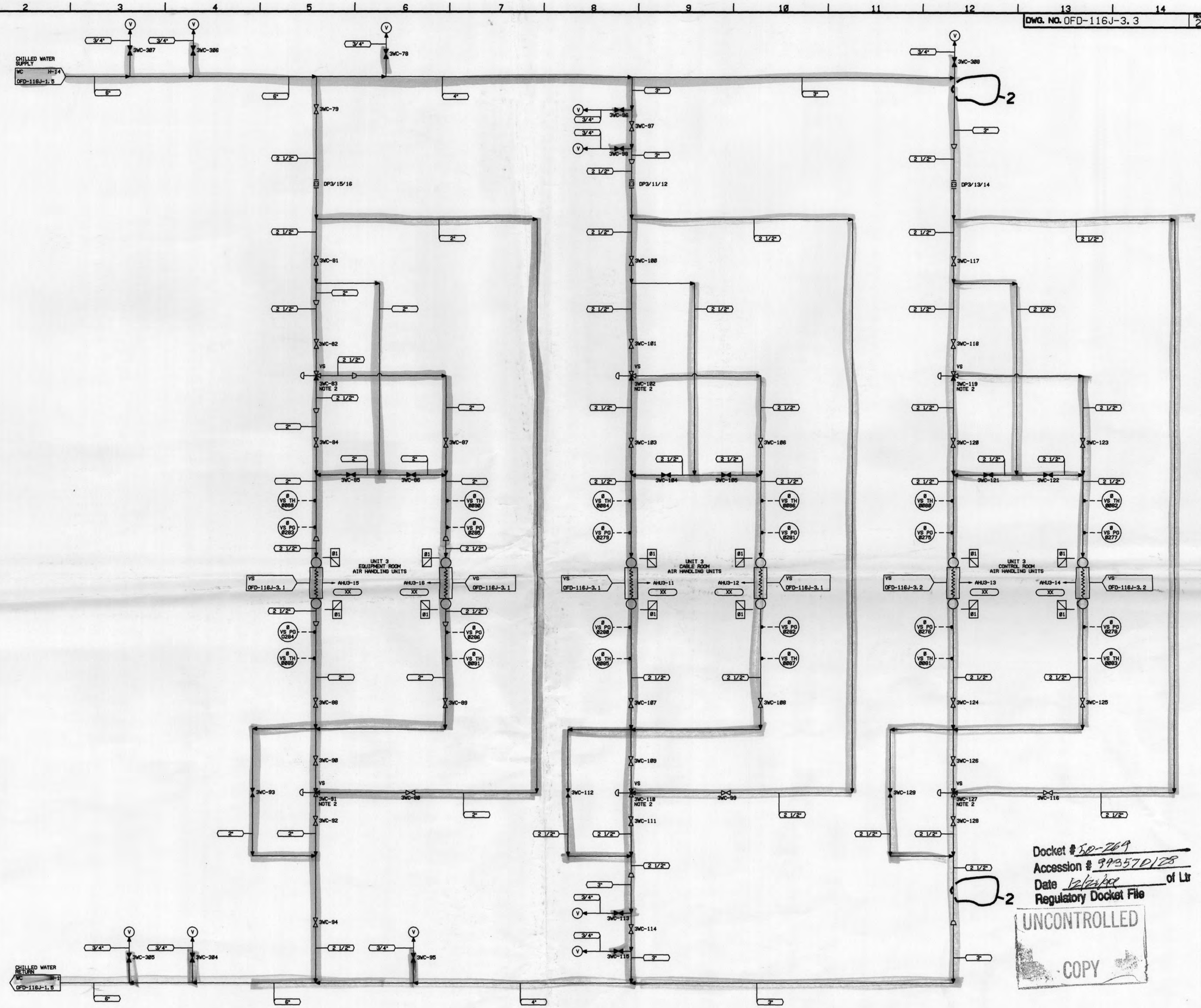
DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 1

FLOW DIAGRAM OF
LOW PRESSURE SERVICE
WATER SYSTEM TURBINE BLDG.
(MAIN TURBINE OIL TANK)

DESIGNER WF SMITH DATE 12-18-85 INSP. MS SILLS DATE 12-18-85
DRAWN KB BARRINDER DATE 12-9-85 INSP. RC HELMS DATE 12-13-85
CHECKED DR DOUGLAS DATE 12-18-85 APPR. RT WARDELL DATE 12-19-85
SCALE DWG. NO. OFD-124A-1.2 REV. 26

ERN: OX000LPL

DWG. NO. OFD-116J-3.3 REV. 2



Docket # 50-269
Accession # 9903570128
Date 12/22/99 of Ltr
Regulatory Docket File

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NOTES:
1. VALVE POSITIONS INDICATE NORMAL OPERATING CONDITIONS (THROTTLED).
2. VALVES FURNISHED BY A.C. CONTRACTOR.
3. ORIGINAL ISSUE OF THIS DWG. IS BASED ON PO-138 REV. 22C, AND WORK DONE PER NSM ON-2324. AS-BUILT PACKAGE FOR THIS NSM HAS NOT BEEN RECEIVED BY DESIGN.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS	DESIGN TEMP	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
01	G	100 PSIG	35°F	CS	150.6	40	-

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
2	REV. PER OE-13035	AES	11-23-98	LER	11-23-98	PMS	11-24-98	GSK	JAK	JBB
1	REV PER EDITORIAL EXEMPTION D.6	LER	6-6-95	JMF	6-6-95	PMS	6-13-95	JND	JDB	DKH
ORG	ORIGINAL DRAWING RETIRED									

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 3

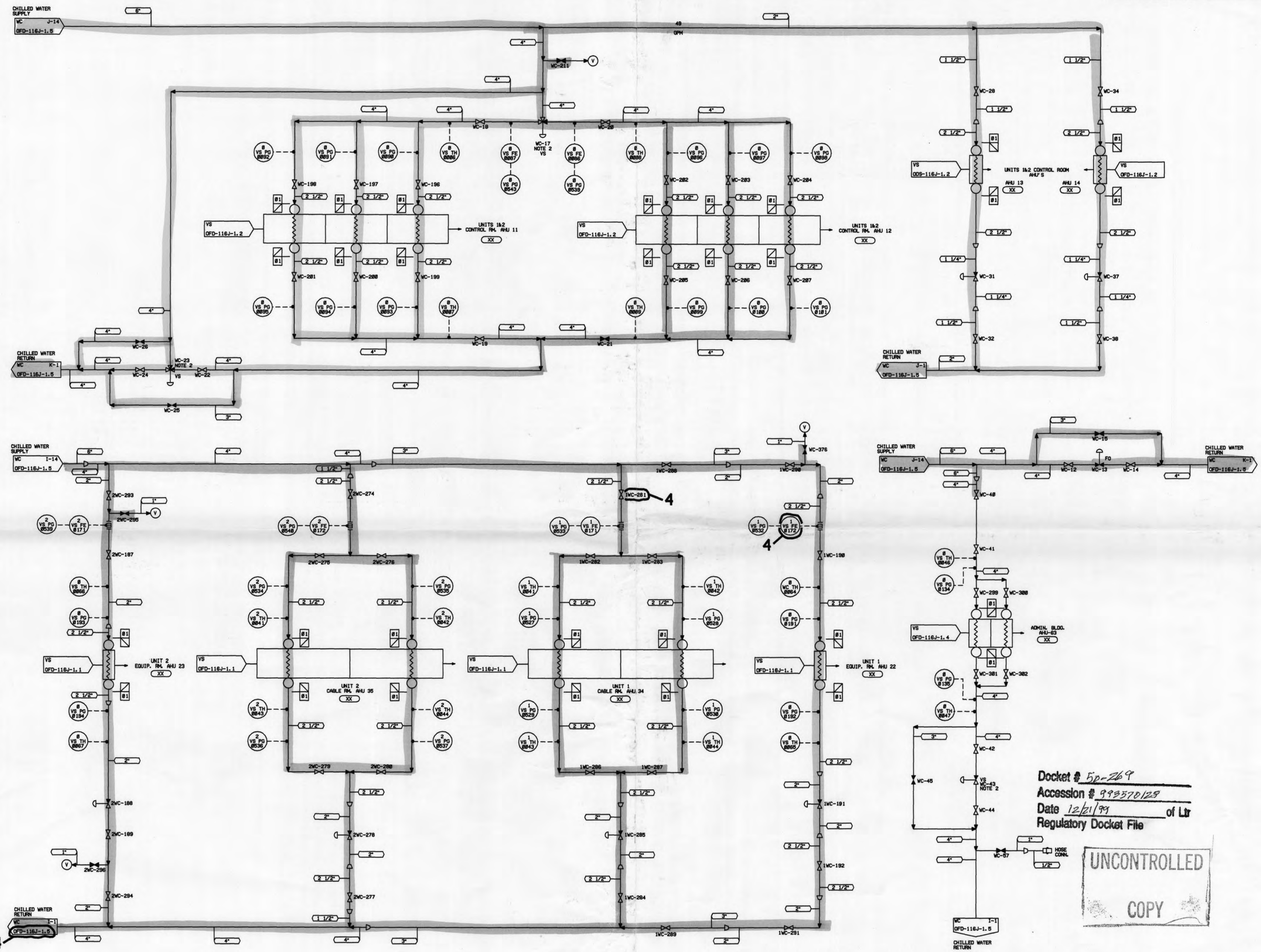
FLOW DIAGRAM OF
CHILLED WATER SYSTEM (WC)
CHILLED WATER SUPPLY & RETURN

DESIGNER CA DRIGGERS DATE 3-11-86 INSP. EG FRAMPTON DATE 3-12-86
DRAWN JL PATTON DATE 3-7-86 INSP. MS SILLS DATE 3-14-86
CHECKED DP MOORE DATE 3-18-86 APPR. RR WEIDLER DATE 3-17-86

SCALE DWG. NO. OFD-116J-3.3 REV. 2

ERN: OX000LJZ

DWG. NO. OFD-116J-1.6 REV. 4



Docket # 50-269
Accession # 9933570128
Date 12/21/99 of Ltr
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NOTES:
1. VALVE POSITIONS INDICATE NORMAL OPERATING CONDITIONS (THROTTLED).
2. VALVES FURNISHED BY A.C. CONTRACTOR.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS	DESIGN TEMP	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
Ø1	G	100 PSIG	35°F	CS	150.6	40	-

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE
4	REV. PER OE-13035	AES	11-24-98	LER	11-24-98	RLB	11-24-98
3	REV PER EDITORIAL EXEMPTION D.6	RWJ	5-25-95	SPM	5-30-95	PMS	6-13-95
ORG	ORIGINAL DRAWING RETIRED						

CIVIL	ELEC.	MECH.
GSK	JAK	JBB
JND	JDB	DKH

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNITS 1&2

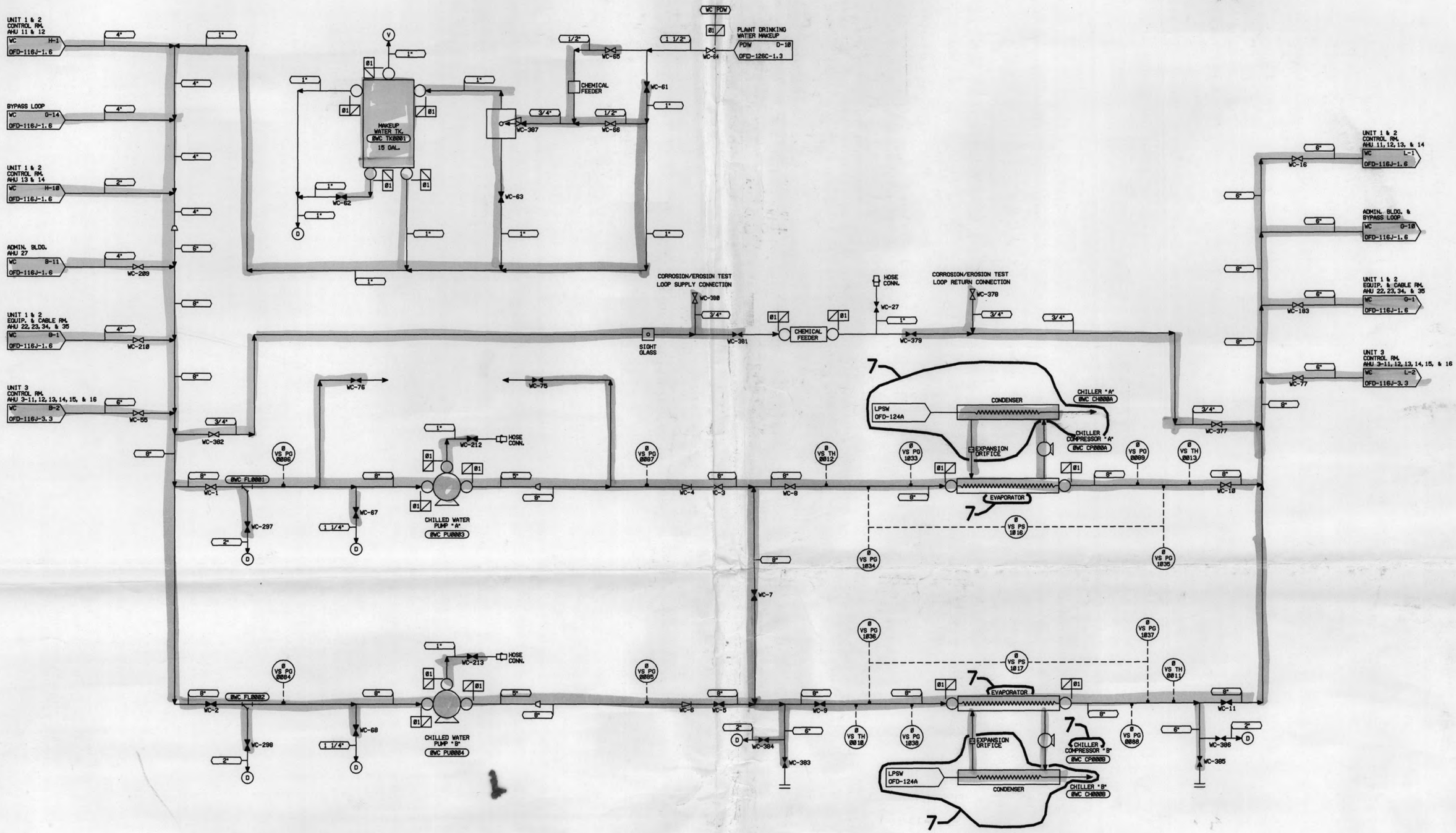
FLOW DIAGRAM OF
CHILLED WATER SYSTEM (WC)
CHILLED WATER SUPPLY & RETURN

DESIGNER CA DRIGGER DATE 2-11-86 INSP. EG FRAMPTON DATE 3-13-86
DRAWN WP PATTON DATE 2-7-86 INSP. MS SILLS DATE 3-14-86
CHECKED DP MOORE DATE 3-18-86 APPR. BR WIEDLER DATE 3-17-86
SCALE

DWG. NO. OFD-116J-1.6 REV. 4

ERN: OX000LJW

DWG. NO. OFD-116J-1.5 REV. 7



UNCONTROLLED COPY

Docket # 50-269
Accession # 9933570128
Date 12/21/99 of Ltr
Regulatory Docket File

NOTES:
1. VALVE POSITIONS INDICATE NORMAL OPERATING CONDITIONS.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
01	D	100 PSIG	35°F	CS	150.6	40	-

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
7	REV. PER OE-13658	DLR	7-13-99	MSI	7-13-99	PMS	7-14-99	RCL	RMS	RGB
6	REV. PER OE-11389	AES	7-16-98	LER	7-16-98	PMS	7-21-98	RCF	JAK	ESF
5	REV. PER OE-11120	BKB	4-2-98	TEH	4-2-98	PMS	4-3-98	GLA	SCA	ESF
4	REV. PER NSM ON-52427/00	DOM	5-16-96	MSI	5-16-96	PMS	5-23-96	GLA	SCA	DKH
3	REV. PER OE-6280	DLR	5-22-94	RBC	5-22-94	LHA	5-23-94	JLH	NFT	VRB
2	REV PER OE-4326 & PER EDITORIAL	DCM	1-24-94	NAS	1-24-94	LJA	1-25-94	JLH	NFT	DKH
--	EXEMPTION D-6									
1	ORIGINAL DRAWING RETIRED									

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNITS 1-3

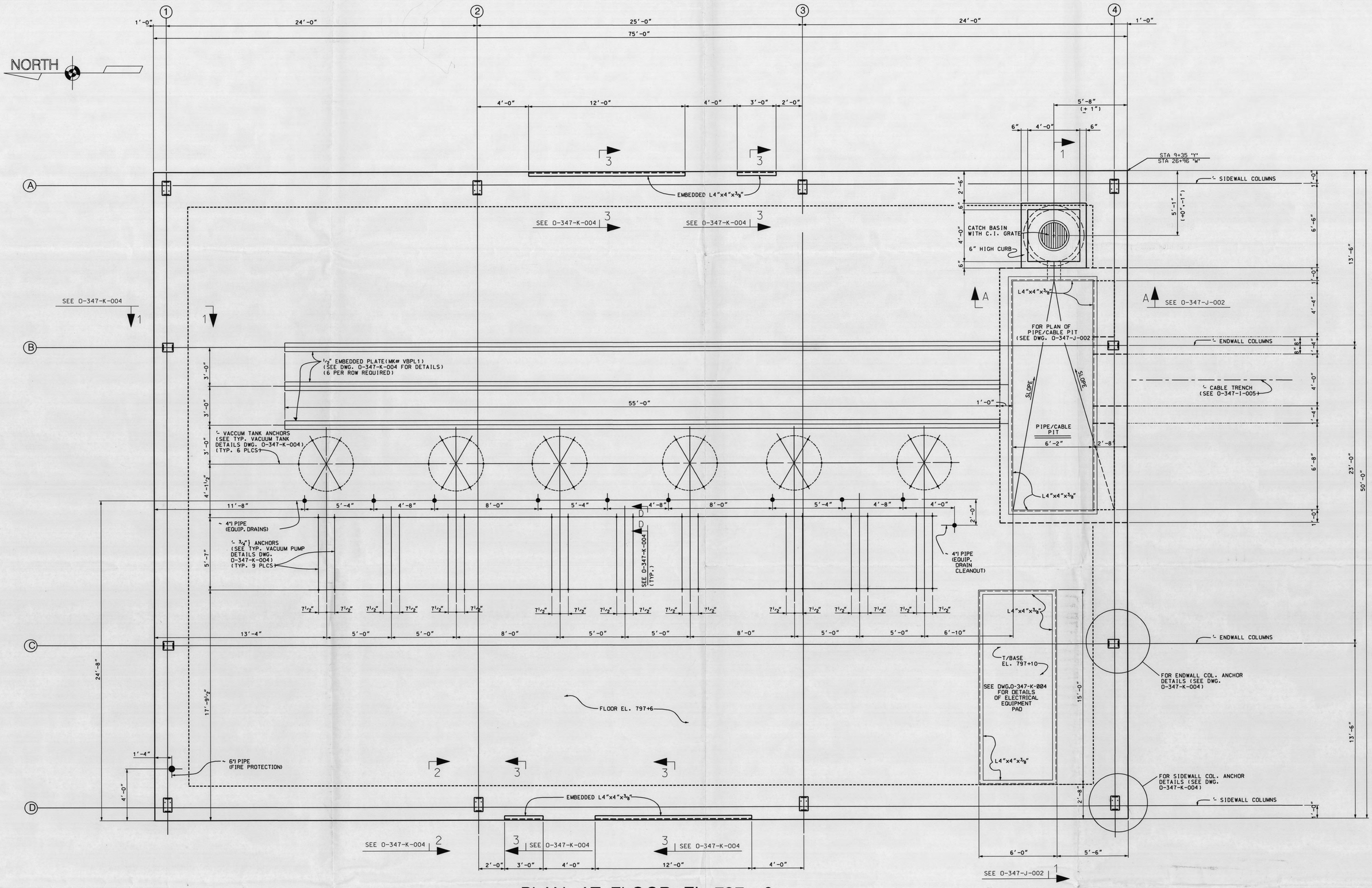
FLOW DIAGRAM OF
CHILLED WATER SYSTEM (WC)
PUMPS AND CHILLERS

DESIGNER CA DRIGGERS DATE 2-11-86 INSP. EQ FRAMPTON DATE 2-12-86
DRAWN JL PATTON DATE 2-7-86 INSP. MS GILLS DATE 2-14-86
CHECKED DP MOORE DATE 2-18-86 APPR. RB WEIDLER DATE 2-17-86

SCALE DWG. NO. OFD-116J-1.5 REV. 7

ERN: OX000LJV

DWG. NO. O-347-J-001 REV. A



PLAN AT FLOOR EL. 797+6

GENERAL NOTES:

1. CONCRETE TO BE PROCURED IN ACCORDANCE WITH SPECIFICATION OSS-0160.00-00-001.
2. CONCRETE TO BE PLACED IN ACCORDANCE WITH SPECIFICATION OSS-0160.00-00-002.
3. TYPICAL EMBEDDED PLATE DETAIL IN ACCORDANCE WITH SPECIFICATION OSS-0141.00-00-049 (GROUP 5)
4. MISCELLANEOUS STEEL SHALL BE FABRICATED IN ACCORDANCE WITH OSS-0141.00-00-0011.
5. COATINGS SHALL BE IN ACCORDANCE WITH THE DUKE POWER "FIELD COATING SPECIFICATION MANUAL" FOR SERVICE LEVEL IV COATINGS. FOR CONCRETE FLOORS USE COATING SYSTEM 404 WITH A CLEAR FINISH/COLOR. FOR EXPOSED CARBON STEEL EMBEDDED IN CONCRETE USE COATING SYSTEM 201 WITH A GRAY FINISH/COLOR.
6. EXCAVATION/SUBGRADE PREPARATION AND BACKFILL SHALL BE IN ACCORDANCE WITH SPECIFICATION OSS-0009.00-00-0006.
7. VERIFICATION OF THE FOUNDATION SHALL BE ACCOMPLISHED BY USING THE "DYNAMIC CONE FOR SHALLOW INSITU PENETRATION" ASTP-399.1966. A MINIMUM OF ONE (1) TEST SHALL BE PERFORMED AT THE BASE OF EACH SIDEWALL COLUMN. BLOW COUNTS SHALL BEGIN AT THE BOTTOM OF THE GRADE BEAM OR MUDMAT. A PENETRATION RESISTANCE,N, EQUAL TO OR GREATER THAN 6 AT EACH LOCATION IS REQUIRED.
8. WHERE UNACCEPTABLE SUBGRADE IS ENCOUNTERED THE MATERIAL SHALL BE REMOVED TO A DEPTH TO BE DETERMINED BY THE ENGINEER AND BACKFILLED WITH SOIL. CRUSHER RUN AND/OR CONCRETE.
9. A MUDMAT OF CONCRETE MAY BE USED UNDER THE DESIGN CONCRETE AT THE DESCRETION OF THE ENGINEER. (MUDMAT IS NON-QA)
10. ALL CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI.
11. EMBEDDED PLATES AND ANGLES MAY BE TACK WELDED TOGETHER TO MAINTAIN ALIGNMENT DURING CONSTRUCTION. (WELDS ARE NON-QA)
12. ALL STEEL SHAPES (PLATES, PIPES, RODS, & ANGLES) SHALL BE ASTM A-36 MATERIAL UNLESS OTHERWISE NOTED.
13. ALL REINFORCING SHALL BE ASTM A-615 GRADE 60 MATERIAL.
14. ALL CONCRETE STUDS SHALL BE FROM ASTM A-108 MATERIAL.
15. CATCH BASIN SHALL BE CONSTRUCTED OF TINDALL CONCRETE PRODUCTS SECTIONS G48-20C AND G48-48B OR APPROVED EQUIVALENT. (CATCH BASIN IS NON-QA)
16. CATCH BASIN FRAME SHALL BE A NEENAH FOUNDARY NUMBER R-1672 WITH TYPE G STANDARD FLAT GRATE OR APPROVED EQUIVALENT. (GRATE & FRAME ARE NON-QA)
17. ALL NUTS FOR 3/4"ø ANCHOR BOLTS SHALL BE HEAVY HEX NUTS OF ASTM A563 MATERIAL; ALL WASHERS FOR THE 3/4"ø ANCHOR BOLTS SHALL BE ASTM F436 MATERIAL. ALL NUTS SHALL BE INSTALLED SNUG TIGHT.

REFERENCES DRAWINGS:

CIVIL:

CONCRETE PLANS,SECTIONS, & DETAILS	O-347-J-001 THRU 003
CONCRETE REINFORCING PLANS,SECTIONS, & DETAILS	O-347-K-001 THRU 004
REINFORCING BILL OF MATERIALS	OBM-347-K-01 THRU 02
YARD LAYOUT	O-32A
YARD DRAINAGE	O-36
SPECIFICATION FOT FURNISHING A PRE-FABRICATED METAL BUILDING	OSS-0148.00-00-0014
CALCULATION: ESV BUILDING, CONCRETE & STEEL	OSC-6564

MECHANICAL:

ESV BUILDING EMBEDDED DRAINS PIPING LAYOUT	O-452C
ESV BUILDING FIRE PROTECTION PIPING LAYOUT	O-423K

ELECTRICAL:

GROUNDING LAYOUT:GENERAL PLAN	O-890
GROUNDING:ESV BUILDING	O-947

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Docket # 50-269
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QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
0	REL FOR IMPLEMENTATION PER NSM ON-43000/00 PART-BS1									

INSPECTED

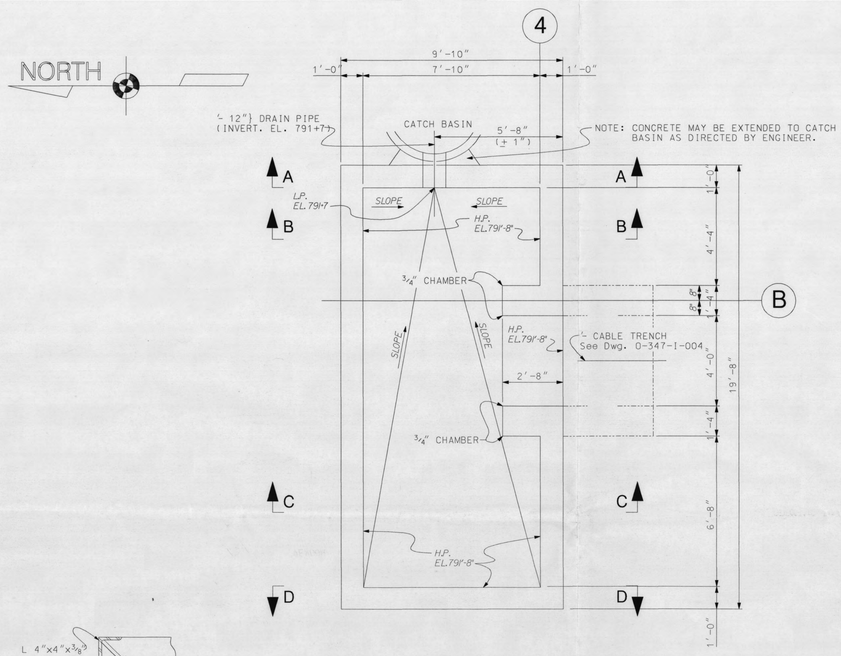
DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNITS 1-3

ESSENTIAL SIPHON VACUUM BUILDING
CONCRETE
PLAN,SECTIONS,DETAILS

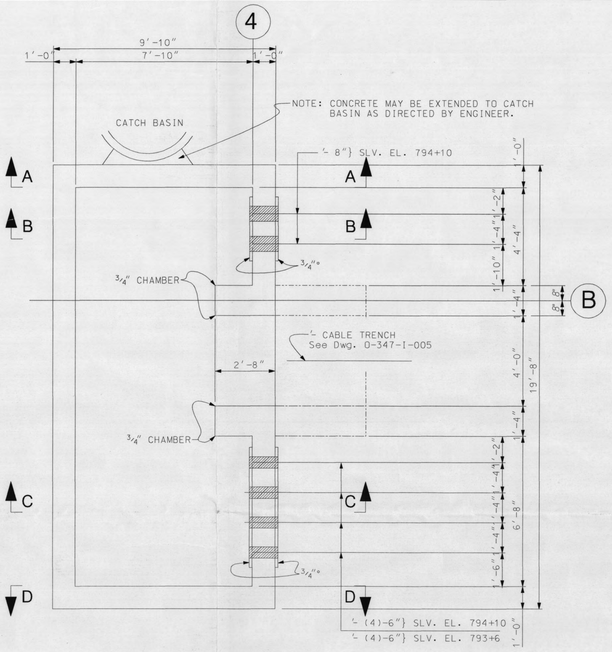
DESIGNER MR HEMPHILL DATE 9/26/96 INSP. WAIVED DATE
DRAWN FW PENLAND DATE 9/26/96 INSP. WAIVED DATE
CHECKED JV KELLY DATE 9/26/96 APPR. SG CREWS DATE 9/26/96
SCALE DWG. NO. O-347-J-001 REV. A

ERN: OX009118

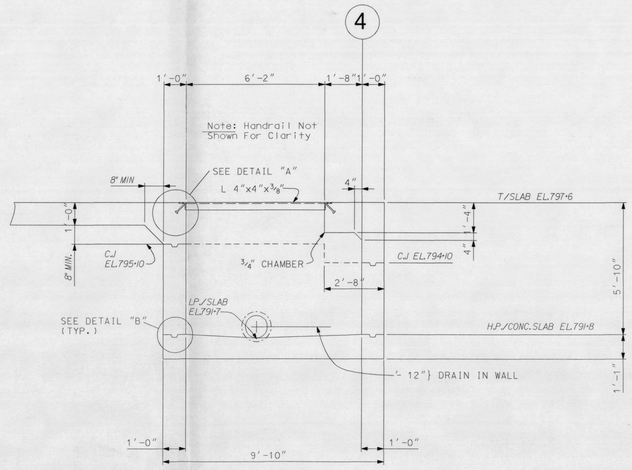
DWG. NO. O-347-J-002 REV. B



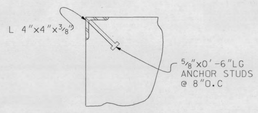
SECTIONAL PLAN @ EL.791+8
PIT BASE SLAB
SCALE: 3/8"=1'-0"



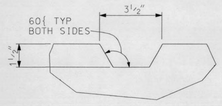
SECTIONAL PLAN
TYPICAL PIT WALL
SCALE: 3/8"=1'-0"



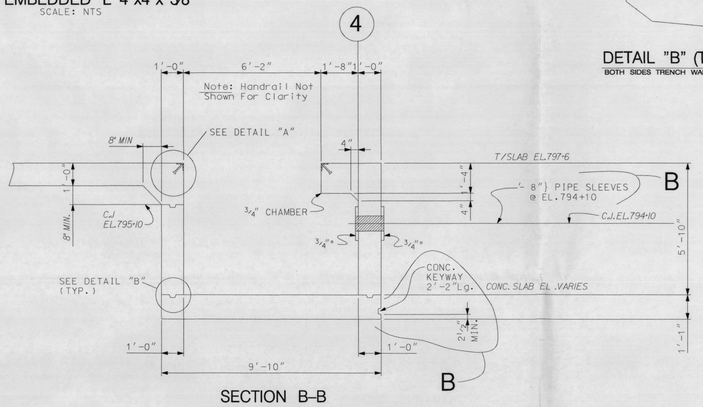
SECTION A–A
SCALE: 3/8"=1'-0"



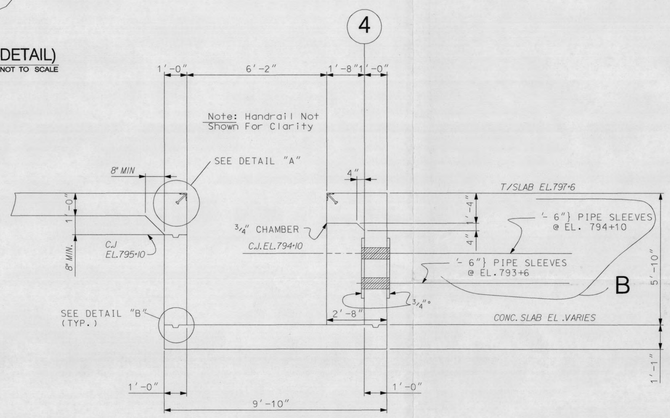
TYPICAL DETAIL "A"
EMBEDDED L 4"x4"x 3/8"
SCALE: NTS



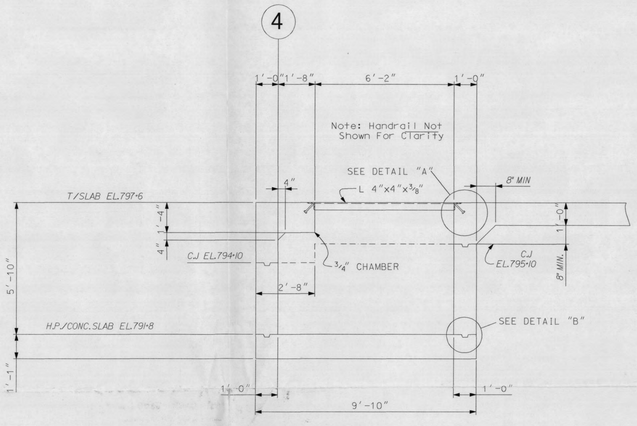
DETAIL "B" (TYP. KEY DETAIL)
BOTH SIDES TRENCH WALL NOT TO SCALE



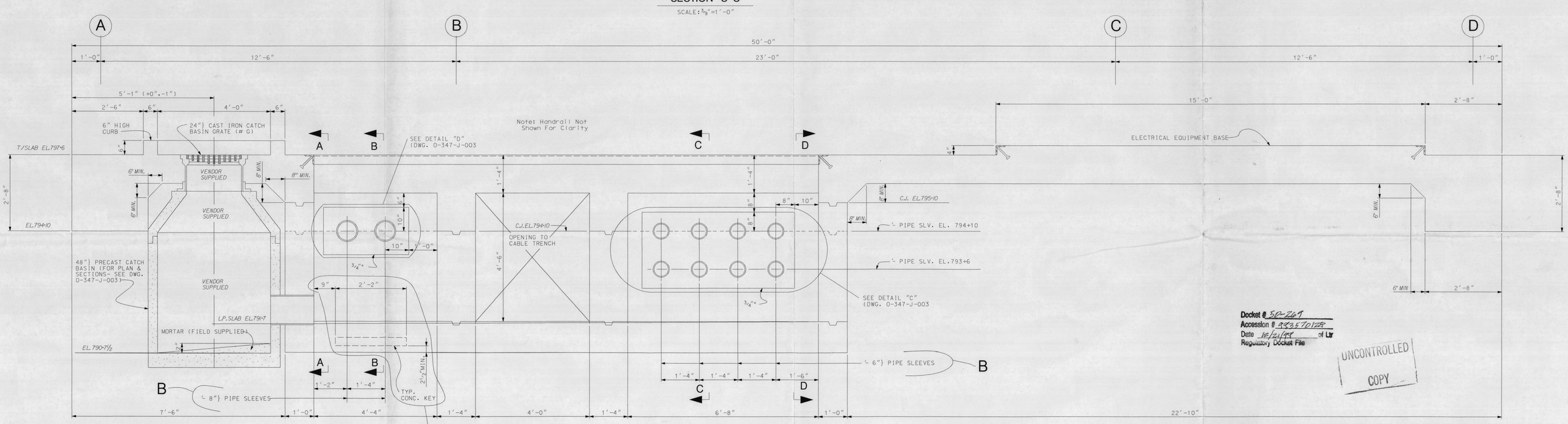
SECTION B–B
SCALE: 3/8"=1'-0"



SECTION C–C
SCALE: 3/8"=1'-0"



SECTION D–D
SCALE: 3/8"=1'-0"



SECTION 1–1
SCALE: 3/4"=1'-0"

Docket # SC-267
Accession # 9835 70125
Date 12/21/87 of Ltr
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FOR GENERAL NOTES & REFERENCE DRAWINGS SEE DWG. O-347-J-001

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
B	REL. FOR IMPLEMENTATION PER NSM ON-43000/00 PART BS1	EWP	10/11/96	MRH	10/11/96	SGC	10/11/96	WAIVED		
A	REL. FOR IMPLEMENTATION PER NSM ON-43000/00 PART BS1									

INSPECTED

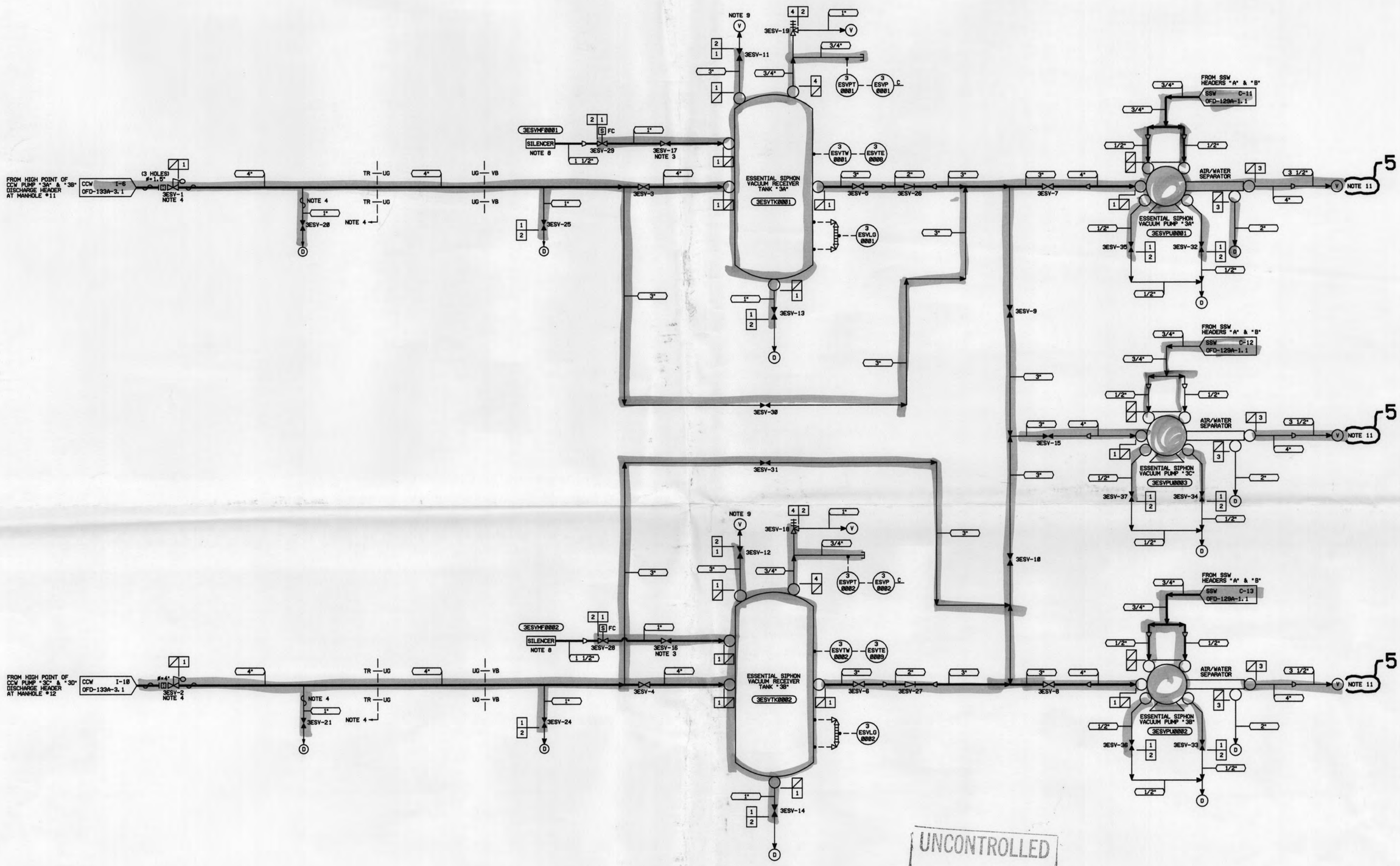
DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNITS 1-3

ESSENTIAL SIPHON VACUUM BUILDING
CONCRETE
PLANS, SECTIONS, & DETAILS

DESIGNER MR HEMPHILL DATE 9/25/96 INSP. WAIVED DATE
DRAWN EW PENLAND DATE 9/24/96 INSP. WAIVED DATE
CHECKED JV KELLY DATE 9/25/96 APPR. SG CREWS DATE 9/26/96
SCALE DWG. NO. O-347-J-002 REV. B

ERN: OX009117

DWG. NO. OFD-130A-3.1 REV. 5



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Docket # 50-269
Accession # 9933570128
Date 12/21/99 of Ltr
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NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: NORMAL ESV PUMP ALIGNMENT TO MAINTAIN SIPHON READINESS.
3. MINIMUM FLOW LINE THROTTLE VALVES (1ESV-16, 17) LOCKED THROTTLED TO ALLOW GREATER THAN 65°/HR. OF DRY AIR FLOW FOR ESV PUMP PROTECTION.
4. LINE TO BE HEAT TRACED AROUND THE FLOAT VALVE AND AT LOW POINTS TO PREVENT FLUID FROM FREEZING.
5. ALL 4" PIPING IN TRENCHES SHALL HAVE 2 1/2 " FIBERGLASS INSULATION. OTHER INSULATION SHALL BE IN ACCORDANCE WITH OSS-0241.00-00-0004.
6. THE HEAT TRACED PIPING TEMPERATURE CAN APPROACH THE HIGH DESIGN TEMPERATURE DURING HOT WEATHER, AT THE FLOAT VALVES AND AT THE LOW POINTS. ESV FLOAT VALVE HEAT TRACE IS SELF REGULATING. ESV LOW POINTS REQUIRE A FAILURE OF BOTH THE AMBIENT AIR THERMOSTAT AND LOCAL CONTROLLER TO REACH HIGHER TEMPERATURES. PIPING LOCATED INSIDE THE VACUUM BUILDING CAN REACH 125°F DURING HOT WEATHER WITH THE EXHAUST FANS OFF.
7. NORMAL OPERATING TEMPERATURE WILL BE APPROXIMATELY 20-30°F ABOVE LAKE WATER TEMPERATURE.
8. TEMPORARILY REMOVE SILENCER & REPLACE WITH ROTAMETER TO SET MIN. FLOW VALVE.
9. ROTAMETER TO BE ATTACHED AT VENT TO MEASURE PUMP CAPACITY DURING PERIODIC PERFORMANCE TESTING. ALL OTHER VALVES ENTERING TANK SHALL BE CLOSED DURING TESTS.
10. STAINLESS STEEL (PS-151.4a) MAY BE SUBSTITUTED FOR 2" AIR/WATER SEPARATOR DRAINS AND 1/2" PUMP SEAL DRAINS.
11. PUMP DISCHARGE COVERS ARE NON-QA. 5

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIALS	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	35 PSIG	100°F/125°F/130°F (NOTE 6)	SS	151.4(a)	40	C
2	G	ATM	100°F/125°F/130°F (NOTE 6)	SS	151.4	40	-
3	F	ATM	170°F (NOTE 7)	SS	151.4	40	C
4	F	35 PSIG	100°F/125°F/130°F (NOTE 6)	SS	151.4	40	C

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
5	REV. PER NSM ON-53000/00, PT. CM3	BKB	6-16-99	TEH	6-16-99	PMS	6-17-99	AKP	SCA	HEH
4	REV. PER NSM ON-53000/00, PT. CM3	BKB	3-31-99	TEH	3-31-99	RLB	3-31-99	AKP	EHM	HEH
3	REV. PER NSM ON-53000/00, PT. CM3	BKB	11-23-98	TEH	11-23-98	PMS	11-24-98	AKP	MHM	HEH
2	REV. PER NSM ON-33000/00, PT. CM1,	BKB	11-11-98	TEH	11-11-98	PMS	11-11-98	AKP	SCA	HEH
--	NSM ON-52932/00, PT. AM3 AND	--	--	--	--	--	--	--	--	--
--	NSM ON-53000/00, PT. CK1 & CM3	--	--	--	--	--	--	--	--	--
1	REV. PER NSM ON-53000/00, PT. CM2	BKB	4-27-98	TEH	4-27-98	PMS	4-28-98	GLA	EHM	HEH
0	REL. PER NSM ON-53000/00, PT. CM1	BKB	9-23-97	TEH	9-23-97	PMS	9-23-97	GLA	SCA	HEH

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 3

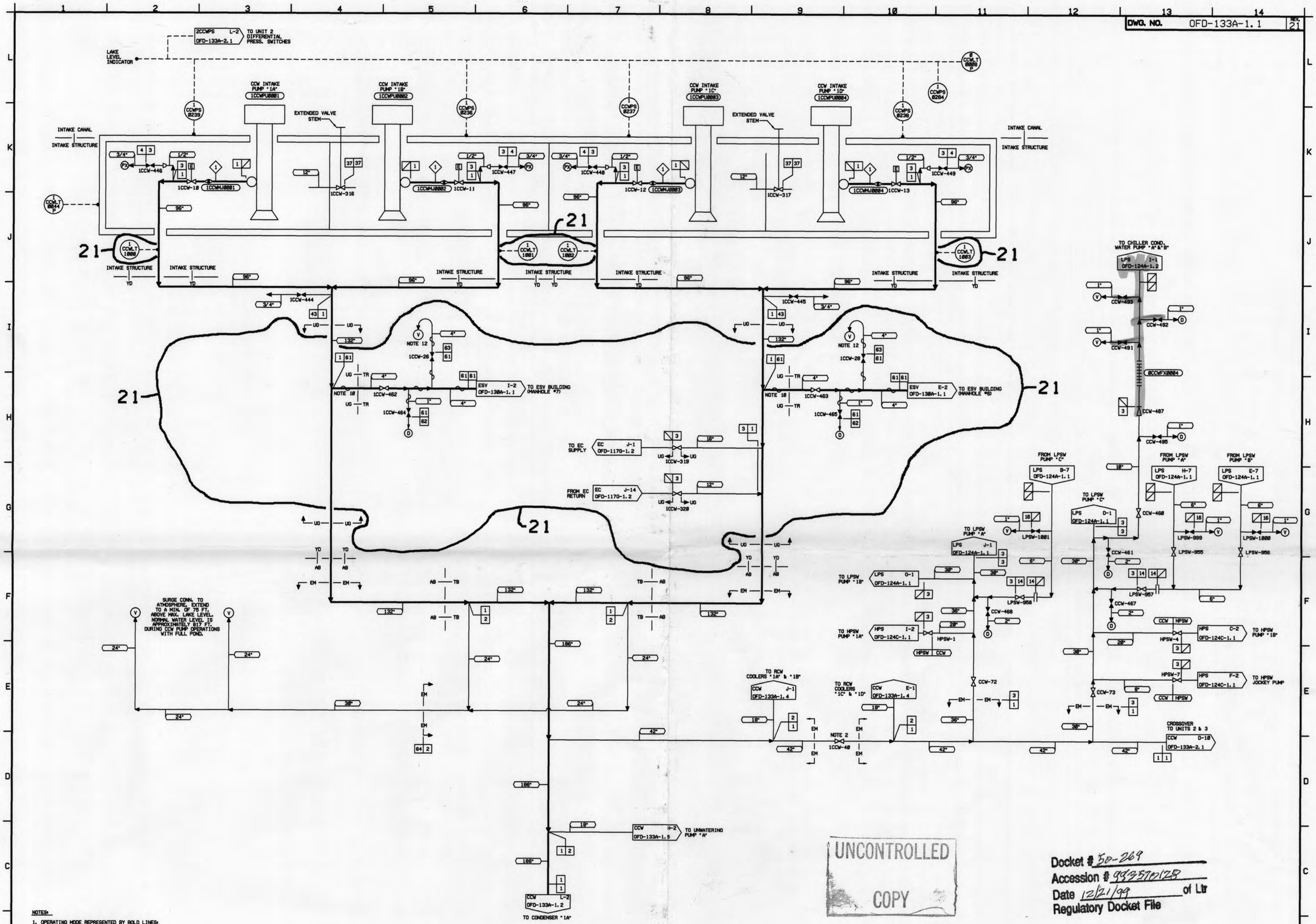
FLOW DIAGRAM OF
ESSENTIAL SIPHON VACUUM
(ESV) SYSTEM

DESIGNER BK BYRUM DATE 7-25-96 INSP. SC ARNOLD DATE 7-26-96
DRAWN BK BYRUM DATE 7-25-96 INSP. GL ARMENTROUT DATE 7-26-96
CHECKED TE HUGHES DATE 7-25-96 APPR. PM STREET DATE 7-29-96

SCALE N/A DWG. NO. OFD-130A-3.1 REV. 5

ERN: OX00905W

DWG. NO. OFD-133A-1.1 REV. 21



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Docket # 50-269
Accession # 9933570128
Date 12/21/99 of Ltr
Regulatory Docket File

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: NORMAL CCW INTAKE.
2. THIS VALVE IS REQUIRED TO BE OPEN DURING NORMAL OPERATION TO MEET SINGLE FAILURE REQUIREMENTS.
3. 1/2" THRU 2" SCH. = XS
   2 1/2" THRU 18" SCH. = 40
   12" THRU 36" SCH. = STD
4. PIPING COVERED BY CIVIL/ENVIRONMENTAL DIVISION SPECIFICATION NO. OSS-0101.00-00-0000 AND/OR ITEM NO. 128.
5. THE ORIGINAL ISSUE OF THIS DRAWING IS BASED ON PO-133A, REV. 27.
6. STAINLESS STEEL, PS-151.41 SHOULD BE SUBSTITUTED PER PIPE SIZES ½" THRU 6".
7. 1/2" THRU 18" SCH. = 40
   12" THRU 24" SCH. = STD
8. QA CONDITION 1
9. QA CONDITION 4
10. A SHORT PIECE OF 4" CS PIPE IS USED TO TRANSITION BETWEEN SS VENT LINE & CS CCW HEADER, SEE PIPING LAYOUT FOR MATERIAL INFO. ON TRANSITION PIECE.
11. THE HEAT TRACED PIPING TEMPERATURE CAN APPROACH THE HIGH DESIGN TEMPERATURE DURING HOT WEATHER. AT THE FLOAT VALVES AND AT THE LOW POINTS. ESV FLOAT VALVE HEAT TRACE IS SELF REGULATING. ESV LOW POINTS REQUIRE A FAILURE OF BOTH THE AMBIENT AIR THERMOSTAT AND LOCAL CONTROLLER TO REACH HIGHER TEMPERATURES.
12. ENDS THREADED TO ALLOW ROTAMETER ATTACHMENT DURING PERIODIC TESTING.

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DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	NOTE 4,8	—	—	CS	NOTE 4	NOTE 4	C
2	NOTE 4,9	—	—	CS	NOTE 4	NOTE 4	-
3	F	50 PSIG	100°F	CS(NOTE 6)	150.6(NOTE 6)	NOTE 3	C
4	G	50 PSIG	100°F	CS(NOTE 6)	150.6(NOTE 6)	NOTE 3	-
14	F	100 PSIG	100°F	CS	150.6	SCH. 40	C
16	G	100 PSIG	100°F	CS(NOTE 6)	150.4(NOTE 6)	NOTE 7	-
37	G	35 PSIG	100°F	CS	150.6	NOTE 3	-
43	F	50 PSIG	100°F	SS	301.4	SCH. 80	C
44	D	50 PSIG	100°F	CS	150.6	SCH. 40	-
61	F	50 PSIG	100°F/130°F(NOTE 11)	SS	151.4(a)	SCH. 40	C
62	G	50 PSIG	100°F	SS	151.4	SCH. 40	-
63	G	ATM.	100°F	SS	151.4	SCH. 40	-
64	D	50 PSIG	100°F	CS(NOTE 6)	150.6(NOTE 6)	NOTE 3	-

21

DESIGN FLOW

NO.	FLOW
1	177,000 GPM

QA CONDITION 4
QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
21	REV. PER NSM ON-13000/00, PT. CM1	BKB	6-16-99	TEH	6-16-99	PMS	6-17-99	AKP	SCA	HEH
20	REV. PER NSM ON-53001/00, PT. BM1	TEH	12-12-98	DGW	12-12-98	PMS	12-12-98	-W-	WAB	JDS
19	REV. PER NSM ON-53003/00, PT. BM1	BKB	5-5-98	TEH	5-6-98	PMS	5-7-98	GLA	SCA	ESF
18	REV. PER NSM ON-53001/00, PT. BM1	BKB	4-23-98	TEH	4-23-98	PMS	4-23-98	GLA	SCA	ESF
17	REV. PER NSM ON-13001/00, PT. AM1	BKB	11-25-97	TEH	11-25-97	LML	11-25-97	GLA	JAK	ESF
16	REV. PER NSM ON-13001/00, PT. AM1	BKB	10-17-97	TEH	10-17-97	PMS	10-17-97	AKP	WAB	ESF
ORIG.	ORIGINAL DRAWING RETIRED	BKB	10-17-97	—	—	—	—	—	—	—

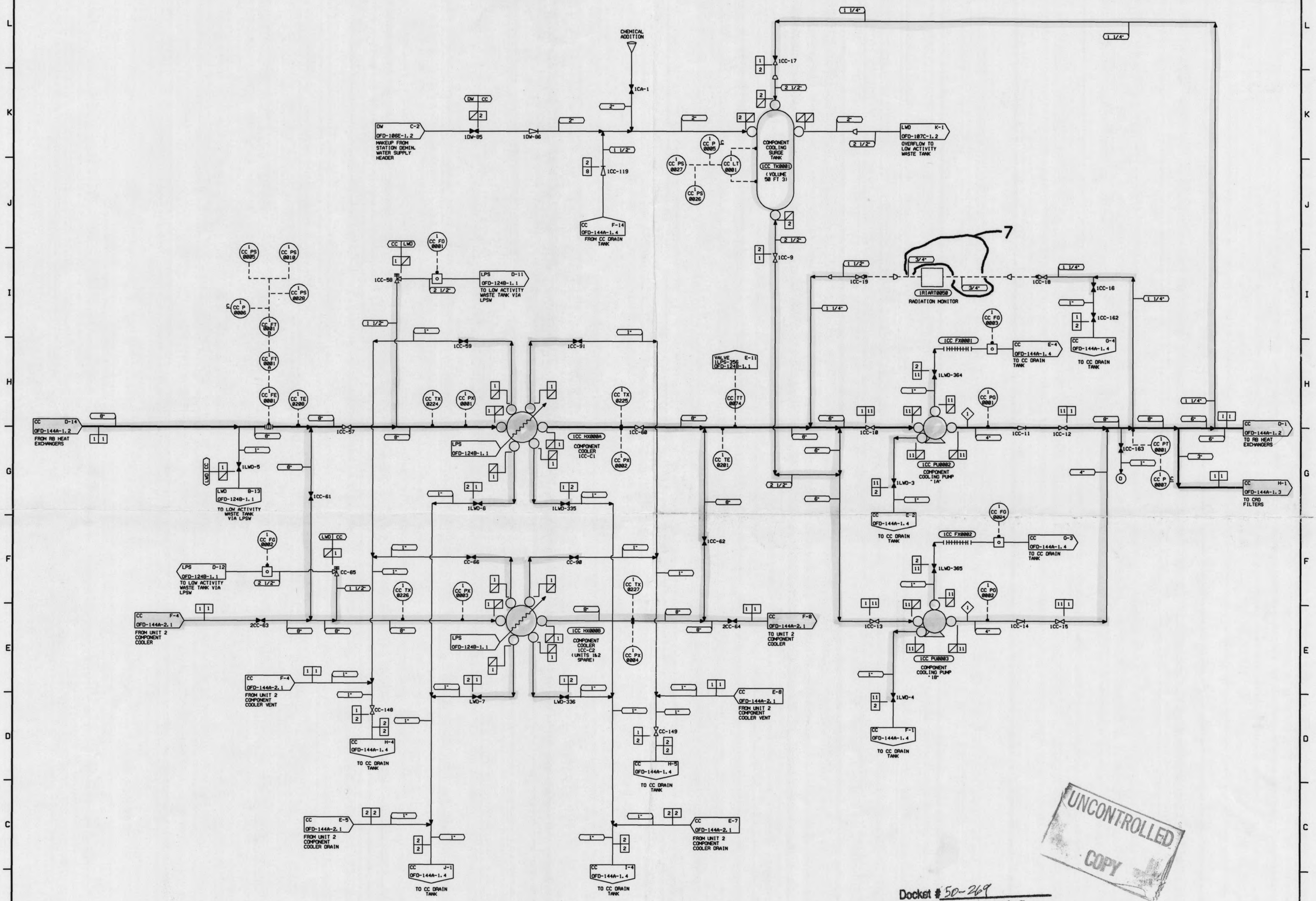
INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION

FLOW DIAGRAM OF
CONDENSER CIRCULATING WATER SYSTEM
(CCW INTAKE PUMPS DISCHARGE)

DESIGNER DICHARELSON DATE 7-17-84 INSP. H. O. McKAY DATE 8-1-84
DRAWN V. O. OWENS DATE 7-17-84 INSP. EO FRAMPTON DATE 8-2-84
CHECKED JB STRINGER DATE 7-17-84 APPR. RF WARDELL DATE 8-6-84
SCALE DWG. NO. OFD-133A-1.1 REV. 21

ERN: OX000LS0



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Docket # 50-269
Accession # 9335701-28
Date 12/21/99 of Ltr
Regulatory Docket File

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: COMPONENT COOLING TO RB HEAT EXCHANGERS & CRD FILTERS.
2. 1/2" THRU 2" SCH. = 80
   2 1/2" THRU 10" SCH. = 40
   12" THRU 24" STD.
3. 1/2" THRU 2" SCH. = 40S
   2 1/2" THRU 12" SCH. = 10S
   14" THRU 18" SCH. = 10
4. RB PEN. SCH. = 80
5. THE ORIGINAL ISSUE OF THIS DRAWING IS BASED ON PO-144A-1, REV. 25.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIALS	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	G	150 PSIG	225°F	CS	150.4	NOTE 2	-
2	G	ATM	200°F	CS	150.4	NOTE 2	-
8	G	150 PSIG	225°F	SS	151.4	NOTE 3	-
11	G	150 PSIG	350°F	CS	150.4	NOTE 2	-

DESIGN FLOW

NO	FLOW
1	766 GPM

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
7	REV. PER NSM ON-52827/00, PT. AM1,	RBC	8-31-93	TEH	8-30-93	SLN	8-31-93	GLA	NET	RSL
--	IMP. DATE: 8/17/93, REV. VALVE									
--	SYMBOLS PER ED. EXEMPTION D.6									
ORIG.	ORIGINAL DRAWING RETIRED	RBC	8-25-93							

INSPECTED

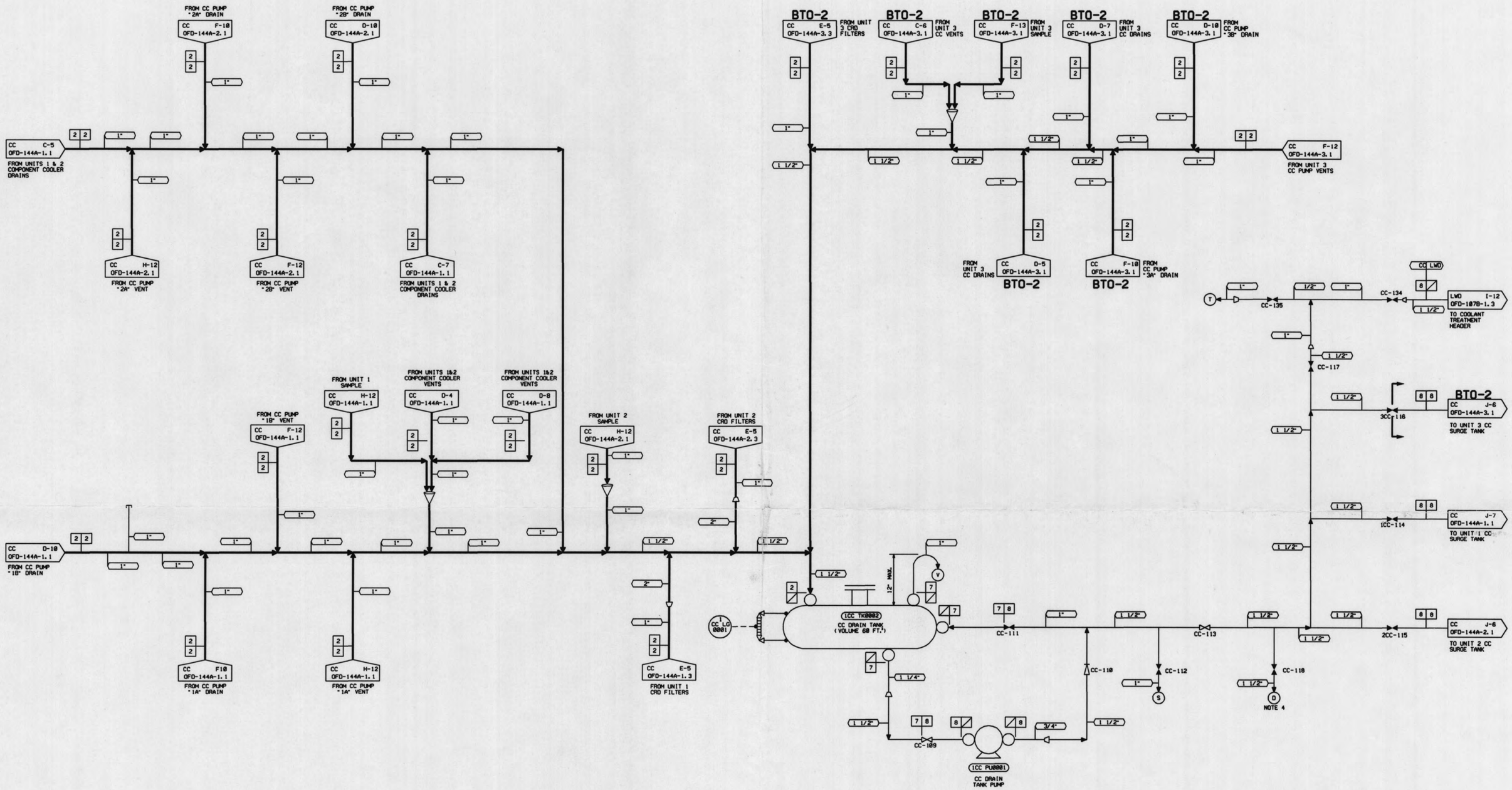
DUKE POWER COMPANY
OCONEE NUCLEAR STATION - UNIT 1

FLOW DIAGRAM OF COMPONENT COOLING SYSTEM (SUPPLY & RETURN)

DESIGNER DK HARRELSON DATE 8-27-85 INSP. WS SILLS DATE 9-4-85
DRAWN ED JACKSON DATE 9-26-85 INSP. EG FRAMPTON DATE 9-6-85
CHECKED JH SKINNER DATE 9-26-85 APPR. RF WARDELL DATE 9-9-85

SCALE DWG. NO. OFD-144A-1.1 REV. 7

ERN: OX000LTB



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Docket # 50-269
Accession # 9903170128
Date 12/21/99 of Ltr
Regulatory Docket File

BTO-2

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: COMPONENT COOLING VENTS & DRAINS TO CC DRAIN TANK.
2. 1/2" THRU 2" SCH. = 80
   2 1/2" THRU 10" SCH. = 40
   12" THRU 24" STD.
3. 1/2" THRU 2" SCH. = 40S
   2 1/2" THRU 12" SCH. = 10S
   14" THRU 18" SCH. = 10
4. CONNECTION FOR TEMPORARY DRAIN TO YARD.
5. THE ORIGINAL ISSUE OF THIS DRAWING IS BASED ON PO-144A-1, REV. 25.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIALS	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	G	150 PSIG	225°F	CS	150.4	NOTE 2	-
2	G	ATM.	200°F	CS	150.4	NOTE 2	-
7	G	ATM.	200°F	SS	151.4	NOTE 3	-
8	G	150 PSIG	225°F	SS	151.4	NOTE 3	-

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
3	REV PER EDITORIAL EXEMPTION D.6	JMW	3-9-95	MWH	3-15-95	PMS	4-6-95	JND	JDB	JBB
ORIG	ORIG DWG RETIRED									

INSPECTED

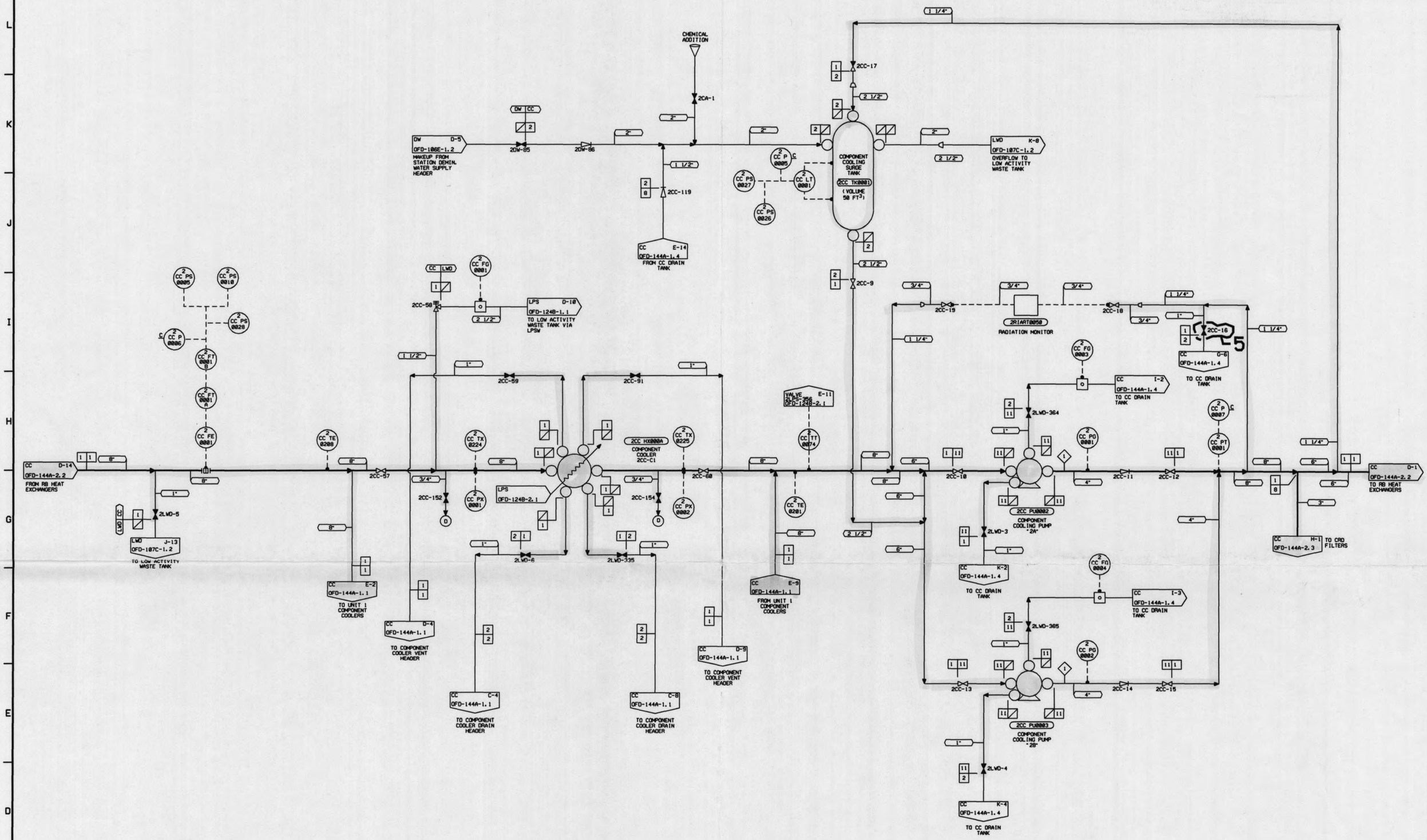
DUKE POWER COMPANY
OCONEE NUCLEAR STATION-UNITS 1 & 3

FLOW DIAGRAM OF
COMPONENT COOLING SYSTEM
(DRAIN TANK)

DESIGNER DK. HARBELSON DATE 8-27-85 INSP. M. S. SILLS DATE 9-4-85
DRAWN F. D. JACKSON DATE 8-26-85 INSP. E. G. FRAMPTON DATE 9-6-85
CHECKED J. H. SKINNER DATE 8-26-85 APPR. B. F. WARDELL DATE 9-9-85

SCALE DWG. NO. OFD-144A-1.4 REV. 3

ERN: OX000LTE



NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: COMPONENT COOLING TO REACTOR BUILDING HEAT EXCHANGERS AND CRD FILTERS
2. 1/2" THRU 2" SCH. = 80
   2 1/2" THRU 10" SCH. = 40
   12" THRU 24" STD.
3. 1/2" THRU 2" SCH. = 40S
   2 1/2" THRU 12" SCH. = 10S
   14" THRU 18" SCH. = 10
4. THE ORIGINAL ISSUE OF THIS DRAWING IS BASED ON PO-144A-2, REV. 28.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIALS	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	G	150 PSIG	225°F	CS	150.4	NOTE 2	-
2	G	ATM	200°F	CS	150.4	NOTE 2	-
8	G	150 PSIG	225°F	SS	151.4	NOTE 3	-
11	G	150 PSIG	350°F	CS	150.4	NOTE 2	-

DESIGN FLOW

NO.	FLOW
1	766 GPM

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
5	REV. PER OE-8168 & REV. VLV SYM.	JMF	4-11-96	NAS	4-11-96	PMS	4-18-96	JND	JDB	HEH
-	& REM. PIPE CAPS PER ED. EX. D.6	--	--	--	--	--	--	--	--	--
4	REV. PER NSM ON-22827/00, PT. AM1.	RBC	8-9-93	JMF	8-9-93	SLN	8-10-93	GLA	TMD	BHJ
--	IMP. DATE: 5-27-93	--	--	--	--	--	--	--	--	--
3	REDRAWN FOR LEG. ENHANCEMENT	LER	12-5-90	NAS	12-5-90	WAH	12-11-90	WAIVED	WAIVED	KLG
ORIG.	ORIG. DRAWING RETIRED	--	--	--	--	--	--	--	--	--

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 2

FLOW DIAGRAM OF
COMPONENT COOLING SYSTEM
(SUPPLY & RETURN)

DESIGNER DK WARREDSON DATE 8-27-85 INSP. MS SILLS DATE 9-4-85
DRAWN FD JACKSON DATE 8-26-85 INSP. EG FRAMPTON DATE 9-6-85
CHECKED JH SKINNER DATE 8-26-85 APPR. RF WARDELL DATE 9-9-85

SCALE DWG. NO. OFD-144A-2.1 REV. 5

ERN: OX000LTF

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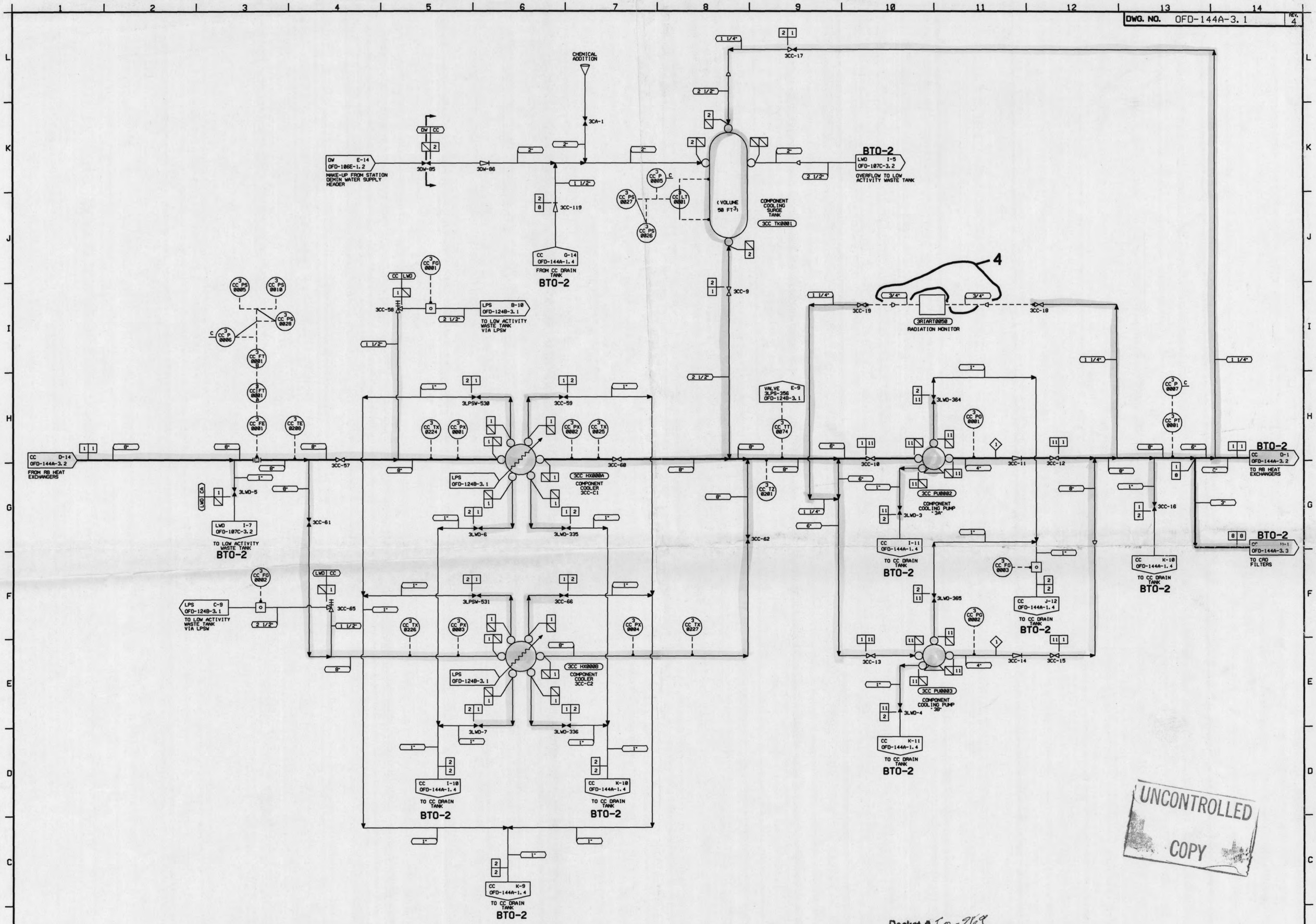
DWG. NO. OFD-144A-3.1 REV. 4



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Docket # 50-269
Accession # 9305170128
Date 12/21/93 of Ltr
Regulatory Docket File

BTO-2

NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES: COMPONENT COOLING TO RB HEAT EXCHANGERS & CRD FILTERS.
2. 1/2" THRU 2" SCH. = 80
   2 1/2" THRU 10" SCH. = 40
   1/2" THRU 24" STD.
3. 1/2" THRU 2" SCH. = 40
   2 1/2" THRU 4" SCH. = 10
4. RB PEN. SCH. = 80
5. THE ORIGINAL ISSUE OF THIS DRAWING IS BASED ON PO-114A-3, REV. 22.

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESSURE	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	G	150 PSIG	225° F	CS	150.4	NOTE 2	--
2	G	ATM	200° F	CS	150.4	NOTE 2	--
8	G	150 PSIG	225° F	SS	151.4	NOTE 3	--
11	G	150 PSIG	350° F	CS	150.4	NOTE 2	--

DESIGN FLOW

NO.	FLOW
1	766 GPM

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.
4	AS-BUILT PER ON-32827/00, IMP.	MSI	9-23-93	DLR	9-23-93	SLN	9-23-93	JLH	NET	DHW
-	DATE: 7-14-93 AND REV. VALVE	---	---	---	---	---	---	---	---	---
-	SYMBOLS PER ED. EX. D.6	---	---	---	---	---	---	---	---	---
ORIG	ORIGINAL DRAWING RETIRED	MSI	9-21-93	---	---	---	---	---	---	---

INSPECTED

DUKE POWER COMPANY
OCONEE NUCLEAR STATION - UNIT 3

FLOW DIAGRAM OF
COMPONENT COOLING SYSTEM
(SUPPLY AND RETURN)

DESIGNER DK HARRELSON DATE 8-27-85 INSP. MS SILLS DATE 9-4-85
DRAWN FD JACKSON DATE 8-26-85 INSP. EO FRAMPTON DATE 9-6-85
CHECKED JH SKINNER DATE 8-26-85 APPR. RF WARDELL DATE 9-9-85

SCALE DWG. NO. OFD-144A-3.1 REV. 4

ERN: OX000LTI