



ARKANSAS POWER & LIGHT COMPANY

Arkansas Nuclear One

TITLE: RECORD OF CHANGES AND REVISIONS

FORM NO. 1000.06A

AUXILIARY SYSTEM OPERATING

REV. # 8 PC #

SPENT RESIN TRANSFER

2104.17 REV. 1

UN-Controlled Copy # 62

Safety Related

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APPROVED BY:

APPROVAL DATE

(Signature)
(General Manager)

7/5/82
REQUIRED EFFECTIVE DATE:



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1.0 PURPOSE

1.1 To provide for transfer of Spent Resin to Spent Resin Tank 2T-13 from the following:

- 1.1.1 Waste Concentration Ion Exchanger
- 1.1.2 CVCS Ion Exchanger
- 1.1.3 Fuel Pool Ion Exchanger
- 1.1.4 Preconcentrator Ion Exchanger
- 1.1.5 Boric Acid Condensate Ion Exchanger

2.0 DESCRIPTION

- 2.1 The Spent Resin Tank is designed to provide a one-year hold up capacity for spent resin to allow decay of short-lived activity.
- 2.2 Spent Resin is sluiced into the Spent Resin Tank from the various ion exchangers in the NSS Auxiliary System. Excess water which is accumulated in the Spent Resin Tank during the transfer of spent resin is drained to the Waste Tanks.
- 2.3 The Spent Resin Tank is equipped with a level indicator and high level alarm.

3.0 REFERENCES

- OP 2104.20 Clean Waste Receiving System
- 2104.18 Waste Concentrator System
- 2104.19 Clean Resin Transfer
- 2104.02 CVCS O.P.
- 2104.06 Fuel Pool System

4.0 LIMITS AND PRECAUTIONS

- 4.1 Valve operation and system checks may require personnel to be exposed to potentially high radiation levels. All proper radiological precautions should be observed to minimize the amount of personnel exposure.
- 4.2 If a high level alarm is received in the Spent Resin Tank during the spent resin transfer, secure the spent resin transfer operation and allow 2T-13 to drain.
- 4.3 Ensure adequate storage space in the Spent Resin Tank 2T-13 for spent resin being transferred. Allow 12% (25% Resin/Water mixture) Resin Level Increase in 2T-13 for each Ion Exchanger covered by this procedure.

5.0 SETPOINTS

None



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6.0 PROCEDURE

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6.1 To transfer resin from Waste Concentrator Ion Exchanger 2T-76 A&B to Spent Resin Tank 2T-13.

- 6.1.1 Ensure adequate space in 2T-13 for resin transfer. The resin level is determined by opening vent to gas collection header 2SZ-42 and 2SZ-20 and draining to drain collection header via 2SZ-10 until level in 2T-13 no longer drops as indicated on 2C-114A.

NOTE

12% change in resin level in 2T-13 corresponds to 32 cu. ft. of resin (a full Waste Concentrator Ion Exchanger).

- 6.1.2 Line up valves on 2T-13 per Attachment "B." _____
- 6.1.3 Ensure reactor makeup water pump is running; open CVC-81. _____
- 6.1.4 Line up Waste Concentrator Ion Exchanger to be transferred as follows:
- | | | |
|--------------------------------------|---------------------|-------|
| 2LRW-7A (B) Inlet | Closed (Circle One) | _____ |
| 2LRW-9A (B) Outlet | Closed " | _____ |
| 2LRW-29A (B) Inlet Cross Conn. | Open " | _____ |
| 2LRW-26A (B) Tank Vent to GCH | Open " | _____ |
| 2DCH-138 Common Drain to DCH | Closed | _____ |
| 2GCH-33 Common Vent To GCH | Open | _____ |
| 2SZ-29A (B) Drain to 2T-13 | Closed " | _____ |
| 2CVC-74 Spent Resin Flush from RMWP | Closed | _____ |
| 2LRW-28A (B) Tank Outlet Cross Conn. | Open " | _____ |
- 6.1.5 Open 2RT-1 Resin Sluice Header to Waste Concentrator Ion Exchangers and open 2SA-86 service air to Resin Sluice Header. Fluff tank for 15 minutes then shut 2SA-86 and 2GCH-33. _____



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- 6.1.6 Open 2SZ-29A (B) (circle one) 2T-76A (B) Outlet to 2T-13 and Open 2CVC-98 to provide 50 gpm flow to Resin Sluice Header. Transfer Resin for 15 minutes.

NOTE

If at the end of 15 minutes Resin has not been transferred as indicated by radiation level on transfer line decreasing, shut 2CVC-98 and 2SZ-29A (B) and Repeat Steps 6.1.5 and 6.1.6.

- 6.1.7 If Resin has been transferred secure the system as follows:

Close 2CVC-98 _____

Close 2RT-1 _____

Close 2SZ-29A (B) (circle one) _____

- 6.1.8 Flush Resin Transfer Line by opening 2CVC-74 from 2P-109 Reactor Makeup Water Pump until radiation levels on transfer lines indicate flushing is adequate then shut 2CVC-74. _____

- 6.1.9 Return Reactor Makeup Water System to normal line up per OP 2104.11. _____

- 6.1.10 Close 2SZ-4, 2T-13 Inlet from Resin Transfer _____

Close 2SZ-10, 2T-13 Outlet to D.C.H. _____

- 6.1.11 Return Waste Condensate Ion Exchanger to normal line up per OP 2104.18 or fill with resin per OP 2104.19. _____



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6.2 To transfer resin from CVCS Ion Exchanger 2T-36 A&B and 2T-70 to Spent Resin Tank 2T-13.

- 6.2.1 Ensure adequate space in 2T-13 for resin transfer. The resin level is determined by opening vent to gas collection header 2SZ-42 and 2SZ-20 and draining to drain collection header via 2SZ-10 until level in 2T-13 no longer drops as indicated on 2C-114A.

NOTE

13.5% change in resin level in 2T-13 corresponds to 36 cu. ft. of resin (a full CVCS Ion Exchanger).

- 6.2.2 Line up valves on 2T-13 per Attachment "B" of 2104.17.

- 6.2.3 Ensure a reactor makeup water pump is running; open 2CVC-81.

- 6.2.4 Line up CVCS Ion Exchanger to be transferred as follows:

2CVC-8A (B,C) Inlet	Shut (circle one)
2CVC-12A (B,C) Outlet	Shut "
2CVC-119 2T36A-2T36B Series X-connect valve	
2SZ-28A (B,C) Drain to 2T-13	Shut "
2CVC-1016 (Boronometer drain line)	Shut
2CVC-1072 (1074, 1076) Outlet Line Vent	Shut "
2CVC-1018 (1020, 1022) Outlet Line Drain	Shut "
2GCH-11A (B,C) Tank Vent to GCH & DCH	Open "
2GCH-14 Sluice Line Vent to GCH	Shut
2GCH-12 Common Vent to GCH & DCH	Open
2DCH-12 Common Vent to DCH	Shut
2DCH-137 2T14 (Inlet Sample Line Drain)	Shut
2GCH-13 Common Vent to GCH	Open
2GCH-9A (B, C) Inlet Line Vent to GCH	Shut (circle one)

- 6.2.5 Open 2DCH-11, resin sluice header drain and drain for approximately 5 minutes.

- 6.2.6 Shut 2DCH-11, resin sluice header drain.

Open 2RT-8, resin sluice header to CVCS ion Exch.

Open 2RT-9, resin sluice header to CVCS ion Exch.



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Open 2SA-86, service air to resin sluice header, _____

Fluff tank for 15 minutes then shut 2SA-86 and
2GCH-13. _____

- 6.2.7 Open 2SZ-28A (B,C) (circle one) 2T-36A (B, 2T-70)
(circle one) Outlet to 2T-13 and open 2CVC-98 to
provide 50 gpm flow to Resin Sluice Header. Trans-
fer Resin for 15 minutes. _____

NOTE

If at the end of 15 minutes resin has not been
transferred as indicated by radiation level on
transfer line decreasing, shut 2CVC-98 and
2SZ-28A (B,C) and Repeat Steps 6.2.5 and 6.2.6.

- 6.2.8 If Resin has been transferred, secure the system as
follows:

Shut 2CVC-98 _____

Shut 2RT-8 _____

Shut 2SZ-28A (B,C) (circle one) _____

- 6.2.9 Flush Resin Transfer Line by opening 2CVC-75 from
2P-109 Reactor Makeup Water Pump until radiation
levels on transfer lines indicate flushing is ade-
quate, then shut 2CVC-75. _____

- 6.2.10 Return Reactor Makeup Water System to normal
line up per OP 2104.11. _____

- 6.2.11 Shut 2SZ-4, 2T-13 Inlet from Resin Transfer _____

Shut 2SZ-10, 2T-13 Outlet to D.C.H. _____

- 6.2.12 Return CVCS Ion Exchanger to normal line up per
OP 2104.18 or fill with Resin per OP 2104.19. _____



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6.3 To transfer Resin from Fuel Pool Ion Exchanger 2T-5 to Spent Resin Tank 2T-13.

- 6.3.1 Ensure adequate space in 2T-13 for resin transfer. The resin level is determined by opening vent to gas collection header via 2SZ-10 until level in 2T-13 no longer drops as indicated on 2C-114A.

NOTE

13.5% change in Resin Level in 2T-13 corresponds to 36 cu. ft. of Resin (a full Fuel Pool Ion Exchanger).

- 6.3.2 Line up valves on 2T-13 per Attachment "B" of 2104.17.

- 6.3.3 Ensure reactor makeup water pump is running; open 2CVC-81.

- 6.3.4 Line up Fuel Pool Ion Exchanger to be transferred as follows:

2FP-13	Inlet	Shut
2FP-1012	Inlet Line Vent	Shut
2FP-15	Outlet	Open
2FP-1018	Resin Sluice Line Drain	Shut
2SZ-27	Outlet to Spent Resin Tank	Shut
2SZ-74	Resin Line Flush from P-109	Shut
2DCH-47	2T-5 to DCH	Shut
2GCH-36	2T-5 Vent to GCH	Open
2RT-13	Resin Sluice Header to 2T-5	Shut
2DCH-49	Ion Ex. Drain	Open

- 6.3.5 Drain Ion Exchanger for approx. 5 minutes

- 6.3.6 Shut 2DCH-49 Ion Exchanger Drain

- 6.3.7 Shut 2FP-15 outlet

- 6.3.8 Open 2RT-13 Resin Sluice Water Inlet

- 6.3.9 Open 2RT-12 Resin Sluice Header to Fuel Pool Ion Exchangers and open 2SA-86 Service Air to Resin Sluice Header Fluff tank for 15 minutes then shut 2SA-86 and 2GCH-36.



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- 6.3.10 Open 2SZ-27, 2T-5 Outlet to 2T-13 and open 2CVC-98 to provide 50 gpm flow to Resin Sluice Header. Transfer Resin for 15 minutes.

NOTE

If at the end of 15 minutes Resin has not been transferred as indicated by radiation level on transfer line decreasing, shut 2CVC-98 and 2SZ-27 and repeat Steps 6.3.5 and 6.3.6.

- 6.3.11 If Resin has been transferred, secure the system as follows:

Shut 2CVC-98

Shut 2RT-12

Shut 2SZ-27

- 6.3.12 Flush Resin Transfer Line by opening 2CVC-74 from 2P-109 Reactor Makeup Water Pump until radiation levels on transfer lines indicate flushing is adequate then Shut 2CVC-74.

- 6.3.13 Return Reactor Makeup Water System to normal line up per OP 2104.11.

- 6.3.14 Shut 2SZ-4, 2T-13 Inlet from Resin Transfer

Shut 2SZ-10, 2T-13 Outlet to DCH

- 6.3.15 Return Fuel Pool Ion Exchanger to normal lineup per OP 2104.06 or fill with resin per OP 2104.19.



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6.4 To transfer Resin from Preconcentrator Ion Exchangers T-15 A&B to Spent Resin Tank 2T-13.

- 6.4.1 Ensure adequate space in 2T-13 for resin transfer. The resin level is determined by opening vent to gas collection header 2SZ-42 and 2SZ-20 and draining to drain collection header via 2SZ-10 until level in 2T-13 no longer drops as indicated on 2C-114A.

NOTE

12% change in resin level in 2T-13 corresponds to 32 cu. ft. of resin (a full Preconcentrator Ion Exchanger).

- 6.4.2 Line up valves on 2T-13 per Attachment "B" of OP 2104.17.
- 6.4.3 Line up valves for sluice water per Attachment "A" of 2104.17 and start 2P-48 Holdup Tank Recirc. Pump, or ensure RMW pump is running and open 2CVC-81.

- 6.4.4 Line up Preconcentrator Ion Exchanger to be transferred as follows:

2BM-21A (B)	Inlet	(circle one)	Shut
2BM-23A (B)	Outlet	"	Shut
2BM-57A (B)	Outlet Cross Conn.	"	Shut
2BM-54A (B)	Outlet to DCH & GCH	"	Open
2DCH-137	Common Outlet to DCH		Shut
2GCH-30	Common Outlet to GCH		Open
2GCH-39	GCH Drain to DCH		Shut
2SZ-30A (B)	Outlet to Resin Transfer		Shut
	Outlet to Resin Header (circle one)		
2BM-55A (B)	Inlet from Resin Sluice Header (circle one)		Open
2CVC-74 P-109	Flushing to Resin Trans.		Shut

- 6.4.5 Open 2DCH-71 for approx. 5 minutes then shut 2DCH-71.

- 6.4.6 Open 2RT-5 Resin Sluice Header to Preconcentrator Ion Exchangers.

Open 2SA-86 Service Air to Resin Sluice Header.

Fluff tank for 15 minutes then shut 2SA-86 and 2BM-54A (B) (circle one)



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- 6.4.7 Open 2SZ-30A (B), (circle one) 2T-15A (B) (circle one) Outlet to 2T-13 and open 2BM-99 Holdup Tank Recirc. Pump discharge to Resin Sluice Header; Reactor makeup water may be used for transfer by opening 2CV-98 to provide 50 gpm flow to the resin sluice header. Transfer Resin for 15 minutes. _____

NOTE

If at the end of 15 minutes resin has not been transferred as indicated radiation level on transfer line decreasing, Shut 2BM-99 (2CVC-98, if opened) and 2SZ-30A (B) and repeat Steps 6.4.5 and 6.4.6.

- 6.4.8 If Resin has been transferred, secure the system as follows:

Shut 2BM-99 (2CVC-98 if used) _____

Shut 2RT-5 _____

Shut 2SZ-30A (B) (circle one) _____

- 6.4.9 Flush Resin Transfer Line by opening 2CVC-74 from 2P-109 Reactor Makeup Water Pump until radiation levels on transfer lines indicate flushing is adequate, then Shut 2CVC-74. _____

- 6.4.10 Return Boron Management System (2T-12 and 2P-48) to normal line up per OP 2104.20 and RMW system to normal alignment per OP 2104.11. _____

- 6.4.11 Shut 2SZ-4, 2T-13 Inlet from Resin Transfer _____

Shut 2SZ-10, 2T-13 Outlet to DCH _____

- 6.4.12 Return Boron Management System 2T-15 A&B to normal line up per OP 2104.20 or fill with resin per OP 2104.19. _____



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6.5 To transfer Resin from Boric Acid Condensate Ion Exchangers 2T-72 A&B to Spent Resin Tank 2T-13.

- 6.5.1 Ensure adequate space in 2T-13 for resin transfer. The resin level is determined by opening vent to gas collection header 2SZ-42 and 2SZ-20 and draining to drain collection header via 2SZ-10 until level in 2T-13 no longer drops as indicated on 2C-114A.

NOTE

12% change in Resin Level in 2T-13 corresponds to 32 cu. ft. of Resin (a full Boric Acid Condensate Ion Exchanger).

- 6.5.2 Line up valves on 2T-13 per Attachment "B" of OP 2104.17.

- 6.5.3 Ensure a reactor makeup water pump is running; open 2CVC-81.

- 6.5.4 Line up Boric Acid Condensate Ion Exchanger to be transferred as follows:

2BM-28A (B)	Inlet	(circle one) Shut	_____
2BM-30A (B)	Outlet	" Shut	_____
2GCH-32	Common Line to GCH	Open	_____
2BM-77A (B)	Inlet Cross Conn.	(circle one) Shut	_____
2BM-78A (B)	Resin Sluice Header	Open	_____
	Inlet (circle one)		_____
2DCH-73	Resin Sluice Header	Shut	_____
	Drain to DCH		_____
2DCH-72A (B)	Tank Vent to GCH	(circle one) Open	_____
2SZ-37A (B)	Resin Outlet to 2T-13	Shut	_____
	(circle one)		_____

- 6.5.5 Open 2DCH-73 for approx. 5 minutes to allow 2T-72A (B) to drain then shut 2DCH-73.

- 6.5.6 Open 2RT-3 Resin Sluice Header to Boric Acid Condensate Ion Exchangers.



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Open 2SA-86 Service Air to Resin Sluice Header. _____

Fluff tank for 15 minutes then shut 2SA-86 and
2DCH-72A (B) (circle one) _____

- 6.5.7 Open 2SZ-37A (B), (circle one) 2T-72A (B) (circle one) Outlet to 2T-13 and open 2CVC-98 to provide 50 gpm flow to Resin Sluice Header. Transfer Resin for 15 minutes.

NOTE

If at the end of 15 minutes resin has not been transferred as indicated by radiation level on transfer line decreasing, Shut 2CVC-98 and 2SZ-37A (B) and repeat Steps 6.5.5 and 6.5.6.

- 6.5.8 If resin has been transferred, secure the system as follows:

Shut 2CVC-98 _____

Shut 2RT-3 _____

Shut 2SZ-37A (B) (circle one) _____

- 6.5.9 Flush Resin Transfer Line by opening 2CVC-74 from 2P-109 Reactor Makeup Water Pump until radiation levels on transfer lines indicate flushing is adequate, then Shut 2CVC-74. _____

- 6.5.10 Return Reactor Makeup Water System to normal line up per OP 2104.11. _____

- 6.5.11 Shut 2SZ-4, 2T-13 Inlet from Resin Transfer. _____

Shut 2SZ-10, 2T-13 Outlet to DCH. _____

- 6.5.12 Return Boron Management System (2T-72A & B) to normal line up per OP 2104.18 or fill with Resin per OP 2104.19. _____



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ATTACHMENT A

VALVE NUMBER	OPEN	CLOSED	DESCRIPTION
2BM-13C	X		2P-48 Suction
2BM-15C	X		2P-48 Discharge
2BM-44		X	Hold Up Tank Pumps Cross Conn.
2BM-49A		X	2P-48 Discharge to Floor Drain
2BM-18	X		2P-48 Discharge to 2F-15A
2BM-19A	X		2F-15A Inlet
2BM-48A		X	2F-15A Bypass
2BM-20A	X		2F-15A Discharge
2BM-51		X	2F-15B Disch. to Recirc.
2BM-52A		X	2F-15A to Floor Drain
2BM-21A		X	2T-15A Inlet
2BM-53A		X	2T-15A Inlet
2BM-53A		X	2T-15A Inlet
2BM-16	Throttled		2P-48 Recirc. to 2T-12
2BM-17A (B,C,D)	X		2T-12A (B, C, D) Recirc. Inlet
2BM-39A (B,C,D)	X		2T-12A (B, C, D) Vent to GCH
2BM-12A (B,C,D)	X		2T-12A (B, C, D) Outlet to 2P-48
2BM-11A (B,C,D)		X	2T-12A (B, C, D) Outlet to 2F-49A or B
2ABS-12A (B,C,D)		X	2T-12A (B, C, D) Outlet to Aux. Bldg. Sump

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ATTACHMENT B

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