

SAFETY EVALUATION

NL-92-004

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**PENNSYLVANIA POWER & LIGHT COMPANY
CALCULATION COVER SHEET**

PROJECT: CALCULATION OF LIQUID ISOTOPE OFFSITE DOSE CONSEQUENCES FOR USE OF ATMOSPHERIC DEMINERALIZER SYSTEM

CALCULATION NO: OT-RKB-92-001

DEPARTMENT: Operations Technology

DATE: February 4, 1992

PERFORMED BY: Robert K. Barclay
R. K. Barclay
Health Physicist-Environmental Services

Date: 2/4/92

REVIEWED BY: Bruce H. Carson
B. H. Carson
Health Physicist-Environmental Services

Date: 2/4/92

APPROVED BY: Kenneth E. Shank
K. E. Shank
Supervisor-Environmental Services

Date: 2/4/92

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CALCULATION OF LIQUID ISOTOPE OFFSITE DOSE CONSEQUENCES
FOR USE OF ATMOSPHERIC DEMINERALIZER SYSTEM1. CALCULATION OF TOTAL BODY DOSE (DOSE_{TB}) PER PERIOD FOR ATMOSPHERIC
DEMINERALIZER RELEASES:

GIVEN:

Atmospheric demineralizer pretreatment constituency based on sample 91-30439 (Attachment 1), which had the highest radioisotope concentration in available samples; total 7.0 E4 gallons;

No credit taken for decontamination factors (DFs) across atmospheric demineralizer;

mrem/release_{A.D.(TB)} = Atmospheric Demineralizer dose per release;
= 7.60 E-5 mrem/release, based on LADTAP calculation (Attachment 2);

13 releases/month = number of atmospheric demineralizer releases/month;

39 releases/quarter = number of atmospheric demineralizer releases/quarter;

156 releases/year = number of atmospheric demineralizer releases/year;

Tech. Spec. 3.11.1.3 whole body projection dose limit = 6.00 E-2 mrem/31 days;

Tech. Spec. 3.11.1.2.a. whole body dose limit to member of public = 1.5 mrem/quarter/unit;

Tech. Spec. 3.11.1.2.b. whole body dose limit to member of public = 3.0 mrem/year/unit.

THEN:

DOSE_{TB}/MONTH = mrem/release_{A.D.(TB)} * releases/month;
= (7.6 E-5 mrem/release)(13 release/month);
= 9.88 E-4 mrem/month.

DOSE_{TB}/QUARTER = mrem/release_{A.D.(TB)} * releases/quarter;
= (7.60 E-5 mrem/release)(39 releases/quarter);
= 2.96 E-3 mrem/quarter.

DOSE_{TB}/YEAR = mrem/release_{A.D.(TB)} * releases/year;
= (7.60 E-5 mrem/release)(156 releases/year);
= 1.19 E-2 mrem/year.



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2. CALCULATION OF ORGAN DOSE ($DOSE_{ORG}$) PER PERIOD FOR ATMOSPHERIC DEMINERALIZER RELEASES:

GIVEN:

mrem/release_{A.D.(ORG)} = Atmospheric Demineralizer dose per release, = 2.08 E-4 mrem/release; based on LADTAP calculation (Attachment 2);

Tech. Spec. 3.11.1.3 organ projection dose limit = 2.00 E-1 mrem/31 days;

Tech. Spec. 3.11.1.2.a. organ dose limit to member of public = 5.0 mrem/quarter/unit;

Tech. Spec. 3.11.1.2.b. organ dose limit to member of public = 10.0 mrem/year/unit.

THEN:

DOSE_{ORG}/MONTH = mrem/release_{A.D.(ORG)} * releases/month;
 = (2.08 E-4 mrem/release)(13 releases/month);
 = 2.70 E-3 mrem/month.

DOSE_{ORG}/QUARTER = mrem/release_{A.D.(ORG)} * releases/quarter;
 = (2.08 E-4 mrem/release)(39 releases/quarter);
 = 8.11 E-3 mrem/quarter.

DOSE_{ORG}/YEAR = mrem/release_{A.D.(ORG)} * releases/year;
 = (2.08 E-4 mrem/release)(156 releases/year);
 = 3.24 E-2 mrem/year.



3. COMPARISON OF DOSES CALCULATED AGAINST TECH. SPEC. LIMITS

Tech. Spec. Basis	% T.S. Limit: T.B. Dose	% T.S. Limit: Organ Dose
3.11.1.3 (31 d)	1.6	1.4
3.11.1.2.a. (qtr)	0.2	0.2
3.11.1.2.b. (yr)	0.4	0.3

4. CONCLUSION:

Based on this evaluation, offsite doses resulting from continuous operation of the atmospheric demineralizer system will be less than two percent (< 2%) of any applicable Tech. Spec. offsite dose limit. These results indicate that use of the atmospheric demineralizer system for the liquid quantities described will have negligible offsite dose consequences. This analysis is supported by conservative assumptions (pretreatment sample used, no credit taken for DFs, with most limiting isotope constituency available; entire thirteen batches/month released).



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ATTACHMENT 1

ATMOSPHERIC DEMINERALIZER SAMPLE CONSTITUENCY (SAMPLE 91-30439)

Summary of Nuclide Activity
 Sample ID : 91-30439

Acquisition date : 23-DEC-1991 03:

Total number of lines in spectrum 16
 Number of unidentified lines 1
 Number of lines tentatively identified by NID 15 93.75%

Nuclide Type : ACTIVATION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected UCI/ML	Wtd Mean Decay Corr UCI/ML	Decay Corr 2-Sigma Error	2-Sigma Error
F-18	109.74M	1.055	4.569E-08	4.822E-08	48.99E-08	1016.05
CR-51	27.70D	1.000	9.770E-05	9.771E-05	1.131E-05	11.58
MN-54	312.70D	1.000	3.155E-04	3.155E-04	0.331E-04	10.51
CO-58	70.80D	1.000	7.413E-06	7.413E-06	1.058E-06	14.27
FE-59	44.63D	1.000	5.562E-05	5.562E-05	0.409E-05	7.36
CO-60	5.27Y	1.000	1.459E-04	1.459E-04	0.102E-04	6.97
ZN-65	244.40D	1.000	1.541E-05	1.541E-05	0.220E-05	14.30
SB-124	60.20D	1.000	1.506E-06	1.506E-06	0.502E-06	33.31
Total Activity :			6.391E-04	6.391E-04		

Nuclide Type : FISSION

Nuclide	Hlife	Decay	Wtd Mean Uncorrected UCI/ML	Wtd Mean Decay Corr UCI/ML	Decay Corr 2-Sigma Error	2-Sigma Error
CS-134	2.06Y	1.000	1.145E-06	1.145E-06	0.634E-06	55.35
CS-137	30.17Y	1.000	2.479E-06	2.479E-06	0.784E-06	31.62
Total Activity :			3.624E-06	3.624E-06		

Grand Total Activity : 6.427E-04 6.427E-04

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit



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ATTACHMENT 2

LADTAP CALCULATION FOR ATMOSPHERIC DEMINERALIZER OFFSITE DOSES

LADTAP CALCULATION BASED ON 13 RELEASES (70E4 GALLONS)

• • • SELECTED LOCATION • • •

LOCATION IS DANVILLE

ADULT DOSES

PATHWAY	DOSE (MREM PER YEAR INTAKE)							
	SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH		8.28E-04	1.76E-03	8.81E-04	2.60E-08	6.88E-04	9.95E-05	2.26E-03
DRINKING		1.78E-05	9.15E-05	4.64E-05	4.89E-09	2.25E-05	6.33E-06	3.85E-04
SHORELINE	5.53E-05	4.78E-06	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05	4.70E-05
TOTAL	5.53E-05	8.81E-04	1.80E-03	8.80E-04	4.70E-05	7.57E-04	1.53E-04	2.70E-03

	USAGE (KG/YR,HR/YR)	DILUTION	TIME(HR)	SHOREWIDTH FACTOR=0.2
FISH	21.0	321.0	49.80	
DRINKING	730.0	321.0	37.80	
SHORELINE	12.0	321.0	25.80	

• • • INDIVIDUAL ISOTOPE PERCENT CONTRIBUTION • • •

PATHWAY		SKIN	BONE	LIVER	TOTAL BODY	THYROID	KIDNEY	LUNG	GI-LLI
FISH	CO 60		0.0	7.80E-01	3.40E+00	0.0	0.0	0.0	1.14E+01
	FE 59		3.29E+00	2.74E+00	2.08E+00	0.0	0.0	1.36E+01	7.11E+00
	MN 54		0.0	2.88E+01	1.88E+01	0.0	2.19E+01	0.0	6.86E+01
	SB 124		5.82E-04	3.88E-06	1.82E-04	3.38E-02	0.0	2.85E-03	4.56E-03
	CR 51		0.0	0.0	4.88E-03	1.00E+02	1.39E-03	5.80E-02	4.84E-01
	CO 58		0.0	1.35E-02	5.80E-02	0.0	0.0	0.0	2.13E-01
	CS 134		2.81E+01	1.78E+01	2.75E+01	0.0	1.41E+01	3.24E+01	2.32E-01
	CS 137		5.57E+01	2.71E+01	3.80E+01	0.0	2.35E+01	5.40E+01	4.07E-01
	ZN 65M		2.08E+01	2.36E+01	2.11E+01	0.0	4.04E+01	0.0	1.16E+01
	F 18		2.84E-13	8.0	2.21E-14	0.0	0.0	0.0	2.32E-15
DRINKING	CO 60		0.0	1.84E+01	4.27E+01	0.0	0.0	0.0	4.66E+01
	FE 59		4.83E+01	1.85E+01	1.31E+01	0.0	0.0	7.47E+01	1.47E+01
	MN 54		0.0	4.82E+01	1.70E+01	0.0	5.84E+01	0.0	3.51E+01
	SB 124		7.13E-01	2.62E-03	1.02E-01	6.31E+00	0.0	1.56E+00	8.39E-01
	CR 51		0.0	0.0	1.85E-02	8.37E+01	7.51E-03	1.61E-01	5.01E-01
	CO 58		0.0	1.82E-01	7.85E-01	0.0	0.0	0.0	8.77E-01
	CS 134		1.23E+01	5.70E+00	8.84E+00	0.0	7.51E+00	8.84E+00	2.37E-02
	CS 137		3.38E+01	9.08E+00	1.10E+01	0.0	1.25E+01	1.48E+01	4.17E-02
	ZN 65M		1.27E+01	7.91E+00	6.63E+00	0.0	2.15E+01	0.0	1.18E+00
	F 18		3.23E-09	0.0	1.29E-10	0.0	0.0	0.0	4.44E-12
SHORELINE	CO 60	8.63E+01	8.62E+01						
	FE 59	4.89E-01	4.10E-01						
	MN 54	1.20E+01	1.20E+01						
	SB 124	2.42E-02	2.48E-02						
	CR 51	1.23E-02	1.22E-02						
	CO 58	7.63E-02	7.66E-02						
	CS 134	2.15E-01	2.17E-01						
	CS 137	6.99E-01	7.04E-01						
	ZN 65M	3.08E-01	3.15E-01						
	F 18	3.08E-11	3.07E-11						

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02-05-1992 08:57





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March 4, 1992

R. A. Breslin

SSES/PT

SUSQUEHANNA STEAM ELECTRIC STATION
ATMOSPHERIC DEMINERALIZER EFFLUENT RESULTS
CCN 741326 FILE R9-3
PLI- 70612

We have reviewed the results of isotopic analyses of influent and effluent samples from the atmospheric demineralizer. These results (telecopy attached) show significant reductions of radionuclide activities across the liners. In nine of 12 samples, the final effluent was below the lower limit of detection. In two samples taken 2/14/92 and one on 2/25/92, where effluent activity exceeded LLD, excellent DFs (two to three orders of magnitude) were observed for total activity reduction. In the three positive effluent samples, the sample activity was lower than LRW sample tank activities: the average LRW sample tank activity in January 1992 was 6.60 E-7 uCi/cc vs. 1.05 E-7 uCi/cc average activity in the final effluent from the atmospheric demineralizer. The maximum activity reported in a sample, 1.46 E-7 uCi/cc , is less than twenty-five percent of the average LRW activity.

Based on these results, and the calculation done previously for doses offsite prior to atmospheric demineralizer treatment (OT-RKB-92-001), this treatment is considered appropriate for water being collected and treated in the chemical radwaste stream.

If you have any questions, please feel free to call me at ETN 220-4721.

Robert K. Barclay

Robert K. Barclay

rkb/mec2700a(26)

Attachment

cc:	K. E. Shank	A9-3
	K. P. Ziolkowski	SSES/PT
	L. K. Vnuk	SSES/PT
	B. E. Rhoads	SSES/PT
	R. L. Doty	A9-3
	B. H. Carson	A9-3
	T. J. Ball	SSES/PT
	J. M. Hettinger	SSES/PT
	SRMS Corresp. File	A6-2



Atmospheric Data Evaluation

Date	Sample Pt	Sample #	Atmospheric Data Data									
			Total Acids	Cr-51	Mn-54	Co-58	Fe-58	Co-60	Zn-65	Sr-134	Ca-134	Ca-137
2/13/82	Influent	823757	7.27E-05	3.85E-08	4.47E-05	5.20E-07	1.24E-08	2.05E-05	1.87E-08			
	Line 1	823758	LLD									
	Line 2	823759	LLD									
	DF											
2/14/82	Influent	823862	6.27E-05	3.81E-08	3.93E-05	3.72E-07	1.20E-08	1.88E-05	1.31E-08			
1405	Line 1	823863	LLD									
	Line 2	823864	4.11E-08									4.11E-08
	DF		1563.567									
2/14/82	Line 1	823865	LLD									
1535	Line 2	823866	1.08E-07		8.98E-08							8.97E-08
	DF		428.4571									
2/14/82	Line 2	823873	LLD									
	DF											
2/14/82	Line 1	824812	LLD									
	Line 2	824813	LLD									
2/18/82	Influent	824280	8.24E-05	8.23E-05	5.43E-05	8.23E-07	1.22E-08	2.64E-05	2.54E-08			
	Line 1	824282	2.15E-07					2.15E-07				
	Line 2	824283	LLD									
	DF											
2/20/82	Influent	824387	2.75E-04	1.28E-05	1.38E-04	1.42E-08	4.88E-08	1.18E-04	8.51E-08			1.55E-06
8838	Line 1	824388	LLD									
	Line 2	824389	LLD									
	DF											
2/20/82	Line 1	824390	LLD									
1748	Line 2	824392	LLD									
	DF											
2/25/82	Influent	824781	4.85E-04	1.28E-04	1.63E-04	4.81E-08	2.80E-05	1.88E-04	1.27E-05	7.55E-07		1.50E-04
2/25/82	Line 1	824782	8.64E-08					8.44E-08				
2/25/82	Line 2	824783	1.28E-07		4.14E-08							8.64E-08
	DF		2848		2854							17.7
2/26/82	Influent	824871	4.88E-04	1.25E-04	1.38E-04	4.17E-08	2.40E-05	1.82E-04	1.18E-05			1.85E-04
2/26/82	Line 1	824882	LLD									
2/26/82	Line 2	824883	LLD									
	DF											
2/27/82	Line 1	824871	2.28E-07									2.28E-07
2/27/82	Line 2	824872	LLD									
2/28/82	Influent	825087	5.88E-04	1.92E-04	1.85E-04	7.75E-08	4.85E-05	1.28E-04	1.28E-05	8.77E-07		1.84E-04
2/28/82	Line 1	825088	2.14E-08		7.78E-08			2.05E-08				
2/28/82	Line 2	825089	LLD									

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BYPASS INSTALLATION FORM

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1. TO BE FILLED OUT BY INDIVIDUAL IN CHARGE OF THE BYPASS INSTALLATION.

BYPASS NUMBER 0-92-002

INSTALLATION WA NUMBER 523203

INDIVIDUAL IN CHARGE OF INSTALLATION Ed Mangum / 13-26-92
NAME DATE

2. TO BE FILLED OUT BY THE INDIVIDUAL REQUESTING THE BYPASS.

INDIVIDUAL REQUESTING THE BYPASS Timothy J. Ball / 1-21-92
NAME OF PERSON DATE

Originating Work Group Chemistry

Unit 0 System No. 69 System Name Liquid Radwaste

Description of Bypass, including purpose and location (reference attached sketch)

A hose will be installed from Evaporator Concentrate Storage Tank Discharge Pump OP328 discharge (HCD-79) to Evaporator Distillate Sample Tank Pumps OP327 A & B suction (HCD-83).

Specifically the hose will be installed from pressure
(continued)

Plan for removing bypass. Include references to maintenance, modifications, and engineering disposition required.

This bypass will validate the benefits of the new processing mode for chemical radwaste and identify any problems to consider for permanent processing in this fashion.

Expected (target) removal date 1993 (continued)

Does the proposed bypass require procedure changes prior to installation?

YES NO

If YES, list procedures affected and PCAF numbers.

Procedures affected: 1. OP-069-050, Release of Liquid Radioactive Waste, will be revised to discharge to the river from the Evaporator

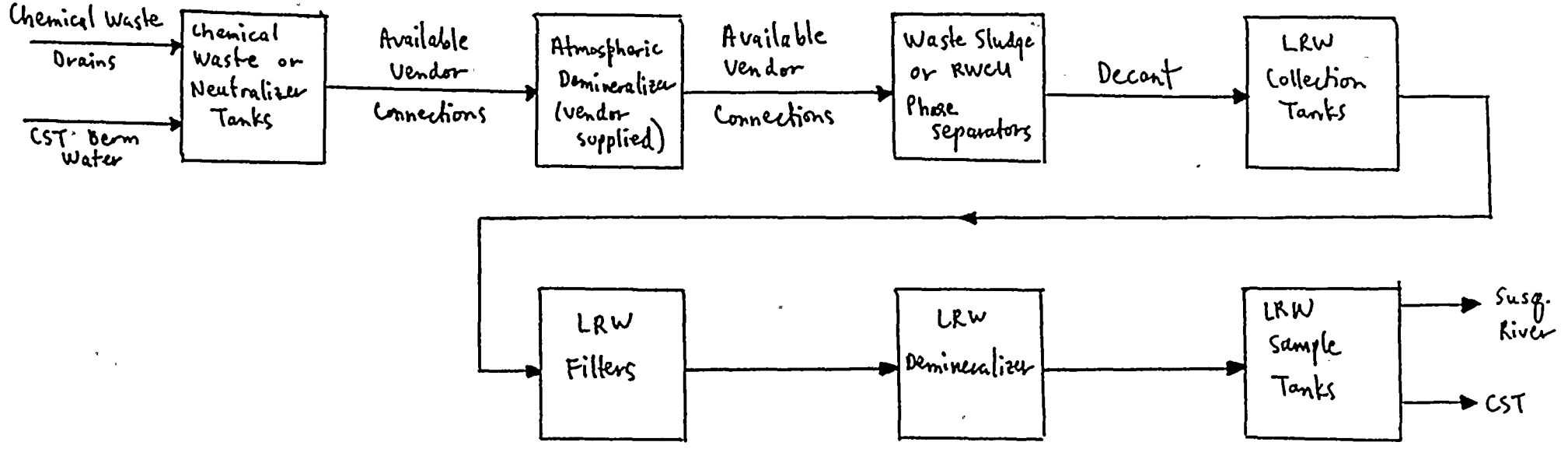
(continued)

Description of Bypass, including purpose and location continued:

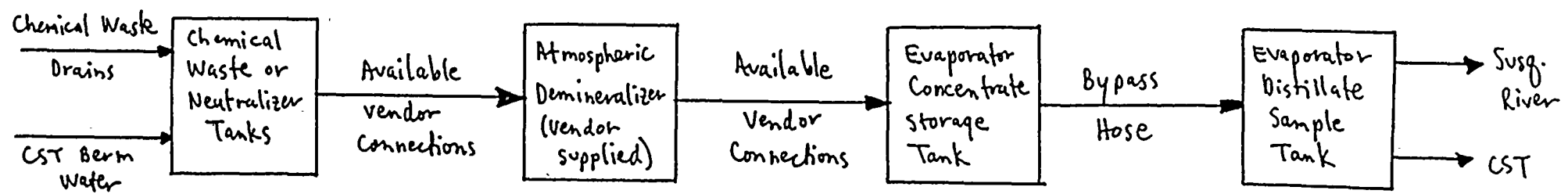
indicator root valve RV-PI-06346 on HCD-79 to a two(2) inch threaded connection (cap removed) on HCD-83. This hose will allow pumping the contents of Evaporator Concentrate Storage Tank OT322 to the Evaporator Distillate Sample Tank OT321 using Evaporator Concentrate Storage Tank Discharge Pump OP32B. The purpose of this bypass is to discharge all chemical waste and CST berm water to the river without processing it through the LRW filter and demineralizer. The basis for this change is given in attached letter PLIS-38716, Radwaste Processing Changes. Presently the chemical waste stream (including berm water) is processed through the atmospheric demineralizer (temporary vendor supplied equipment) to the Waste Sludge or RWCH Phase Separators. The phase separators are decanted to RW collection for further processing through the LRW filters and demineralizer. Procedure changes issued in conjunction with this bypass will allow discharging the atmospheric demineralizer to the evaporator concentrate storage tank through available mobile vendor hose connections. The bypass hose will allow transferring from the concentrate tank to the distillate tank. The distillate tank is a design discharge point to the river that is not presently used since the evaporators are not run. Additional procedure changes will incorporate discharge from the distillate tank.



Present Chemical Waste Processing



New Chemical Waste Processing mode with Bypass





Plan for removing bypass continued:

A request for minor modification (attached) will be submitted for 1993 installation consideration to permanently tie the concentrates tank to the distillate tank. The permanent change would likely tie the tanks through their normal inlets for direct processing of the atmospheric demineralizer to the distillate tank.

Procedures affected continued:

Distillate Sample Tank OT321 (new revision)

2. OP-068-122, Three Tank Demineralizer Operations (Unpressurized), will be revised to process the atmospheric demineralizer discharge to the Evaporator Concentrate Tank OT322. (PCAF 1-92-0407)
3. OP-069-012, Evaporator Distillate Sample and Concentrate Tanks Operation, will be revised to transfer the concentrate tank to the distillate tank using the bypass hose. (PCAF 1-92-0406)
4. CL-069-0122, Evaporator Distillate Sample Tank Mechanical, will be revised to reflect bypass hose isolation valves. (PCAF 1-92-0408)
5. CL-069-0124, Evaporator Concentrate Storage Tank Mechanical, will be revised to reflect bypass hose isolation valves. (PCAF 1-92-0409)

Note that OP-169-010, Neutralization of Chemical Waste Neutralizer and Chemical Waste Tanks, and OP-269-010, Neutralization of Chemical Waste Neutralizer Tanks, have sections for transferring to
(continued)



- a mobile processing vendor per OP-068-122 but will not require revision.
6. Offsite Dose Calculation Manual (ODCM) will be revised to reflect the new processing mode and any requirements necessary to meet the Technical Specifications.
 7. AD-QA-310, Liquid Effluent Release, will be revised so that the requirements for release are consistent with PLIS-38716, Radwaste Processing Changes, and this bypass. (PCAF 1-92-0404)
 8. SO-069-002, 92 Day Operability Demonstration of Radwaste Systems, will be revised to add the atmospheric demineralizer and other appropriate radwaste chemical waste stream processing equipment to the operability demonstration. (PCAF 1-92-0405)

Note that no chemistry procedures will require revision due to this bypass. Evaporator Distillate Sample Tank sampling and analysis is already available in the Chemistry Sampling Schedule, Analysis, and Control (SSA&C) Matrix.

BYPASS INSTALLATION FORM

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Does the proposed bypass require any print changes?

YES

NO

If Yes, list the prints that are affected. (Ensure that the appropriate DCNs are implemented.)

Prints Affected: m-163(E106268) SH 3, m-163(E106268) SH2

Isometrics were not changed since these drawings are not class 1.

3. TO BE FILLED OUT BY RESPONSIBLE SYSTEM ENGINEER

Does installation of the Bypass as specified above:

- a. Constitute a change to the facility as described in the FSAR? YES NO
- b. Constitute a change to the procedures as described in the FSAR? YES NO
- c. Perform a test or experiment not described in the FSAR? YES NO

If the answer to a, b, or c is YES, a Safety Evaluation shall be performed in accordance with NDI-9.1.1. Attach evaluation to this bypass package. Otherwise, provide rationale for answering NO to these questions on the attached page, referencing the applicable FSAR sections as required.

DETAILS OF 50.59 REVIEW

This bypass involves essentially a new processing mode for the chemical waste stream. The chemical waste stream includes the chemical waste drains and CST berm water also processed through the chemical waste system. Since the RW evaporators are not run due to operational problems, an atmospheric demineralizer (temporary vendor supplied equipment) is used prior to the LRW filters and demineralizer for processing chemical waste. This bypass suggests using the atmospheric demineralizer as

(continued)

Bypass Number
0.92-002

DETAILS OF 50.59 REVIEW CONTINUATION SHEET

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primary treatment without routing chemical waste through the LRW filters and demineralizer prior to release of the material to the river. The intention is to release all chemical waste to the river if effluent requirements can be met. This bypass therefore prompts questions of appropriate treatment per the Offsite Dose Calculation Manual (ODCM) to meet effluent program requirements as well as a equipment design evaluation of the new processing mode. For these reasons, the bypass was considered a change to the facility as described in the FSAK.

BYPASS INSTALLATION FORM

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Does installation of the bypass disable any equipment required to be operable per the Technical Specifications in any Operational Condition? If YES, attach an Equipment Release Form (ERF) to the package describing the limitations.

YES NO

(1) Does the proposed bypass affect nuclear instrumentation or inputs to core thermal power heat balance (ref. RE-OTP-002) such that inaccurate core thermal power indications may occur?

YES NO

If YES, provide justification and obtain Rx Engineering concurrence.

N/A
Reactor Engineer Date

Could the proposed bypass introduce a "foreign potential" as described in AD-QA-103?

YES NO

If YES, describe actions to prevent personnel injury: (Use additional sheets if necessary)

Necessary P&ID print changes will be issued as called out in section 2 of this form. This will ensure the mechanical potential of the hose is identified for personnel protective blocking. Valves will be available on either end of the hose for blocking purposes. Temporary valve will be assigned a number consistent with DCN.

Does the proposed bypass require installation of Yellow Caution Tags? YES NO

If YES, provide details below: (Use additional sheets if necessary)

N/A

Identify Post-installation testing below:

Technical Specification Operability Testing: N/A

Other testing: Inservice leak inspection of all valves, fittings, and hose.

The proposed Bypass is accurately specified with respect to engineered parameters (e.g., pipe size, current capacity, voltage drop, seismic qualifications, environmental qualifications, etc.).

Evaluated By: Samothy J. Bell / 1-28-92
See attached evaluation System Engineer Date

Installation Approved By: [Signature] / 3-5-92
Tech. Supv. Date

Permission to Install: [Signature] / 3-26-92 / 1248
Shift Supervision Date Time



BYPASS NUMBER 0-92.002
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LIST OF BYPASS TAG LOCATIONS

TAG NO.	LOCATION (Panel #, Room #) (J-Box, other)	BYPASS INSTALLED (Give type & location of bypass)	EQUIP#	SCHEME # (REF. DWG.)	INSTALLED BY/DATE	INDEPENDENT VERIFICATION
1	41-646' Room R-8	Mechanical - Hose from pressure indicator RV-PI-16346	HCD-79	M-163 SH3	Ed Morgan 13-26-92	J. H. 3-26-92
2	41-646' Room R-7	Mechanical - Hose to 2" threaded capped connection with temporary valve	HCD-83	M-163 SH2	Ed Morgan 13-26-92 Ed FBM 3-26-92	J. H. 3-26-92