

(Unit 1 & 2) NRC (Student) 5/3/79

NRC

AP 1001

Figure 1001-8

Three Mile Island Nuclear Station
Special Operating Procedure

(REV 3)

SIDE 1

SOP No. 2-51
(From SOP Log Index)

Unit No. 1 & 2

Date 5/2/79

NOTE: Instructions and guidelines in AP 1001 must be followed when completing this form.

Comment dated 5/1/79

1. Title LIQUID RELEASES FROM TMI

2. Purpose (include purpose of SOP)
This provides a basis by which all liquid releases to the river may be monitored & controlled.

3. Attach procedure to this form written according to the following format.

A. Limitations and Precautions

- 1. Nuclear Safety
- 2. Environmental Safety
- 3. Personnel Safety
- 4. Equipment Protection

B. Prerequisites

C. Procedure

[Handwritten signature]

4. Generated by W. E. Crawford Date 4/30/79

5. Duration of SOP - Shall be no longer than 93 days from the effective date of the SOP or (a) or (b) below - whichever occurs first.

(a) SOP will be cancelled by incorporation into existing or new permanent procedure submitted by _____

(b) SOP is not valid after 11/14
(fill in circumstances which will result in SOP being cancelled)

6. (a) Is the procedure Nuclear Safety Related?
If "yes", complete Nuclear Safety Evaluation. (Side 2 of this Form) Yes No

(b) Does the procedure affect Environmental Protection?
If "yes", complete Environmental Evaluation. (Side 2 of this Form) Yes No

(c) Does the procedure affect radiation exposure to personnel? Yes No

NOTE: If all entries are "no", the change may be approved by the Shift Supervisor. If any questions are answered "yes", the change must be approved by the Station Superintendent/Unit Superintendent.

7. Review and Approval
Not true
Approved - Shift Supervisor [Signature] 5/2/79 Date

Reviewed - List members of PORC contacted
NRC 5/1/79 Date

NA 5/1/79 Date

Approved - Station Superintendent/Unit Superintendent
[Signature] 5/1/79 Date

8. SOP is Cancelled

Shift Supervisor/Shift Foreman

Date

"EVALUATION"

1001

Three Mile Island Nuclear Station
Nuclear Safety/Environmental Impact Evaluation

SIDE 2

SOP No. 2-51

REV 3

1. Title L. LIQUID RELEASE FROM TMI

2. Nuclear Safety Evaluation

Does this SOP:

- (a) increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety? yes no
- (b) create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report? yes no
- (c) reduce the margin of safety as defined in the basis for any technical specification? yes no

Details of Evaluation (E explain why answers to above questions are "no" Attach additional pages if required.)

Evaluation By _____ Date _____

Environmental Impact Evaluation

Does this SOP:

- (a) possibly involve a significant environmental impact? yes no
- (b) have a significant adverse effect on the environment? yes no
- (c) involve a significant environmental matter or question not previously reviewed and evaluated by the N.R.C. yes no

Details of Evaluation

This procedure provides a means for insuring that all releases to the river will be less than the MPC values.

Evaluation By H. C. Crawford Date 4/30/79

* NOTE: If these questions are "yes", the change must receive N.R.C. approval.

4. Review (PORC review of evaluation is required only when requested by the Station Superintendent/Unit Superintendent. If the review is made, the PORC must consist of two off-site members.)

1. [Signature] _____
 2. [Signature] _____
 Off-Site Members PORC Chairman Signature Date

5. Approval

[Signature] [Signature]
 Station Superintendent/Unit Superintendent Date 5/1/79

1.0 Discharge from Unit 1 (D1), Unit 1 Neutralizing Tank and Unit 1 Waste Evaporator Concentrate Storage Tank.

2.0 Effluent

Discharge into Central Cooling System (CCS), and the Unit 1 Waste Evaporator Concentrate Storage Tank, and Unit 1 Neutralizing Tank while in tops are present in concentration greater than 100.

3.0 A. Limit and Regulation

1) Nuclear: None

2) Environmental

- Assure pH is within limits.
- Final sample analysis must be performed while releasing. Stop release if final fraction is found to be greater than 1.
- During discharge take grab samples at 1007 every 4 hours and record dilution flow and discharge flow rates. See ATTACHMENT 1
- If discharges occur from two systems simultaneously, the dilution flow must be proportioned between the two to assure that the discharge DPC will be less than 1.0.

3) Potential: None

4) Equipment: None

B. Prerequisites:

1. Notify NRC NRE of the time that the release was started *J+E*
2. Notify the Met Ed Rad Waste Group of the time the release was started
3. Complete ATTACHMENT 4 prior to and immediately after discharging to river. *3 points*

1. Prior to commencing discharge to the river obtain a grab sample from the pump with the mixers running. Sample volume shall be 100 ml.
2. Obtain routine analysis of sample. Determine whether any other releases will be in progress during this (DPC) discharge, if so, proportion dilution flow between each release.
3. Complete IUTS (IERS) later (copy). Analyze Calculation Sheet (ATTACHMENT 2) (Attach detailed sample analysis data sheet as form). Use 150 gpm release rate for calculation of Dilution Factor unless a higher release rate is planned. Verify the final fraction is less than 1.0. If DPC levels are exceeded do not release water.

You can verify that the radioactivity is less than NRC but you can not assume same comment on 3 of 4

4. Verify the pH is between 6 and 9.

~~4.2. Obtain a 500 ml grab sample from point 107 (104) approximately every two (2) hours while discharging.~~

5. State up NIS (NRC) and commence release per OP 110-30A (SOG). Control release flow rate used in NRC Calculation. Caution: If NIS-7 alarm, immediately terminate release and resample per step 7 of this procedure.

6. Notify the Unit 1 and Unit 2 Control Room personnel that the discharge is in progress, and if effluent flow is reduced, calculate a new NRC fraction for the release (must be less than 1.0). If NIS-7 alarm, inform the release operator to terminate discharge.

7. Obtain 500 ml grab samples from point 107 (104) approximately every two (2) hours while discharging. Insure priority analysis. Complete a calculation sheet using actual flow rates and verify that the final fraction of NRC is less than 1.0. If the final NRC fraction is greater than 1.0 immediately terminate the release and notify ~~Shift Supervisor~~. Shift Supervisor, ATTACHMENT 2

8. Obtain grab samples from NIS-7 approximately every four (4) hours, and record the discharge and dilution flow rates at the time of the sample. ATTACHMENT 1

9. When isotopic analysis is received, ensure that the sample taken from NIS-7 is less than NRC.

VERIFY

10. Complete the attached Liquid Release Data Form for each tank or system being released using data from the NIS-7 grab samples. ATTACHMENT 3

~~11. Obtain a 500 ml grab sample from the system being discharged and terminate only if dilution flow is less than 1.0~~

11. Return completed data sheets to Shift Supervisor

12. Telecopy Liquid Release Form To Mr Lyons ATTACHMENT 3

02. Procedure - Release of Secondary Neutralizing Tank for Unit 1

1. Prior to commencing discharge to the river obtain a 500 ml sample for chemistry and isotopic analysis.

2. Obtain isotopic analysis of sample. Determine whether any other release will be in progress during neutralizing tank release, if so, proportion dilution flow between each release.

3. Complete calculation sheet using 10% of estimated discharge flow. Verify that the final NRC fraction is less than 1.0. Do not release if NRC levels will be exceeded. ATTACHMENT 2

4. Verify the pH is between 6 and 9.

~~5. Verify Observation Center prior to commencing release~~

5. Commence release per OP 1104-18. If RML-7 alarms, notify Release Operator, to terminate release, and resample per step 1.

6. Notify the Unit 1 and Unit 2 Control Room personnel that the discharge is in progress, and if effluent flow is reduced, calculate a new MPC fraction for the release (must be less than 1.0). If RML-7 alarms, inform the Release Operator to terminate release and resample per step 1.

7. Obtain grab samples from RML-7 approximately every four (4) hours, and record the discharge and dilution flow rate at the time of the sample. ATTACHMENT 1

8. When isotopic analysis is received VERIFY that the sample taken from RML-7 is less than MPC.

9. Complete the attached Liquid Release Data Form for each tank or system being released using data from the RML-7 grab samples. ATTACHMENT 2

10. Return completed data sheets to Shift Supervisor.

11. Teletype Liquid Release Form to Molecules ATTACHMENT 3

C1. Procedure for Releasing Waste Evaporator Condensate Storage Tank

1. Sample and fill out release permit per HPP 1621.

2. Determine whether any other release is in progress. If so proportion the dilution flow between the two sources and prepare calculation sheet to verify that the final fraction is less than 1.0. Do not release if the diluted water will exceed MPC. ATTACHMENT 2

~~3. Verify the Observation Center that release is intended~~

3. Commence release per OP 1104-29S and obtain grab sample every four (4) hours at RML-7. Record discharge flow rate and dilution.

4. Notify the Unit 1 and Unit 2 Control Room that the discharge is in progress, and if effluent flow is reduced, calculate a new MPC fraction for the release (must be less than 1.0). If RML-7 alarms, inform the Release Operator to terminate release and resample per step 1.

5. When isotopic analysis is received ^{verify} assure that the sample taken from RML-7 is less than MPC. Record the discharge and dilution flow rates at the time of the sample. ATTACHMENT 1

6. Complete attached Liquid Release Data Form for each tank or system being released using data from the RML-7 grab sample. ATTACHMENT 3

7. Return completed data sheets to Shift Supervisor.

~~8. If system the state is notified at first time daily of releasing to the public their sample analysis.~~

8. Teletype Liquid Release Form To Mr. Lyons. ATTACHMENT 3

SAMPLE LOCATIONS CENTER FILLING

PT 10

← Sample sump prior to discharge

← Sample PT 10 - Sample every 2 hrs. during discharge



Plant Discharge

PT 10/PS

← Sample prior to transfer

PT 10

← Sample sump prior to discharge

← PT 10 Sample every 2 hrs. during discharge



Obtain Wil-7 grab sample every 4 hrs. during discharge

Neutralization Tank

↑ Sample prior to discharge



Waste Generator Condensate Tank

← Sample prior to discharge



TRACHTMGT 1

STATION EFFLUENT

DATE	TIME	STATION DISCHARGE	RELEASES IN PROGRESS
	0000		
	0400		
	0800		
	1200		
	1600		
	2000		
	0000		
	0400		
	0800		
	0200		
	1600		
	2000		
	0000		
	0400		
	0800		
	1200		
	1600		
	2000		
	0000		
	0400		
	0800		
	1200		
	1600		
	2000		

Attachment 2

I^{131} (ug/cc) : Concentration of I^{131} found in sample.

Calculate for each sump:

$$I^{131} \text{ To river (ug/cc)} : \frac{I^{131} \text{ (ug/cc)}}{D.F.}$$

$$\frac{I^{131}}{MPC} : \frac{I^{131} \text{ To River (ug/cc)}}{MPC \text{ For } I^{131} \text{ in water}}$$

Fraction of MPC
restricted
or unrestricted.

Combined Fraction of MPC : The sum of all the MPC fractions being discharged to the river.
(must be ≤ 1.0)

$$* D.F. = \frac{\text{total flow rate to the river}}{\text{flow rate from the individual sumps}}$$

WHERE INDIVIDUAL
SUMP FLOWRATES:

$$IWTs = 150 \text{ GPM}$$

$$IWFS = 150 \text{ GPM}$$

$$\text{Sec Nant.} = 440 \text{ GPM}$$

$$\text{WECST} = \text{Per H P 1621}$$

APPACHINACT 3

LIQUID RELEASE DATA FORM

	DATE:	TIME:	DATE:	TIME:	DISCHARGE SOLUTION		
					FLOW RATE:	FLOW RATE:	VOL.
Industrial Waste Treatment System	---	---	---	---	---	---	---
Industrial Waste Filter System	---	---	---	---	---	---	---
Secondary Plant Neutralizing Tank	---	---	---	---	---	---	---
Waste Evaporator Condensate Tank	---	---	---	---	---	---	---

Sample Point: Station Discharge - Point 001

Sample Date: _____
Time: _____

<u>ISOTOPES PRESENT</u>	<u>CONCENTRATION</u>	<u>FRACTION OF MPC</u>
I 131	-----	-----
I 131	-----	-----
Ce 137	-----	-----
-----	-----	-----

TOTAL FRACTION OF MPC _____

