3. The MCPR Limiting Conditioning for Operation (LCO) will be increased 0.03 to 1.38 for 7 x 7 and 8 x 8 fuel (T.S. 3.5.K)

4. The Minimum Average Planar Linear Heat Generation Rate (MAPLHGR) limits will be reduced by 0.7 for all fuel types. (T.S. reference 3.5.I)

5. The APRM Scram and Rod Block Setpoints and the RBM Setpoints shall be reduced by 3.5% to read as follows:

T.S. 2.1.A.I	$S \leq .58\ WD + 58.5$
T.S. 2.1.A.1*	$S \leq (.58\ WD + 58.5)\ FRP/MFLPD$
T.S. 2.1.B	$S \leq .58\ WD + 46.5$
T.S. 2.1.B*	$S \leq (.58\ WD + 46.5)\ FRP/MFLPD$
T.S. 3.2.C	(TABLE 3.2.3):
APRM Upscale	$\leq (.58\ WD + 46.5)\ FRP/MFLPD$
RBM Upscale	$\leq .65\ WD + 38.5$

6. The suction valve in the idle loop is closed and electrically isolated until the idle loop is being prepared for return to service.

7. APRM flux noise will be measured once per shift and the recirculation pump speed will be reduced if the flux noise averaged over 1/2 hour exceeds 5% peak to peak, as measured on the APRM chart recorder.

8. The core plate delta p noise will be measured once per shift and recirculation pump speed will be reduced if the noise exceeds 1 psi peak to peak.

* In the event that MFLPD exceeds FRP.

L. Post-Accident Sampling

A program will be established, implemented, and maintained which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant chimney effluents, and containment atmosphere samples under accident conditions. The program shall include the following:

1. Training of personnel,
2. Procedures for sampling and analysis, and
3. Provisions for maintenance of sampling and analysis equipment.

4. This license is effective as of the date of issuance, and shall expire at midnight, February 15, 2007.

Date of Issuance: December 14, 1972

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F. Control Room Ventilation System Isolation

1. The control room ventilation systems are isolated from outside air on a signal of high drywell pressure, low water level, high main steamline flow, high toxic gas concentration, high radiation in either of the reactor building ventilation exhaust ducts, or manually. Limiting conditions for operation shall be as indicated in Table 3.2-1 and Specifications 3.2.H. and 3.2.F.2.

2. The toxic gas detection instrumentation shall consist of a chlorine, ammonia, and sulphur dioxide analyzer with each trip setpoint set at:

   a. Chlorine concentration $\leq$ 5 ppm.
   b. Ammonia concentration $\leq$ 50 ppm.
   c. Sulphur dioxide concentration $\leq$ 3 ppm.

   The provisions of Specification 3.0.A. are not applicable.

F. Control Room Ventilation System Isolation

1. Surveillance for instrumentation which initiates isolation of control room ventilation shall be as specified in Table 4.2-1.

2. Manual isolation of the control room ventilation systems shall be demonstrated once every refueling outage.

G. Radioactive Liquid Effluent Instrumentation

The effluent monitoring instrumentation shown in Table 3.2-5 shall be operable with alarm setpoints set to ensure that the limits of Specification 3.8.B. are not exceeded. The alarm setpoints shall be determined in accordance with the ODCM.

1. With a radioactive liquid effluent monitoring instrument alarm/trip setpoint less conservative than required, without delay suspend the release of radioactive liquid effluents monitored by the affected instrument, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.

G. Radioactive Liquid Effluent Instrumentation

Each radioactive liquid effluent monitoring instrument shown in Table 4.2-3 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequencies shown in Table 4.2-3.

2. With one or more radioactive liquid effluent monitoring instruments inoperable, take the action shown in Table 3.2-5. Exert best efforts to return the inst ument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. This is in lieu of an LER.

3. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC, and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

H. Radioactive Gaseous Effluent Instrumentation

The effluent monitoring instrumentation shown in Table 3.2-6 shall be operable with alarm/trip setpoints set to ensure that the limits of Specification 3.8.A. are not exceeded. The alarm/trip setpoints shall be determined in accordance with the ODCM.

1. With a radioactive gaseous effluent monitoring instrument alarm/trip setpoint less conservative than required, without delay suspend the release of radioactive gaseous effluents monitored by the affected instrument, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.

H. Radioactive Gaseous Effluent Instrumentation

Each radioactive gaseous radiation monitoring instrument in Table 4.2-4 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequency shown in Table 4.2-4.

2. With one or more radioactive gaseous effluent monitoring instruments inoperable, take the action shown in Table 3.2-6. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. This is in lieu of an LER.

3. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

so that none of the activity released during the refueling accident leaves the reactor building via the normal ventilation stack but that all the activity is processed by the standby gas treatment system.

The instrumentation which is provided to monitor the postaccident condition is listed in Table 3.2-4. The instrumentation listed and the limiting conditions for operation on these systems ensure adequate monitoring of the containment following a loss-of-coolant accident. Information from this instrumentation will provide the operator with a detailed knowledge of the conditions resulting from the accident; based on this information he can make logical decisions regarding postaccident recovery.

The specifications allow for postaccident instrumentation to be out of service for a period of 7 days. This period is based on the fact that several diverse instruments are available for guiding the operator should an accident occur, on the low probability of an instrument being out of service and an accident occurring in the 7-day period, and on engineering judgment.

The normal supply of air for the control room ventilation system Trains "A" and "B" is outside the service building. In the event of an accident, this source of air may be required to be shut down to prevent high doses of radiation in the control room. Rather than provide this isolation function on a radiation monitor installed in the intake air duct, signals which indicate an accident, i.e., high drywell pressure, low water level, main streamline high flow, or high radiation in the reactor building ventilation duct, will cause isolation of the intake air to the control room. The above trip signals result in immediate isolation of the control room ventilation system and thus minimize any radiation dose. Manual isolation capability is also provided. Isolation from high toxic chemical concentration has been added as a result of the "Control Room Habitability Study" submitted to the NRC in December 1981 in response to NUREG-0737 Item III D.3.4. As explained in Section 3 of this study, ammonia, chlorine, and sulphur dioxide detection capability has been provided. The setpoints chosen for the control room ventilation isolation are based on early detection in the outside air supply at the odor threshold, so that the toxic chemical will not achieve toxicity limit concentrations in the Control Room.

The radioactive liquid and gaseous effluent instrumentation is provided to monitor the release of radioactive materials in liquid and gaseous effluents during releases. The alarm setpoints for the instruments are provided to ensure that the alarms will occur prior to exceeding the limits of 10 CFR 20.

TABLE 3.2-4
POSTACCIDENT MONITORING INSTRUMENTATION REQUIREMENTS ([2])

Minimum Number of Operable Channels([1])([3])	Parameter	Instrument Readout Location Unit 1	Number Provided	Range
1	Reactor pressure	901-5	1 2	0-1500 psig 0-1200 psig
1	Reactor water level	901-3	2	-243 inches +57 inches
1	Torus water temperature	901-21	2	0-200°F
1	Torus air temperature	901-21	2	0-600°F
	Torus water level indicator	901-3	1	-5 inches -- +5 inches (narrow range)
2([6])	Torus water level indicator	901-3	2	0-30 feet (wide range)
	Torus water level sight glass		1	18 inch range (narrow range)
1	Torus pressure	901-3	1	-5 inches Hg to 5 psig
2	Drywell pressure	901-3	1 2	-5 inches Hg to 5 psig 0 to 75 psig 0 to 250 psig
2	Drywell temperature	901-21	6	0-600°F
2	Neutron monitoring	901-5	4	0.1-10^8 CPS
2([4])	Torus to drywell differential pressure		2	0-3 psid
1([8])	Drywell Hydrogen concentration	901-55,56	2	0-4%
2([7])	Drywell radiation monitor	901-55,56	2	1 to 10^8 R/hr
	Main steam RV position, acoustic monitor	901-21	1 per valve	NA
2/valve([5])	Main steam RV position, temperature monitor	901-21	1 per valve	0-600°F
	Main steam SV position, acoustic monitor	901-21	1 per valve	NA
2/valve([5])	Main steam SV position, temperature monitor	901-21	1 per valve	0-600°F

Notes

1. Instrument channels required during power operation to monitor postaccident conditions.

2. Provisions are made for local sampling and monitoring of drywell atmosphere.

3. In the event any of the instrumentation becomes inoperable for more than 7 days during reactor operation, initiate an orderly shutdown and be in the cold shutdown condition within 24 hours. See notes 4, 5, 6, 7, and 8 for exceptions to this requirement.

4. From and after the date that one of these parameters is reduced to one indication, continued operation is not permissible beyond thirty days unless such instrumentation is sooner made operable. In the event that all indication of these parameters is disabled and such indication cannot be restored in six (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in twenty-four (24) hours.

5. If the number of position indicators is reduced to one indication on one or more valves, continued operation is permissible; however, if the reactor is in a cold shutdown condition for longer than 72 hours, it may not be started up until all position indication is restored. In the event that all position indication is lost on one or more valves and such indication cannot be restored in 30 days, an orderly shutdown shall be initiated, and the reactor shall be depressurized to less than 90 psig in 24 hours.

6. From and after the date that this parameter is reduced to either one narrow-range indication or one wide-range indication, continued reactor operation is not permissible beyond 30 days unless such instrument is sooner made operable. In the event that either all narrow-range indication or all wide-range indication is disabled, continued reactor operation is not permissible beyond 7 days unless such instruments are sooner made operable. In the event that all indication for this parameter is disabled, and such indication cannot be restored in 6 hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in 24 hours.

7. With less than the minimum number of operable channels, initiate the pre-planned alternate method of monitoring this parameter within 72 hours, and:

   a. either restore the inoperable channel(s) to operable status within 7 days of the event, or

   b. prepare and submit a special report to the NRC within 30 days following the event, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

8. From and after the date that one of the drywell hydrogen monitors becomes inoperable, continued reactor operation is permissible.

   a. If both drywell hydrogen monitors are inoperable, continued reactor operation is permissible for up to 30 days provided that during this time the HRSS hydrogen monitoring capability for the drywell is operable.

   b. If all drywell hydrogen monitoring capability is lost, continued reactor operation is permissible for up to 7 days.

Table 3.2-5

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels	Total No. of Channels	Parameter	Action (1)
1	1	Service Water Effluent Gross Activity Monitor	A
1	1	Liquid Radwaste Effluent Flow Rate Monitor	C
1	1	Liquid Radwaste Effluent Gross Activity Monitor	B

Notes:

Action A: With less than the minimum number of operable channels, releases via this pathway may continue, provided that at least once per 12 hours grab samples are collected and analyzed for beta or gamma activity at an LLD of less than or equal to 10^{-7} uCi/ml.

Action B: With less than the minimum number of operable channels, effluent releases via this pathway may continue, provided that prior to initiating a release, at least 2 independent samples are analyzed in accordance with Specification 4.8.B.1., and at least 2 members of the facility staff independently verify the release calculation and discharge valving. Otherwise, suspend release of radioactive effluents via this pathway.

Action C: With less than the minimum number of operable channels, releases via this pathway may continue, provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves may be utilized to estimate flow.

Table 3.2-6

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels (1)	Total No. of Channels	Parameter	Action (2)
1	2	SJAE Radiation Monitors	D
1	2	Main Chimney Noble Gas Activity Monitor	A
1	1	Main Chimney Iodine Sampler	C
1	1	Main Chimney Particulate Sampler	C
1	1	Reactor Bldg. Vent Sampler Flow Rate Monitor	B
1	1	Reactor Bldg. Vent Iodine Sampler	C
1	1	Reactor Bldg. Vent Particulate Sampler	C
1	1	Main Chimney Sampler Flow Rate Monitor	B
1	1	Main Chimney Flow Rate Monitor	B
1	2	Reactor Bldg. Vent Noble Gas Monitor	E
1	1	Main Chimney High Range Noble Gas Monitor	F

Notes

(1) For SJAE monitors, applicable during SJAE operation. For other instrumentation, applicable at all times.

(2) Action A: With the number of operable channels less than the minimum requirement, effluent releases via this pathway may continue, provided grab samples are taken at least once per 8 hour shift and these samples are analyzed within 24 hours.

Action B: With the number of operable channels less than the minimum required, effluent releases via this pathway may continue provided that the flow rate is estimated at least once per 4 hours.

Action C: With less than the minimum channels operable, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment, as required in Table 4.8-1.

Action D: With less than the minimum channels operable, gases from the main condenser off gas system may be released to the environment for up to 72 hours provided at least one chimney monitor is operable; otherwise, be in hot stand-by in 12 hours.

Action E: With less than the minimum channels operable, immediately suspend release of radioactive effluents via this pathway.

Action F: With less than the minimum channels operable, initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours, and:

(1) either restore the inoperable channel(s) to operable status within 7 days of the event, or

(2) prepare and submit a Special Report to the Commission within 30 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable status.

TABLE 4.2-1 (Cont'd)

Instrument Channel	Instrument Functional Test[3]	Calibration[2]	Instrument Check[3]
HPCI Isolation			
1. Steamline high flow	(1) (9)	Once/3 months	None
2. Steamline area high temperature	Refueling outage	Refueling outage	None
3. Low reactor pressure	(1)	Once/3 months	None
Reactor Building Ventilation System Isolation And Standby Treatment System Initiation			
1. Refueling floor radiation monitors	(1)	Once/3 months	Once/day
Control Room Ventilation System Isolation			
1. Reactor low water level	(1)	Once/3 months	Once/day
2. Drywell high pressure	(1)	Once/3 months	None
3. Main steamline high flow	(1)	Once/3 months	Once/day
4. Toxic gas analyzers (chlorine, ammonia, sulphur dioxide)	Once/month	One/18 months	Once/day

Notes:

1. Initially once per month until exposure hours (M as defined on Figure 4.1-1) are 2.0×10^5, thereafter, according to Figure 4.1-1 with an interval not less than 1 month nor more than 3 months. The compilation of instrument failure rate data may include data obtained from other boiling water reactors for which the same design instrument operates in an environment similar to that of Quad-Cities Units 1 and 2.

2. Functional tests, calibrations, and instrument checks are not required when these instruments are not required to be operable or are tripped.

3. This instrumentation is excepted from the functional test definition. The functional test shall consist of injecting a simulated electrical signal into the measurement channel.

4. This instrument channel is excepted from the functional test definitions and shall be calibrated using simulated electrical signals once every 3 months.

5. Functional tests shall be performed before each startup with a required frequency not to exceed once per week. Calibrations shall be performed during controlled shutdowns with a required frequency not to exceed once per week.

6. The positioning mechanism shall be calibrated every refueling outage.

7. Logic system functional tests are performed as specified in the applicable section for these systems.

8. Functional test shall include verification of operation of the degraded voltage 5-minute timer and 7 second inherent timer.

9. Verification of the time delay setting of $3 \leq + \leq 10$ seconds shall be performed during each refueling outage.

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TABLE 4.2-2
POSTACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Minimum Number of Operable Channels*	Parameter	Instrument Readout Location Unit 1	Calibration	Instrument Check
1	Reactor pressure	901-5	Once every 3 months	Once per day
1	Reactor water level	901-3	Once every 3 months	Once per day
1	Torus water temperature	901-21	Once every 3 months	Once per day
1	Torus air temperature	901-21	Once every 3 months	Once per day
2	Torus water level indicator (narrow range)	901-3	Once every 3 months	Once per day
2	Torus water level indicator (wide range)	901-3	Once every 18 months	Once per 31 days
2	Torus water level sight glass		N/A	None
1	Torus pressure	901-3	Once every 3 months	Once per day
2	Drywell pressure	901-3	Once every 3 months	Once per day
2	Drywell temperature	901-21	Once every 3 months	Once per day
2	Neutron monitoring	901-5	Once every 3 months	Once per day
2	Torus to drywell differential pressure		Once every 6 months	None
1	Drywell Hydrogen concentration	901-55,56	Once every 3 months	Once per 31 days
2	Drywell radiation monitor	901-55,56	Once every*** 18 months	Once per 31 days
	Main steam RV position, acoustic monitor	901-21	**	Once per 31 days
2/valve	Main steam RV position, temperature monitor	901-21	Once every 18 months	Once per 31 days

Minimum Number of Operable Channels*	Parameter	Instrument Readout Location Unit 1	Calibration	Instrument Check
	Main steam SV position, acoustic monitor	901-21	**	Once per 31 days
2/valve	Main steam SV position, temperature monitor	901-21	Once every 18 months	Once per 31 days

*Instrument channels required during power operation to monitor postaccident conditions.

**Functional tests will be conducted before startup at the end of each refueling outage or after maintenance is performed on a particular safety or relief valve.

***Calibration shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr; and a one-point calibration check of the detector below 10 R/hr with an installed or portable gamma source.

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TABLE 4.2-3
RADIOACTIVE LIQUID EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Instrument Check (1)	Calibration (1)(3)	Functional Test (1)(2)	Source Check (1)
Liquid Radwaste Effluent Gross Activity Monitor	D	R	Q (7)	(6)
Service Water Effluent Gross Activity Monitor	D	R	Q (7)	R
Liquid Radwaste Effluent Flow Rate Monitor	(4)	R	NA	NA

Notes:

(1) D = once per 24 hours
M = once per 31 days
Q = once per 92 days
R = once per 18 months
S = once per 6 months

(2) The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable.

a. Instrument indicates levels above the alarm setpoint.
b. Circuit failure.
c. Instrument indicates a downscale failure
d. Instrument controls not set in OPERATE mode.

3) Calibration shall include performance of a functional test.

4) Instrument Check to verify flow during periods of release.

5) Caliabration shall include performance of a source check.

6) Source check shall consist of observing instrument response during a discharge.

7) Functional test may be performed by using trip check and test circuitry associated with the monitor chassis.

Table 4.2-4

RADIOACTIVE GASEOUS EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Mode(2)	Instrument Check(1)	Calibration(1)(4)	Functional Test(1)(3)	Source Check(1)
Main Chimney Noble Gas Activity Monitor	B	D	R	Q	M
Main Chimney Sampler Flow Rate Monitor	B	D	R	Q(6)	NA
Reactor Bldg. Vent Sampler Flow Rate Monitor	B	D	R	Q(6)	NA
Main Chimney Flow Rate Monitor	B	D	R	Q	NA
Reactor Bldg. Vent Activity Monitor	B	D	R	Q	Q
SJAE Activity Monitor	A	D	R	Q	R
Main Chimney Iodine and Particulate Sampler	B	D(5)	NA	NA	NA
Reactor Bldg. Vent Iodine and Particulate Sampler	B	D(5)	NA	NA	NA
Main Chimney High Range Noble Gas Monitor	B	D(5)	R	Q	M

Notes

(1) D = once per 24 hours
M = once per 31 days
Q = once per 92 days
R = once per 18 months

(2) A = during SJAE operation
B = at all times

(3) The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable:

a. Instrument indicates levels above the alarm setpoint
b. Circuit failure
c. Instrument indicates a downscale failure
d. Instrument controls not set in OPERATE mode

(4) Calibration shall include performance of a functional test.

(5) Instrument check to verify operability of the instrument; that the instrument is in-place and functioning properly.

(6) Functional test shall be performed on local switches providing low flow alarm.

H. Control Room Emergency Filtration System

1. The control room emergency filtration system, including at least one booster fan shall be operable at all times when secondary containment integrity is required, except as specified in Sections 3.8.H.1.a. and b.

   a. After the control room emergency filtration system is made or found to be inoperable for any reason, reactor operation and fuel handling are permissible only during the succeeding 14 days. Within 36 hours following the 14 days, the reactor shall be placed in a condition for which the control room emergency filtration system is not required in accordance with Specification 3.7.C.1.a. through d.

   b. Specification 3.8.H.1.a. above does not apply during performance or post-maintenance testing, or during removal of the charcoal test canister.

2. Periodic Performance Requirements

   a. The results of the in-place DOP tests at 2000 cfm (±10%) on HEPA filters shall show ≤ 1% DOP penetration.

   b. The results of in-place halogenated hydrocarbon tests at 2000 cfm (±10%) on the charcoal banks shall show ≤ 1% penetration.

   c. The results of laboratory carbon sample analysis shall show ≥ 90% methyl iodide removal efficiency when tested at 130°C and 95% R.H.

H. Control Room Emergency Filtration System

1. At least once per month, initiate 2000 cfm (±10%) flow through the control room emergency filtration system for at least 10 hours with the heaters operable.

2. Performance Requirement Tests

   a. At least once per operating cycle but not to exceed 18 months, or following painting, fire, or toxic chemical release in any ventilation zone communicating with the intake of the system while the system is operating that could contaminate the HEPA filters of charcoal absorbers, perform the following:

      1) In-place DOP test the HEPA filter banks to verify leaktight integrity.

      2. In-place test the charcoal absorber banks with halogenated hydrocarbon tracer to verify leaktight integrity.

3) Remove one carbon test canister from the charcoal absorber. Subject this sample to a laboratory analysis to verify methyl iodide removal efficiency.

b. At least once per operating cycle, but not to exceed 18 months, the following conditions shall be demonstrated:

1) Pressure drop across the combined filters

is less than 6 inches of water at 2000 cfm (±10%) flow rate.

2) Operability of inlet heater demonstrates heater ΔT of 15°F.

3. Postmaintenance Requirements

a. After any maintenance or heating that could affect the HEPA filter or HEPA filter mounting frame leak-tight integrity, the results of the in-place DOP tests at 2000 cfm (±10%) on HEPA filters shall show ≤ 1% DOP penetration.

b. After any maintenance or testing that could affect the charcoal absorber leaktight integrity, the results of in-place halogenated hydrocarbon tests at 2000 cfm (±10%) shall show ≤ 1% penetration.

3. Postmaintenance Testing

a. After any maintenance or testing that could affect the leaktight integrity of the HEPA filters, perform in-place DOP tests on the HEPA filters in accordance with Specification 3.8.H.2.a.

b. After any maintenance or testing that could affect the leaktight integrity of the charcoal absorber banks, perform halogenated hydrocarbon tests on the charcoal adsorbers in accordance with Specification 3.8.H.2.b.

3.8/4.8.C. MECHANICAL VACUUM PUMP

The purpose of isolating the mechanical vacuum line is to limit release of activity from the main condenser. During an accident, fission products would be transported from the reactor through the main steamline to the main condenser. The fission product radioactivity would be sensed by the main steamline radioactivity monitors which initiate isolation.

3.8/4.8.F. MISCELLANEOUS RADIOACTIVE MATERIALS SOURCES

The objective of this specification is to assure that leakage from byproduct, source and special nuclear material sources does not exceed allowable limits. The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39 (c) limits for plutonium.

3.8/4.8.E. SOLID RADIOACTIVE WASTE

The operability of the solid radioactive waste system ensures that the system will be available for use whenever solid radwastes require processing and packaging prior to being shipped off-site. This specification implements the requirements of 10 CFR 50.36a. and General Design Criteria 60 of Appendix A to 10 CFR Part 50.

3.8/4.8.H CONTROL ROOM AIR FILTRATION

The purpose of these specifications is to assure availability of the control room emergency air filtrations unit that has been installed in response to NUREG-0737 Item III D.3.4. Operation of this unit is described in the "Control Room Habitability Study" for Quad-Cities Station which was submitted to the NRC in December 1981.

3. The MCPR Limiting Conditioning for Operation (LCO) will be increased 0.03 to 1.38 for 7 x 7 and 8 x 8 fuel (T.S. 3.5.K)

4. The Minimum Average Planar Linear Heat Generation Rate (MAPLHGR) limits will be reduced by 0.7 for all fuel types. (T.S. reference 3.5.I)

5. The APRM Scram and Rod Block Setpoints and the RBM Setpoints shall be reduced by 3.5% to read as follows:

T.S. 2.1.A.I	$S \leq .58$ WD + 58.5
T.S. 2.1.A.1*	$S \leq$ (.58 WD + 58.5) FRP/MFLPD
T.S. 2.1.B	$S \leq .58$ WD + 46.5
T.S. 2.1.B*	$S \leq$ (.58 WD + 46.5) FRP/MFLPD
T.S. 3.2.C	(TABLE 3.2.3):
APRM Upscale	$\leq$ (.58 WD + 46.5) FRP/MFLPD
RBM Upscale	$\leq .65$ WD + 38.5

6. The suction valve in the idle loop is closed and electrically isolated until the idle loop is being prepared for return to service.

7. APRM flux noise will be measured once per shift and the recirculation pump speed will be reduced if the flux noise averaged over 1/2 hour exceeds 5% peak to peak, as measured on the APRM chart recorder.

8. The core plate delta p noise will be measured once per shift and recirculation pump speed will be reduced if the noise exceeds 1 psi peak to peak.

* In the event that MFLPD exceeds FRP.

L. Post-Accident Sampling

A program will be established, implemented, and maintained which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant chimney effluents, and containment atmosphere samples under accident conditions. The program shall include the following:

1. Training of personnel,
2. Procedures for sampling and analysis, and
3. Provisions for maintenance of sampling and analysis equipment.

4. This license is effective as of the date of issuance, and shall expire at midnight, February 15, 2007.

Date of Issuance: December 14, 1972

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F. Control Room Ventilation System Isolation

1. The control room ventilation systems are isolated from outside air on a signal of high drywell pressure, low water level, high main steamline flow, high toxic gas concentration, high radiation in either of the reactor building ventilation exhaust ducts, or manually. Limiting conditions for operation shall be as indicated in Table 3.2-1 and Specifications 3.2.H. and 3.2.F.2.

2. The toxic gas detection instrumentation shall consist of a chlorine, ammonia, and sulphur dioxide analyzer with each trip setpoint set at:

   a. Chlorine concentration $\leq$ 5 ppm.
   b. Ammonia concentration $\leq$ 50 ppm.
   c. Sulphur dioxide concentration $\leq$ 3 ppm.

   The provisions of Specification 3.0.A. are not applicable.

F. Control Room Ventilation System Isolation

1. Surveillance for instrumentation which initiates isolation of control room ventilation shall be as specified in Table 4.2-1.

2. Manual isolation of the control room ventilation systems shall be demonstrated once every refueling outage.

G. Radioactive Liquid Effluent Instrumentation

The effluent monitoring instrumentation shown in Table 3.2-5 shall be operable with alarm setpoints set to ensure that the limits of Specification 3.8.B. are not exceeded. The alarm setpoints shall be determined in accordance with the ODCM.

1. With a radioactive liquid effluent monitoring instrument alarm/trip setpoint less conservative than required, without delay suspend the release of radioactive liquid effluents monitored by the affected instrument, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.

G. Radioactive Liquid Effluent Instrumentation

Each radioactive liquid effluent monitoring instrument shown in Table 4.2-3 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequencies shown in Table 4.2-3.

2. With one or more radioactive liquid effluent monitoring instruments inoperable, take the action shown in Table 3.2-5. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. This is in lieu of an LER.

3. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC, and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

H. Radioactive Gaseous Effluent Instrumentation

The effluent monitoring instrumentation shown in Table 3.2-6 shall be operable with alarm/trip setpoints set to ensure that the limits of Specification 3.8.A. are not exceeded. The alarm/trip setpoints shall be determined in accordance with the ODCM.

1. With a radioactive gaseous effluent monitoring instrument alarm/trip setpoint less conservative than required, without delay suspend the release of radioactive gaseous effluents monitored by the affected instrument, or declare the instrument inoperable, or change the setpoint so it is acceptably conservative.

H. Radioactive Gaseous Effluent Instrumentation

Each radioactive gaseous radiation monitoring instrument in Table 4.2-4 shall be demonstrated operable by performance of the given source check, instrument check, calibration, and functional test operations at the frequency shown in Table 4.2-4.

2. With one or more radioactive gaseous effluent monitoring instruments inoperable, take the action shown in Table 3.2-6. Exert best efforts to return the instrument to operable status within 30 days and, if unsuccessful, explain in the next Semi-Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner. This is in lieu of an LER.

3. In the event a limiting condition for operation and associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specifications, provide a 30-day written report to the NRC and no changes are required in the operational condition of the plant, and this does not prevent the plant from entry into an operational mode.

so that none of the activity released during the refueling accident leaves the reactor building via the normal ventilation stack but that all the activity is processed by the standby gas treatment system.

The instrumentation which is provided to monitor the postaccident condition is listed in Table 3.2-4. The instrumentation listed and the limiting conditions for operation on these systems ensure adequate monitoring of the containment following a loss-of-coolant accident. Information from this instrumentation will provide the operator with a detailed knowledge of the conditions resulting from the accident; based on this information he can make logical decisions regarding postaccident recovery.

The specifications allow for postaccident instrumentation to be out of service for a period of 7 days. This period is based on the fact that several diverse instruments are available for guiding the operator should an accident occur, on the low probability of an instrument being out of service and an accident occurring in the 7-day period, and on engineering judgment.

The normal supply of air for the control room ventilation system Trains "A" and "B" is outside the service building. In the event of an accident, this source of air may be required to be shut down to prevent high doses of radiation in the control room. Rather than provide this isolation function on a radiation monitor installed in the intake air duct, signals which indicate an accident, i.e., high drywell pressure, low water level, main streamline high flow, or high radiation in the reactor building ventilation duct, will cause isolation of the intake air to the control room. The above trip signals result in immediate isolation of the control room ventilation system and thus minimize any radiation dose. Manual isolation capability is also provided. Isolation from high toxic chemical concentration has been added as a result of the "Control Room Habitability Study" submitted to the NRC in December 1981 in response to NUREG-0737 Item III D.3.4. As explained in Section 3 of this study, ammonia, chlorine, and sulphur dioxide detection capability has been provided. The setpoints chosen for the control room ventilation isolation are based on early detection in the outside air supply at the odor threshold, so that the toxic chemical will not achieve toxicity limit concentrations in the Control Room.

The radioactive liquid and gaseous effluent instrumentation is provided to monitor the release of radioactive materials in liquid and gaseous effluents during releases. The alarm setpoints for the instruments are provided to ensure that the alarms will occur prior to exceeding the limits of 10 CFR 20.

TABLE 3.2-4
POSTACCIDENT MONITORING INSTRUMENTATION REQUIREMENTS ([2])

Minimum Number of Operable Channels([1])([3])	Parameter	Instrument Readout Location Unit 1	Number Provided	Range
1	Reactor pressure	901-5	1 2	0-1500 psig 0-1200 psig
1	Reactor water level	901-3	2	-243 inches +57 inches
1	Torus water temperature	901-21	2	0-200°F
1	Torus air temperature	901-21	2	0-600°F
	Torus water level indicator	901-3	1	-5 inches -- +5 inches (narrow range)
2([6])	Torus water level indicator	901-3	2	0-30 feet (wide range)
	Torus water level sight glass		1	18 inch range (narrow range)
1	Torus pressure	901-3	1	-5 inches Hg to 5 psig
2	Drywell pressure	901-3	1 2	-5 inches Hg to 5 psig 0 to 75 psig 0 to 250 psig
2	Drywell temperature	901-21	6	0-600°F
2	Neutron monitoring	901-5	4	0.1-10^8 CPS
2([4])	Torus to drywell differential pressure		2	0-3 psid
1([8])	Drywell Hydrogen concentration	901-55,56	2	0-4%
2([7])	Drywell radiation monitor	901-55,56	2	1 to 10^8 R/hr
	Main steam RV position, acoustic monitor	901-21	1 per valve	NA
2/valve([5])	Main steam RV position, temperature monitor	901-21	1 per valve	0-600°F
	Main steam SV position, acoustic monitor	901-21	1 per valve	NA
2/valve([5])	Main steam SV position, temperature monitor	901-21	1 per valve	0-600°F

Notes

1. Instrument channels required during power operation to monitor postaccident conditions.

2. Provisions are made for local sampling and monitoring of drywell atmosphere.

3. In the event any of the instrumentation becomes inoperable for more than 7 days during reactor operation, initiate an orderly shutdown and be in the cold shutdown condition within 24 hours. See notes 4, 5, 6, 7, and 8 for exceptions to this requirement.

4. From and after the date that one of these parameters is reduced to one indication, continued operation is not permissible beyond thirty days unless such instrumentation is sooner made operable. In the event that all indication of these parameters is disabled and such indication cannot be restored in six (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in twenty-four (24) hours.

5. If the number of position indicators is reduced to one indication on one or more valves, continued operation is permissible; however, if the reactor is in a cold shutdown condition for longer than 72 hours, it may not be started up until all position indication is restored. In the event that all position indication is lost on one or more valves and such indication cannot be restored in 30 days, an orderly shutdown shall be initiated, and the reactor shall be depressurized to less than 90 psig in 24 hours.

6. From and after the date that this parameter is reduced to either one narrow-range indication or one wide-range indication, continued reactor operation is not permissible beyond 30 days unless such instrument is sooner made operable. In the event that either all narrow-range indication or all wide-range indication is disabled, continued reactor operation is not permissible beyond 7 days unless such instruments are sooner made operable. In the event that all indication for this parameter is disabled, and such indication cannot be restored in 6 hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition in 24 hours.

7. With less than the minimum number of operable channels, initiate the pre-planned alternate method of monitoring this parameter within 72 hours. and:

   a. either restore the inoperable channel(s) to operable status within 7 days of the event, or

   b. prepare and submit a special report to the NRC within 30 days following the event, outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

8. From and after the date that one of the drywell hydrogen monitors becomes inoperable, continued reactor operation is permissible.

   a. If both drywell hydrogen monitors are inoperable, continued reactor operation is permissible for up to 30 days provided that during this time the HRSS hydrogen monitoring capability for the drywell is operable.

   b. If all drywell hydrogen monitoring capability is lost, continued reactor operation is permissible for up to 7 days.

Table 3.2-5

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels	Total No. of Channels	Parameter	Action (1)
1	1	Service Water Effluent Gross Activity Monitor	A
1	1	Liquid Radwaste Effluent Flow Rate Monitor	C
1	1	Liquid Radwaste Effluent Gross Activity Monitor	B

Notes:

Action A: With less than the minimum number of operable channels, releases via this pathway may continue, provided that at least once per 12 hours grab samples are collected and analyzed for beta or gamma activity at an LLD of less than or equal to 10^{-7} uCi/ml.

Action B: With less than the minimum number of operable channels, effluent releases via this pathway may continue, provided that prior to initiating a release, at least 2 independent samples are analyzed in accordance with Specification 4.8.B.1., and at least 2 members of the facility staff independently verify the release calculation and discharge valving. Otherwise, suspend release of radioactive effluents via this pathway.

Action C: With less than the minimum number of operable channels, releases via this pathway may continue, provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves may be utilized to estimate flow.

Table 3.2-6

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Minimum No. of Operable Channels (1)	Total No. of Channels	Parameter	Action (2)
1	2	SJAE Radiation Monitors	D
1	2	Main Chimney Noble Gas Activity Monitor	A
1	1	Main Chimney Iodine Sampler	C
1	1	Main Chimney Particulate Sampler	C
1	1	Reactor Bldg. Vent Sampler Flow Rate Monitor	B
1	1	Reactor Bldg. Vent Iodine Sampler	C
1	1	Reactor Bldg. Vent Particulate Sampler	C
1	1	Main Chimney Sampler Flow Rate Monitor	B
1	1	Main Chimney Flow Rate Monitor	B
1	2	Reactor Bldg. Vent Noble Gas Monitor	E
1	1	Main Chimney High Range Noble Gas Monitor	F

Notes

(1) For SJAE monitors, applicable during SJAE operation. For other instrumentation, applicable at all times.

(2) Action A: With the number of operable channels less than the minimum requirement, effluent releases via this pathway may continue, provided grab samples are taken at least once per 8 hour shift and these samples are analyzed within 24 hours.

Action B: With the number of operable channels less than the minimum required, effluent releases via this pathway may continue provided that the flow rate is estimated at least once per 4 hours.

Action C: With less than the minimum channels operable, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment, as required in Table 4.8-1.

Action D: With less than the minimum channels operable, gases from the main condenser off gas system may be released to the environment for up to 72 hours provided at least one chimney monitor is operable; otherwise, be in hot stand-by in 12 hours.

Action E: With less than the minimum channels operable, immediately suspend release of radioactive effluents via this pathway.

Action F: With less than the minimum channels operable, initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours, and:

(1) either restore the inoperable channel(s) to operable status within 7 days of the event, or

(2) prepare and submit a Special Report to the Commission within 30 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable status.

TABLE 4.2-1 (Cont'd)

Instrument Channel	Instrument Functional Test[2]	Calibration[2]	Instrument Check[2]
HPCI Isolation			
1. Steamline high flow	(1) (9)	Once/3 months	None
2. Steamline area high temperature	Refueling outage	Refueling outage	None
3. Low reactor pressure	(1)	Once/3 months	None
Reactor Building Ventilation System Isolation And Standby Treatment System Initiation			
1. Refueling floor radiation monitors	(1)	Once/3 months	Once/day
Control Room Ventilation System Isolation			
1. Reactor low water level	(1)	Once/3 months	Once/day
2. Drywell high pressure	(1)	Once/3 months	None
3. Main steamline high flow	(1)	Once/3 months	Once/day
4. Toxic gas analyzers (chlorine, ammonia, sulphur dioxide)	Once/month	One/18 months	Once/day

Notes:

1. Initially once per month until exposure hours (M as defined on Figure 4.1-1) are 2.0×10^5, thereafter, according to Figure 4.1-1 with an interval not less than 1 month nor more than 3 months. The compilation of instrument failure rate data may include data obtained from other boiling water reactors for which the same design instrument operates in an environment similar to that of Quad-Cities Units 1 and 2.

2. Functional tests, calibrations, and instrument checks are not required when these instruments are not required to be operable or are tripped.

3. This instrumentation is excepted from the functional test definition. The functional test shall consist of injecting a simulated electrical signal into the measurement channel.

4. This instrument channel is excepted from the functional test definitions and shall be calibrated using simulated electrical signals once every 3 months.

5. Functional tests shall be performed before each startup with a required frequency not to exceed once per week. Calibrations shall be performed during controlled shutdowns with a required frequency not to exceed once per week.

6. The positioning mechanism shall be calibrated every refueling outage.

7. Logic system functional tests are performed as specified in the applicable section for these systems.

8. Functional test shall include verification of operation of the degraded voltage 5-minute timer and 7 second inherent timer.

9. Verification of the time delay setting of $3 \leq + \leq 10$ seconds shall be performed during each refueling outage.

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TABLE 4.2-2
POSTACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Minimum Number of Operable Channels*	Parameter	Instrument Readout Location Unit 1	Calibration	Instrument Check
1	Reactor pressure	901-5	Once every 3 months	Once per day
1	Reactor water level	901-3	Once every 3 months	Once per day
1	Torus water temperature	901-21	Once every 3 months	Once per day
1	Torus air temperature	901-21	Once every 3 months	Once per day
	Torus water level indicator (narrow range)	901-3	Once every 3 months	Once per day
2	Torus water level indicator (wide range)	901-3	Once every 18 months	Once per 31 days
	Torus water level sight glass		N/A	None
1	Torus pressure	901-3	Once every 3 months	Once per day
2	Drywell pressure	901-3	Once every 3 months	Once per day
2	Drywell temperature	901-21	Once every 3 months	Once per day
2	Neutron monitoring	901-5	Once every 3 months	Once per day
2	Torus to drywell differential pressure		Once every 6 months	None
1	Drywell Hydrogen concentration	901-55,56	Once every 3 months	Once per 31 days
2	Drywell radiation monitor	901-55,56	Once every*** 18 months	Once per 31 days
	Main steam RV position, acoustic monitor	901-21	**	Once per 31 days
2/valve	Main steam RV position, temperature monitor	901-21	Once every 18 months	Once per 31 days

Minimum Number of Operable Channels*	Parameter	Instrument Readout Location Unit 1	Calibration	Instrument Check
	Main steam SV position, acoustic monitor	901-21	**	Once per 31 days
2/valve	Main steam SV position, temperature monitor	901-21	Once every 18 months	Once per 31 days

*Instrument channels required during power operation to monitor postaccident conditions.

**Functional tests will be conducted before startup at the end of each refueling outage or after maintenance is performed on a particular safety or relief valve.

***Calibration shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr; and a one-point calibration check of the detector below 10 R/hr with an installed or portable gamma source.

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TABLE 4.2-3
RADIOACTIVE LIQUID EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Instrument Check (1)	Calibration (1)(3)	Functional Test (1)(2)	Source Check (1)
Liquid Radwaste Effluent Gross Activity Monitor	D	R	Q (7)	(6)
Service Water Eff'uent Gross Activity Monitor	D	R	Q (7)	R
Liquid Radwaste Effluent Flow Rate Monitor	(4)	R	NA	NA

Notes:

(1) D = once per 24 hours
M = once per 31 days
Q = once per 92 days
R = once per 18 months
S = once per 6 months

(2) The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable.

a. Instrument indicates levels above the alarm setpoint.
b. Circuit failure.
c. Instrument indicates a downscale failure
d. Instrument controls not set in OPERATE mode.

3) Calibration shall include performance of a functional test.

4) Instrument Check to verify flow during periods of release.

5) Caliabration shall include performance of a source check.

6) Source check shall consist of observing instrument response during a discharge.

7) Functional test may be performed by using trip check and test circuitry associated with the monitor chassis.

Table 4.2-4

RADIOACTIVE GASEOUS EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Mode(2)	Instrument Check(1)	Calibration(1)(4)	Functional Test(1)(3)	Source Check(1)
Main Chimney Noble Gas Activity Monitor	B	D	R	Q	M
Main Chimney Sampler Flow Rate Monitor	B	D	R	Q(6)	NA
Reactor Bldg. Vent Sampler Flow Rate Monitor	B	D	R	Q(6)	NA
Main Chimney Flow Rate Monitor	B	D	R	Q	NA
Reactor Bldg. Vent Activity Monitor	B	D	R	Q	Q
SJAE Activity Monitor	A	D	R	Q	R
Main Chimney Iodine and Particulate Sampler	B	D(5)	NA	NA	NA
Reactor Bldg. Vent Iodine and Particulate Sampler	B	D(5)	NA	NA	NA
Main Chimney High Range Noble Gas Monitor	B	D(5)	R	Q	M

Notes

(1) D = once per 24 hours
M = once per 31 days
Q = once per 92 days
R = once per 18 months

(2) A = during SJAE operation
B = at all times

(3) The Instrument Functional Test shall also demonstrate that control room alarm annunciation occurs, if any of the following conditions exist, where applicable:

a. Instrument indicates levels above the alarm setpoint
b. Circuit failure
c. Instrument indicates a downscale failure
d. Instrument controls not set in OPERATE mode

(4) Calibration shall include performance of a functional test.

(5) Instrument check to verify operability of the instrument; that the instrument is in-place and functioning properly.

(6) Functional test shall be performed on local switches providing low flow alarm.

H. Control Room Emergency Filtration System

1. The control room emergency filtration system, including at least one booster fan shall be operable at all times when secondary containment integrity is required, except as specified in Sections 3.8.H.1.a. and b.

   a. After the control room emergency filtration system is made or found to be inoperable for any reason, reactor operation and fuel handling are permissible only during the succeeding 14 days. Within 36 hours following the 14 days, the reactor shall be placed in a condition for which the control room emergency filtration system is not required in accordance with Specification 3.7.C.1.a. through d.

   b. Specification 3.8.H.1.a. above does not apply during performance or post-maintenance testing, or during removal of the charcoal test canister.

2. Periodic Performance Requirements

   a. The results of the in-place DOP tests at 2000 cfm (±10%) on HEPA filters shall show ≤ 1% DOP penetration.

   b. The results of in-place halogenated hydrocarbon tests at 2000 cfm (±10%) on the charcoal banks shall show ≤ 1% penetration.

   c. The results of laboratory carbon sample analysis shall show ≥ 90% methyl iodide removal efficiency when tested at 130°C and 95% R.H.

H. Control Room Emergency Filtration System

1. At least once per month, initiate 2000 cfm (±10%) flow through the control room emergency filtration system for at least 10 hours with the heaters operable.

2. Performance Requirement Tests

   a. At least once per operating cycle but not to exceed 18 months, or following painting, fire, or toxic chemical release in any ventilation zone communicating with the intake of the system while the system is operating that could contaminate the HEPA filters of charcoal absorbers, perform the following:

      1) In-place DOP test the HEPA filter banks to verify leaktight integrity.

      2. In-place test the charcoal absorber banks with halogenated hydrocarbon tracer to verify leaktight integrity.

3) Remove one carbon test canister from the charcoal absorber. Subject this sample to a laboratory analysis to verify methyl iodide removal efficiency.

b. At least once per operating cycle, but not to exceed 18 months, the following conditions shall be demonstrated:

1) Pressure drop across the combined filters

is less than 6 inches of water at 2000 cfm (±10%) flow rate.

2) Operability of inlet heater demonstrates heater ΔT of 15°F.

3. Postmaintenance Requirements

a. After any maintenance or heating that could affect the HEPA filter or HEPA filter mounting frame leak-tight integrity, the results of the in-place DOP tests at 2000 cfm (±10%) on HEPA filters shall show ≤ 1% DOP penetration.

b. After any maintenance or testing that could affect the charcoal absorber leaktight integrity, the results of in-place halogenated hydrocarbon tests at 2000 cfm (±10%) shall show ≤ 1% penetration.

3. Postmaintenance Testing

a. After any maintenance or testing that could affect the leaktight integrity of the HEPA filters, perform in-place DOP tests on the HEPA filters in accordance with Specification 3.8.H.2.a.

b. After any maintenance or testing that could affect the leaktight integrity of the charcoal absorber banks, perform halogenated hydrocarbon tests on the charcoal adsorbers in accordance with Specification 3.8.H.2.b.

3.8/4.8.C. MECHANICAL VACUUM PUMP

The purpose of isolating the mechanical vacuum line is to limit release of activity from the main condenser. During an accident, fission products would be transported from the reactor through the main steamline to the main condenser. The fission product radioactivity would be sensed by the main steamline radioactivity monitors which initiate isolation.

3.8/4.8.F. MISCELLANEOUS RADIOACTIVE MATERIALS SOURCES

The objective of this specification is to assure that leakage from byproduct, source and special nuclear material sources does not exceed allowable limits. The limitations on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39 (c) limits for plutonium.

3.8/4.8.E. SOLID RADIOACTIVE WASTE

The operability of the solid radioactive waste system ensures that the system will be available for use whenever solid radwastes require processing and packaging prior to being shipped off-site. This specification implements the requirements of 10 CFR 50.36a. and General Design Criteria 60 of Appendix A to 10 CFR Part 50.

3.8/4.8.H CONTROL ROOM AIR FILTRATION

The purpose of these specifications is to assure availability of the control room emergency air filcrations unit that has been installed in response to NUREG-0737 Item III D.3.4. Operation of this unit is described in the "Control Room Habitability Study" for Quad-Cities Station which was submitted to the NRC in December 1981.