TABLE TS.3.5-4

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCTIONS

FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 PERMISSIBLE BYPASS CONDITIONS	4 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
1. CONTAINMENT ISOLATION				
a. Safety Injection	(See Item No. 1 of Table TS.3.5-3)			Hot shutdown**
b. Manual	2	1		Hot shutdown
2. CONTAINMENT VENTILATION ISOLATION				
a. Safety Injection	(See Item No. 1 of Table TS.3.5-3)			Maintain Purge and Inservice Purge Valves closed if (1) conditions of a, b, or c cannot be met above Cold Shutdown or (2) if conditions of b or c cannot be met during fuel handling in containment.
b. High Radiation in Exhaust Air	2	1		
c. Manual	2	1		
3. STEAM LINE ISOLATION				
a. Hi-Hi Steam Flow with Safety Injection	2	1		Hot shutdown**
b. Hi Steam Flow and 2 of 4 Low Tavg with Safety Injection	2	1		Hot shutdown**
c. Hi Containment Pressure	1/loop	1		Hot shutdown**
d. Manual	1/loop	-		Hot shutdown**
4. EMERGENCY COOLDOWN EQUIPMENT ROOM ISOLATION				
a. High temperature in ventilation system ducts	2	1		Hot shutdown**

** - If minimum conditions are not met within 24 hours, steps shall be taken on the affected unit to place the unit in cold shutdown conditions.

TABLE TS.3.5-4
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E. Two independent chlorine detection systems, each consisting of two channels of instrumentation shall be operable at all times except as specified below. The alarm/trip setpoint shall be adjusted to actuate at a chlorine concentration of less than or equal to 5 ppm.

1. If one chlorine detection channel for one train of ventilation is inoperable, then within seven days:

   a. Restore the inoperable channel to operable status, or

   b. Operate the redundant ventilation system in the normal (non-recirculation) mode, and close the outside air supply dampers for the affected train of ventilation.

2. If both chlorine detection channels for one train of ventilation are inoperable then within six hours:

   a. Restore at least one channel to operable status, or

   b. Operate the redundant ventilation system in the normal (non-recirculation) mode and close the outside air supply dampers for the affected train of ventilation.

3. If all chlorine monitors for both trains of ventilation are inoperable then within six hours close all Control Room ventilation outside air supply dampers.

F. Two independent toxic gas detection systems, each capable of detecting ammonia, formaldehyde and hydrochloric acid, shall be operable at all times except as specified in 3.13.F.1 or 3.13.F.2 below. The alarm/trip setpoints shall be adjusted to actuate at the following levels:

Ammonia $\leq$25 ppm

Formaldehyde $\leq$2 ppm

Hydrochloric Acid $\leq$5 ppm

1. If the toxic gas detection system for one train of control room ventilation is inoperable, operate the redundant ventilation train in the normal (non-recirculation) mode and close the outside air supply dampers for the affected train of ventilation. Restore the inoperable system to an operable status within 21 days or submit a special report to the Commission within 30 days outlining the cause of the malfunction and the plans for restoring the system to operable status. If the redundant ventilation train cannot be operated in the normal (non-recirculation) mode, follow the actions described in 3.13.F.2 below as if both toxic gas detection systems were inoperable.

2. If both toxic gas detection systems are inoperable, one control room ventilation train may continue to be operated in the normal (non-recirculation) mode. Restore at least one system to an operable status within 7 days or submit a special report to the Commission within 14 days outlining the cause of the malfunction and the plans for restoring the systems to operable status.

3.13 CONTROL ROOM AIR TREATMENT SYSTEM

Bases

The Control Room Special Ventilation System is designed to filter the Control Room atmosphere during accident conditions. The system is designed to automatically start on a high radiation signal in the ventilation air or when a Safety Injection signal is received from either unit. Two completely redundant trains are provided.

Each train has a filter unit consisting of a prefilter, HEPA filters, and charcoal adsorbers. The HEPA filters remove particulated from the Control Room atmosphere and prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to remove any radioiodines from the Control Room atmosphere. The in-place test results should indicate a HEPA filter leakage of less than 1% through DOP testing and a charcoal adsorber leakage of less than 1% through halogenated hydrocarbon testing. The laboratory carbon sample test results should indicate a radioactive methyl iodide removal efficiency of at least 90% under test conditions more severe than expected accident conditions. System flows should be near their design values. The verification of these performance parameters combined with the qualification testing conducted on new filters and adsorber provide a high level of assurance that the Control Room Special Ventilation System will perform as predicted in reducing potential doses to plant personnel below those levels stated in Criterion 19 of Appendix A to 10 CFR 50.

In-place testing procedures will be established utilizing applicable section of ANSI N510 - 1975 standard as a procedural guideline only.

The operability of the chlorine detection system ensures that sufficient capability is available to promptly detect and initiate protective action in the event of an accidental chlorine release. This capability is required to protect the control room personnel and is consistent with the recommendations of Regulatory Guide 1.95 "Protection of Nuclear Power Plant Control Room Operators Against an Accidental Chlorine Release," February 1975.

The Control Room Special Ventilation System remains operable if the ventilation system can be operated in the recirculation mode.

Each train of the control room special ventilation system is equipped with a toxic gas detection system consisting of monitors capable of detecting ammonia, formaldehyde and hydrochloric acid. These toxic gas detection systems are designed to isolate the control room from outside air upon detection of toxic concentrations of the monitored gases in the control room ventilation system. The operability of the toxic gas detection systems provides assurance that the control room operators will have adequate time to take protective action in the event of an accidental toxic gas release. A ventilation train's toxic gas detection system should be considered inoperable if it is found to be incapable of detecting any of the monitored gases or incapable of initiating an isolation of the respective ventilation train upon detection of one of the monitored gases.

Selection of the gases to be monitored and the bases for the monitor setpoints are described by the Prairie Island Main Control Room Habitability Study dated May, 1981 and transmitted to the Commission on July 20, 1981.

F. Yard Hydrant Hose Houses

1. Whenever equipment in the following buildings is required to be operable, the yard hydrant hose houses in the main yard loop adjacent to each building shall be operable:

   a. Unit No. 1 Reactor Building

   b. Unit No. 2 Reactor Building

   c Turbine Building

   d. Auxiliary Building

   e. Screen House

2. If Specification 3.14.F.1 cannot be met, within one hour have sufficient additional lengths of 2-1/2 inch diameter hose located in adjacent operable yard hydrant hose house(s) to provide service to the unprotected area(s).

   Restore the yard hydrant hose house(s) to Operable status within 14 days or submit a 30-day written report outlining the cause of the inoperability and the plans and schedule for restoring the houses to Operable status.

G. Penetration Fire Barriers

1. All penetration fire barriers in fire area boundaries protecting equipment required to be operable shall be operable.

2. If Specification 3.14.G.1 cannot be met, a continuous fire watch shall be established on at least one side of the affected penetration(s) within one hour.

   Restore the inoperable penetration fire barriers to Operable status within 14 days or submit a 30-day written report outlining the cause of the inoperability and the plans and schedule for restoring the barriers to Operable status.

TABLE TS.4.1-1
(Page 5 of 5)

	Channel Description	Check	Calibrate	Functional Test	Response Test	Remarks
40.	Auxiliary Feedwater Pump Suction Pressure	NA	R	R	NA	
41.	Auxiliary Feedwater Pump Discharge Pressure	NA	R	R	NA	
42.	NaOH Caustic Stand Pipe Level	W	R	M	NA	
43.	Control Room Ventilation System Chlorine Monitors	S	Y	M(1)	NA	
44.	Hydrogen Monitors	S	Q(2)	M	NA	
45.	Containment Temperature Monitors	M	R	NA	NA	
46.	Control Room Ventilation System Ammonia, Hydrochloric Acid and Formaldehyde Monitors	W	Y	M(3)	NA	

S - Shift
D - Daily
W - Weekly
M - Monthly
Q - Quarterly
P - Prior to each startup if not done previous week
T - Prior to each startup following shutdown in excess of 2 days if not done in the previous 30 days.

Y - Yearly
R - Each refueling shutdown
NA - Not applicable
* - See Specification 4.1.D.

(1) Verification of the chlorine monitor control logic only.
(2) Test will be conducted per manufacturer's recommendations.
(3) Verification of the monitor control logic only.

TABLE TS.4.2-1
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SPECIAL INSERVICE INSPECTION REQUIREMENTS

	Component	Method of Examination	Extent and Frequency
	REACTOR COOLANT PUMPS		
1.	Pump Flywheel	U.T.	An in-place ultrasonic volumetric examination of the areas of higher stress concentration at the bore and key way at approx. 3 year intervals, during the refueling or maintenance shutdown coinciding with the in-service inspection schedule as required by the ASME B & PV Code Section XI.
		M.T. or P.T. U.T.	A surface examinaton of all exposed surfaces and complete ultrasonic volumetric examination at approx. 10 year intervals, during the plant shutdown coinciding with the in-service inspection schedule as required by the ASME B & PV Code Section XI. Removal of the fly-wheel is not required to perform these examinations.

Notes:

1. The following definitions shall apply to the inspection methods employed in Table TS.4.2-1.

   a. U.T. - Ultrasonic examination per IWA-2230.
   b. P.T. - Liquid Penetrant examination per IWA-2220.
   c. M.T. - Magnetic Particle examination per IWA-2220.

UNIT 1 AND UNIT 2 PENETRATION DESIGNATION FOR LEAKAGE TESTS

Penetration Number	Penetration Description	Penetration Designation (Note 3)	Type of Test
42B (53 in Unit 2)	Inservice Purge Supply Valves (6)	ABSVZ	C
42B (53 in Unit 2)	*Inservice Purge Supply Blind Flange(4)	Annulus	B
42C (54 in Unit 2)	Containment Heating Steam (4)	ABSVZ	B
42D, 42E	Spare		-
42F-1 (42E-1 in Unit 2)	Heating Steam Condensate Return(4)	ABSVZ	B
42F-2 (42E-2 in Unit 2)	Heating Steam Return Vent(4)	ABSVZ	B
42G	Spare		
43A (52 in Unit 2)	Inservice Purge Exhaust Valves(6)	ABSVZ	C
43A (52 in Unit 2)	*Inservice Purge Exhaust Blind Flange(4)	Annulus	B
43B,C,D	Spares		
44	Containment Vessel Pressurization (4)	ABSVZ	B
45	Reactor Makeup to Pressurizer Relief Tank	ABSVZ	C
46A, 46B (46C, 46D in Unit 2)	Auxiliary Feedwater	Note (2)	-
47	Electrical Penetration	Annulus	B
48	Low Head SI	Note (5)	-
49A	Instrumentation	Note (1)	-
49B (55 in Unit 2)	Demineralized Water (4)	ABSV	B

*Testing required following modification to inservice purge system of each unit during 1983 refueling outages.

During reactor operation, the instrumentation which is depended on to initiate safety injection and containment spray is generally checked weekly, and the initiating circuits are tested monthly (in accordance with Specification 4.1).

The program of pump and valve testing for safety related equipment conforms to the requirements of 10 CFR 50, Section 50.55a(g). Where practical, tests of ASME Code Class 1, Class 2, and Class 3 pumps and valves are performed in accordance with Section XI of the ASME Code. If a code required test is impractical for the Prairie Island facility, a request for deviation from that requirement is submitted to the Commission in accordance with 10 CFR 50, Section 50.55a(g)(6)(i).

Deviations which are needed from the procedures prescribed in Section XI of the ASME Code and applicable Addenda will be reported to the Commission prior to the beginning of each 20-month inspection period if they are known to be required at that time. Deviations which are identified during the course of inspection will be reported quarterly throughout the 20-month inspection period. Negative reports will not be made.

Other systems that are also important to the emergency cooling function are the accumulators, the component cooling system, the Cooling Water System and the containment fan coolers. The accumulators are a passive safeguard. In accordance with Specification 4.1, the water volume and pressure in the accumulators are checked periodically. The other systems mentioned operate when the reactor is in operation and by these means are continuously monitored for satisfactory performance.

The purpose of the surveillance requirements on ECCS throttle valves is to provide assurance that proper ECCS flows will be maintained in the event of a LOCA. Maintenance of proper flow resistance and pressure drop in the piping system to each injection point in the High Head Safety Injection System is necessary to: (1) prevent total pump flow from exceeding runout conditions when the system is in its minimum resistance configuration, (2) provide the proper flow split between injection points in accordance with the assumptions used in the ECCS-LOCA analyses, and (3) provide an acceptable level of total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses.

References

(1) FSAR, Section 6.2

TABLE TS.4.10-2

MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)[a,e]

Analysis	Water (pCi/l)	Airborne Particulate or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
gross beta	4[b]	1×10^{-2}				
^{3}H	2000(1000[b])					
^{54}Mn	15		130			
^{59}Fe	30		260			
$^{58,60}Co$	15		130			
^{65}Zn	30		260			
^{95}Zr-Nb	15[c]					
^{131}I	1[b,d]	7×10^{-2}		1[d]	60	
$^{134,137}Cs$	15(10[b]), 18	1×10^{-2}	130	15	60	150
^{140}Ba-La	15[c]			15[c]		

TABLE TS.4.10-2 (Page 1 of 2)
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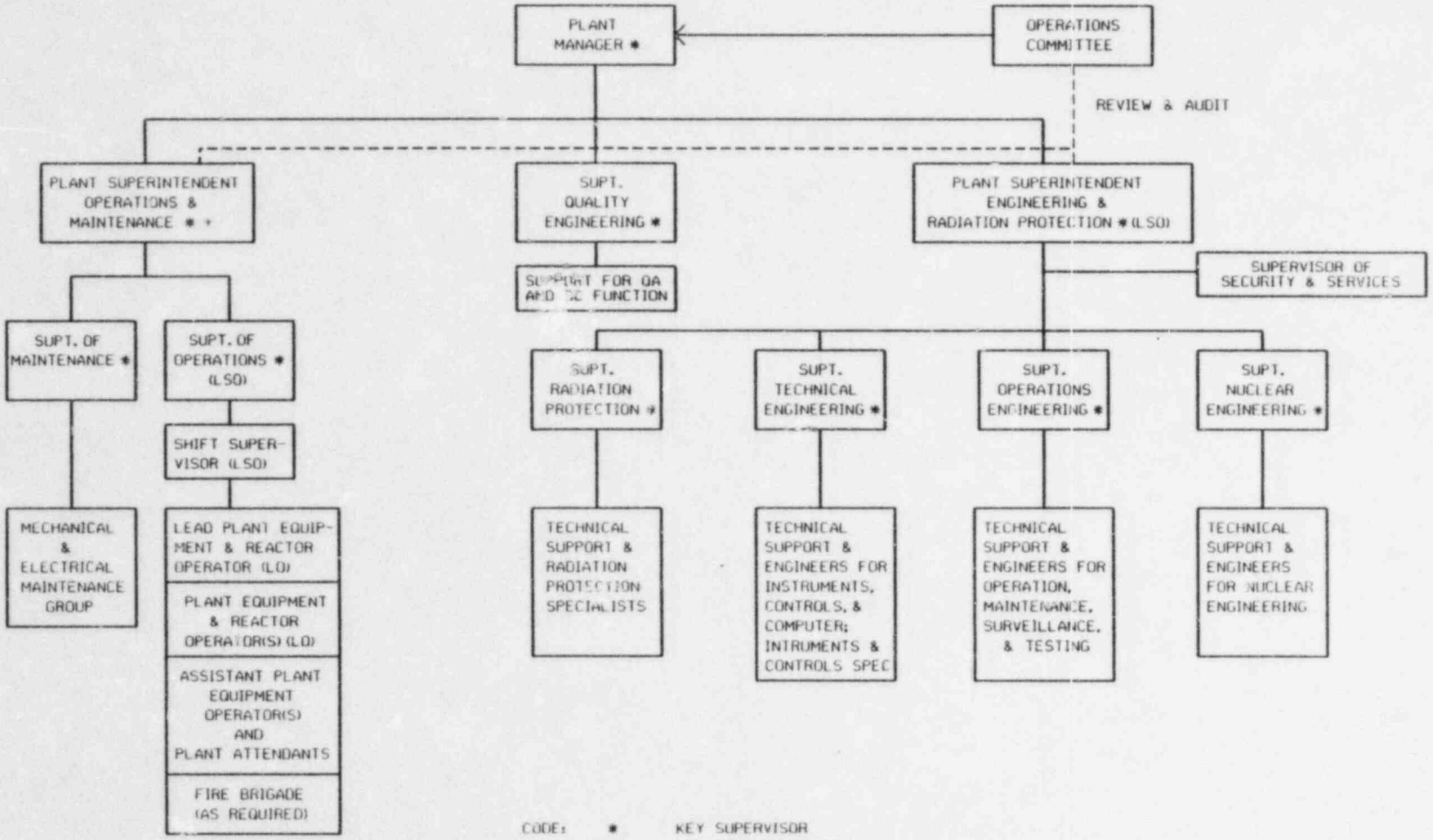

CODE:
- * KEY SUPERVISOR
- LO LICENSED OPERATOR
- LSO LICENSED SENIOR OPERATOR
- + HAS RESPONSIBILITY FOR IMPLEMENTATION OF THE FIRE PROTECTION PROGRAM

FIGURE TS.6.1-2 PRAIRIE ISLAND NUCLEAR GENERATING PLANT
FUNCTIONAL ORGANIZATION FOR ON-SITE GROUP

Figure TS.6.1-2
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1. a. Paragraph 20.203 "Caution signs, labels, signals and controls". In lieu of the "Control device" or alarm signal required by paragraph 20.203(c)(2), each high radiation area in which the intensity of radiation is 1000 mRem/hr or less shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit (or continuous escort by a qualified person for the purpose of making a radiation survey) and any individual or group of individuals permitted to enter such areas shall be provided with a radiation monitoring device which continuously indicates the radiation dose rate in the area.

   b. The above procedure shall also apply to each high radiation area in which the intensity of radiation is greater than 1000 mRem/hr, except that doors shall be locked or attended to prevent unauthorized entry into these areas and the keys or key devices for locked doors shall be maintained under the administrative control of the Plant Manager.

2. A program shall be implemented to reduce leakage from systems outside containment that would or could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. This program shall include the following:

   a. Provisions establishing preventive maintenance and periodic visual inspection requirements, and

   b. Integrated leak test requirements for each system at a frequency not to exceed refueling cycle intervals.

   A program acceptable to the Commission was described in letters from L O Mayer, NSP, to Director of Nuclear Reactor Regulation, dated December 31, 1979 "Lessons Learned Implementation" and March 13, 1980, "1/1/80 Lessons Learned Implementation Additional Information".

3. A program shall be implemented which will ensure the capability to accurately determine the airborne iodine concentration in essential plant areas under accident conditions. This program shall include the following:

   a. Training of personnel,

   b. Procedures for monitoring, and

   c. Provisions for maintenance of sampling and analysis equipment.

   A program acceptable to the Commission was described in letters from L O Mayer, NSP, to Director of Nuclear Reactor Regulation, dated December 31, 1979 "Lessons Learned Implementation" and March 13, 1980, "1/1/80 Lessons Learned Implementation Additional Information".

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

   a. Training of personnel,

b. Procedures for sampling and analysis,

c. Provisions for maintenance of sampling and analysis equipment.

C. Maintenance and Test

The following maintenance and test procedures will be developed to satisfy routine inspection, preventive maintenance programs, and operating license requirements.

1. Routine testing of Engineered Safeguards and equipment as required by the facility License and the Technical Specifications.

2. Routine testing of standby and redundant equipment.

3. Preventive or corrective maintenance of plant equipment and systems that could have an effect on nuclear safety.

4. Calibration and preventive maintenance of instrumentation that could affect the nuclear safety of the plant.

5. Special testing of equipment for proposed changes to operational procedures or proposed system design changes.

D. Process Control Program (PCP)

The PCP shall be approved by the Commission prior to initial implementation. Changes to the PCP shall satisfy the following requirements:

1. A description of changes shall be submitted to the Commission with the Semi-Annual Radioactive Effluent Release Report for the period in which the change(s) were made. This submittal shall contain:

   a. sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information;

   b. a determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes; and

   c. documentation of the fact that the change has been reviewed and found acceptable by the Operations Committee.

2. Shall become effective upon review and acceptance by the Operations Committee.

5. Semiannual Radioactive Effluent Release Report. Routine radioactive effluent release reports covering the operation of the unit during the previous six months of operation shall be submitted within 60 days after January 1st and July 1st of each year.

The radioactive effluent release reports shall include a summary of the quantities of radioactive liquid and gaseous effluents as outlined in Appendix B of Regulatory Guide 1.21, Revision 1, June, 1974, with data summarized on a quarterly basis.

The report to be submitted 60 days after January 1 of each year shall include an assessment of the radiation doses from radioactive effluents released from the plant during the previous calendar year. This same report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to individuals due to their activities inside the site boundary (Figures 3.9-1 and 3.9-2) during the report period. All assumptions used in making these assessments (i.e., specific activity, exposure time and location) shall be included in these reports. The assessment of radiation doses shall be performed in accordance with the Offsite Dose Calculation Manual (ODCM) or standard NRC computer codes.

The report to be submitted 60 days after January 1 of each year shall also include an assessment of radiation doses to the likely most exposed member of the general public from reactor releases and other nearby uranium fuel cycle sources (including doses from primary effluent pathways and direct radiation) for the previous 12 consecutive months to show conformance with 40 CFR 190, Environmental Radiation Protection Standards for Nuclear Power Operation.

The radioactive effluent release reports shall include the following information for solid waste shipped offsite during the report period.

a. container volume,
b. total curie quantity (specify whether determined by measurement or estimate).
c. principal radionuclides (specify whether determined by measurement or estimate),
d. type of waste (e.g., spent resin, compacted dry waste, evaporator bottoms),
e. type of container (e.g., LSA, Type A, Type B, Large Quantity), and
f. solidification agent (e.g., cement, urea formaldehyde).

The radioactive effluent releases reports shall include unplanned releases from the site of radioactive materials in gaseous and liquid effluents on a quarterly basis, changes to the ODCM, a description of changes to the PCP, a report of when milk or vegetable samples cannot be obtained as required by Table 4.10-1, and changes in land use resulting in significant increases in calculated doses.

6. Annual Summaries of Meteorological Data. An annual summary of meteorological data shall be submitted for the previous calendar year in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability at the request of the Commission.