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RADIOLOGICAL EMERGENCY RESPONSE PLAN - PLANT

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TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 4

ISSUANCE AUTHORIZED BY	J.W. Gahm 8-15-84	
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4.0 Emergency Conditions

Emergencies are classified into four categories as provided by "Emergency Action Level Guidelines For Nuclear Power Plants", Appendix 1, USNRC NUREG-0654, Rev. 1. Each succeeding classification is more severe than its predecessor and results in a higher level of response. The classification system results in responses and procedures that are both timely and appropriate for a wide range of emergency conditions.

4.1 Classification

The classifications described in the following sections comprise the system. Each classification description includes appropriate levels of station and state/local government agency emergency response actions. The classifications given match those employed in the State RERP.

4.1.1 NOTIFICATION OF UNUSUAL EVENT

This classification applies to situations where unusual events are in process (or have occurred) which indicate a potential for degradation of the level of safety of the plant.

In these situations, time is available to take precautionary and constructive steps to prevent a more serious event and/or to mitigate any consequences that may occur. This event status places the plant in a readiness position for a possible cessation of routine activities and/or an augmentation of on-shift resources. State officials are promptly notified of an unusual event. No releases of radioactive material requiring offsite response or monitoring are expected at this level.

Table 4.1-1 outlines initiating events and response actions for the NOTIFICATION OF AN UNUSUAL EVENT class of incident.

4.1.2 ALERT

This classification comprises events which are in process, or have occurred, that involve the potential for a substantial degradation of the level of safety of the plant. Any releases of radioactive materials are expected to represent small fractions of the EPA Protective Action Guide limits. The purpose of the ALERT category is to assure that emergency personnel are readily available if the situation degrades and to provide offsite authorities with comprehensive status information. Operator modification of plant operating status is a probable corrective action if such modification has not already been accomplished by automatic protective systems.

Declaration of an ALERT will trigger prompt initial and followup notification to offsite authorities. If applicable, updated meteorological information, verification of releases by surveys, and projected radiological effects on offsite areas will be provided to local and state authorities. The ALERT status is maintained until the event is declared to be terminated or an escalation to a more severe emergency class is declared.

Table 4.1-2 outlines initiating events and response actions for the ALERT class of incident.

4.1.3 SITE AREA EMERGENCY

A SITE AREA EMERGENCY consists of events which are in process, or have occurred, that involve actual or likely major failures of plant protective functions. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary. The purpose of the SITE AREA EMERGENCY declaration is to assure that emergency response facilities are manned, that radiation monitoring teams are dispatched, that emergency forces are readily available, and to provide efficient exchange of status information between PSC and offsite authorities. Consideration of appropriate protective actions, based on actual or projected data, is warranted. Onsite and offsite emergency centers are activated. Onsite evacuation is initiated if indicated to be necessary by actual or projected doses. PSC radiological monitoring teams are deployed. The station provides status updates to offsite authorities, including meteorological information, offsite radiological monitoring data (prior to

state monitoring team deployment), and projected doses (calculated on foreseeable plant conditions and projected long-term releases). State monitoring teams are dispatched to assess offsite consequences. If projected exposures approach those noted in the EPA PAGs, state/local authorities institute appropriate actions for public protection. A decision on termination, escalation, or recommended reduction in emergency class will be communicated to governmental authorities.

Table 4.1-3 outlines initiating events and response actions for the SITE AREA EMERGENCY class of incident.

4.1.4 GENERAL EMERGENCY

A GENERAL EMERGENCY consists of events which are in process, or have occurred, that involve actual or imminent substantial core degradation, with the potential for loss of Prestressed Concrete Reactor Vessel (PCRV) integrity. Exposure levels beyond the site boundary may exceed EPA Protective Action Guideline levels. There is prompt notification of appropriate state and local authorities of the GENERAL EMERGENCY status. The purpose of declaration of a GENERAL EMERGENCY is to rapidly initiate predetermined protective actions for the public.

During a GENERAL EMERGENCY, resources and personnel are augmented by the activation of emergency centers. Radiological monitoring teams are dispatched. The station provides plant status updates, as well as data on radioactive releases, meteorological information, radiological field measurements, radiological dose projections, and affected downwind zones to offsite authorities.

A decision on termination or reduction of the GENERAL EMERGENCY class will be communicated to governmental authorities after thorough review of the emergency situation.

Table 4.1-4 outlines initiating events and response actions for the GENERAL EMERGENCY class of incident.

4.2 Offsite Accident Assessment

The station has the responsibility to perform a preliminary assessment of the offsite consequences of an

incident. This preliminary assessment includes: determination of the radiation exposure rate by precalculated analytical methods (see Section 6.2) and/or field surveys; estimation of projected total dose levels for different downwind sectors and distances; and, classification of incident consequences, per Tables 4.1-1 through 4.1-4. Based upon the results of these assessments, notification of state/local authorities of the appropriate incident classification is then made.

After arrival at the Forward Command Post (FCP), the Colorado Department of Health (CDH) assumes responsibility for confirmatory (in-field) and continued offsite accident assessment, and FSV Field Monitoring Teams are recalled to the Personnel Control Center). This responsibility is carried out by dispatching CDH field monitoring teams and by analysis of data provided by PSC. Long-term offsite assessments (secondary incident assessments) are the responsibility of the CDH staff as noted in the State RERP.

4.3 Spectrum of Possible Accidents and Initiating Events

The accidents which might occur at the Fort St. Vrain Nuclear Generating Station have been analyzed in Section 14 of the FSV FSAR for their severity of consequence and probability of occurrence. These accidents reflect the design characteristics of a High Temperature Gas-cooled Reactor (HTGR) and are addressed in Tables 4.1-1 through 4.1-4 from the viewpoint of initiating events, alarm actuation and/or associated readings, and consequent incident classification.

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/local Actions
1. Any unplanned radiological release to the Reactor Bldg. or its ventilation system.	Alarms on: 1. RT 7312 CAM(s) RT 7324-1; RT 4801; RT 7324-2; RT 4802; RT 7325-1; RT 4803; RT 7325-2; RT 73437-1,2	Inform State and local authorities of nature of unusual condition within 2 hours of occurrence, but in any event, within 15 minutes of declaration.	Provide assistance if requested (fire, security, medical, etc).
2. Any liquid waste release resulting in offsite effluent in excess of Technical Specification Limits.	2. a) RT 6212 or 6213 alarm with inability to prevent discharge offsite. b) As determined by station personnel.	Augment on-shift resources Assess and respond.	Continue offsite notification as necessitated by situation.
3. Indication of minor fuel damage detected in primary coolant	3. a) 25% increase in circulating activity from previous equilibrium conditions at the same power level. RT 9301 b) SR 5.2.11 results.	Terminate with verbal summary to offsite authorities followed by written summary within 24 hours. or Escalate to a more severe class.	Standby until verbal termination. or Escalate to a more severe class.

NOTE 1: Assumption implicit throughout Tables 4.1-1 - 4.1-4 that alarms are confirmed to be valid by supporting observations or analysis as specified by abnormal operating or annunciator response procedures.

NOTE 2: Due to instrument characteristics, alarm setpoints for radiation monitors listed in Tables 4.1-1 - 4.1-4 vary with time. Instruments and alarm setpoints are checked/calibrated quarterly. Consult Master Setpoint List for actual settings.

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
4. Serious fire at the plant lasting more than 10 minutes, which could lead to substantial degradation of plant safety systems, or which could result in the release of radiological or toxic materials.	4. a) any of various alarms on Fire Control Alarm Panel; b) Fire Pump 1A auto start; c) verbal reports.	Note: Per agreement with the State of Colorado, PSC will notify the State prior to public information releases concerning FSV.	
5. Abnormal coolant temperatures or core region temperature rises to the extent requiring shutdown in accordance with Technical Specifications.	5. Violations of LCO 4.1.7 or 4.1.9 for region outlet mismatch, or region Delta-T respectively, to the extent that shutdown per Station Technical Specifications is required (SOP 12-04).		
6. Natural phenomenon that may be experienced or threatened that represent risks beyond normal levels: a) earthquake b) floods c) tornadoes d) extremely high winds	6. a) Seismic Recorder Operate; b)-d) as visually observed by, or reported to, station personnel.		

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
7. Unusual Hazards Experienced: a) Aircraft crash on site or near the site that is subject to public concern because of possible detrimental effect on the plant b) Onsite explosions or near onsite explosions that may be subject to public concern because of possible detrimental effect on the plant; or, c) Onsite or near on-site plant related accidents that could result in the release of toxic material or spills of flammable materials.	7. As visually observed by, or reported to, station personnel		
8. Any serious radiological exposure of plant personnel or the transportation to offsite facilities of contaminated personnel who may have been injured.	8. As occurring.		

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
9. Accidents within the state that may involve plant spent fuel shipments or plant radioactive waste shipments.	9. As occurring or reported by shipper.		
10. Loss of Engineered Safety Feature or Fire Protection System to the extent requiring shutdown in accordance with station Technical Specifications.	10. Shutdown required in accordance with applicable LCOs: a) Engineered Safeguards 1) Plant Ventilation - LCO 4.5.1 2) Steam/Water Dump System-LCO 4.3.3 3) PCRV penetration flow restriction devices - LCO 4.2.7 and LCO 4.2.9 4) PCRV penetration secondary closures - LCO 4.2.7 and LCO 4.2.9 5) PCRV Safety Valves - LCO 4.2.8 SL 3.2 LSSS 3.3.2.c b) Fire Protection System - LCO 4.2.6 and, LCO 4.10.1 - LCO 4.10.5		

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Indication or alarms on radiological effluent monitors not functional.	11. Data Logger Alarm/ Alarm Summary indication of non-operational alarm or indication on: a) RT-7324-1,2 and RT 4803; or b) RT-7325-1,2, RT 4802, and RT 73437-1; or c) RT 73437-2 and RT 4801; or d) RT 6212 and RT 6213 NOTE: Use ELCO 8.1.1 Technical Specification limits as basis.		

The initiating events for the NOTIFCATION OF UNUSUAL EVENT category are per Public Service Company separate written agreement with the State of Colorado.

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. Rapid, severe fuel particle coating failure.	1. Coolant Inventory of a) greater than 2.4 (Ci)(Mev) Beta-Gamma lb b. circulating I-131 activity equivalent greater than 24Ci c. plate out I-131 greater than 1 x 10 Ci. d. SR 5.2.6 or SR 5.2.11 results.	Inform State and/or local authorities of ALERT status/cause as declared	Provide assistance, if requested (fire, security, medical, etc.)
2. Rapid, gross failure of one steam generator reheat section with loss of offsite power.	2. Loop 1 Hot Reheat Header (HRH) activity high (5mrem/hr); or, Loop 2 HRH activity high (5mrem/hr), accompanied by 230 KV OCB trips and RAT undervoltage/ loss of power alarm.	Augment resources by activating TSC, PCC, and FCP. Assess and respond.	Augment resources by activating FCP and State/local EOCs.
3. Primary coolant pressure decay (to a value greater than 100 psi less than normal pressure, accompanied by area and stack radiation monitor alarms).	3. PAL 9335 PAL 9347 PAL 9359 and area monitor or stack monitor alarm.	Dispatch onsite monitoring teams with associated communications. Provide periodic plant status updates to offsite authorities as conditions warrant (at least every 15 minutes.)	Place key emergency personnel (including monitoring teams and associated communications) on standby status.

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
4. High radiation levels or high airborne contamination which indicates severe degradation in control of radioactive materials. (Increase by factor of 1,000 over normal.) e.g., lifting PCRV relief valve or abnormal release to cooling tower blowdown.	4. RT 7312 CAM(s) alarm RT 6212 RT 6213 RT 93252-12 Area Monitors Alarms with corresponding meter readings on area or process monitors.	Provide meteorological assessments to offsite authorities and, if releases are occurring, dose estimates for actual releases. Terminate by verbal summary to offsite authorities followed by written summary within 8 hours. or Escalate to a more severe class.	Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections if actual releases substantially exceed technical specification limits. Maintain ALERT status until verbal termination. or Escalate to a more severe class.
5. Loss of offsite power and vital onsite AC power for up to 30 minutes.	5. 230 KV OCB trips and RAT undervoltage/loss of power alarm accompanied by 4 Kv bus undervoltage, 480V bus undervoltage, and Diesel Trouble alarms.		
6. Loss of all vital DC power for up to 30 minutes.	6. DC bus 1 less than 10 volts, and DC bus 2 less than 10 volts.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
7. Loss of primary coolant forced circulation for between 2 and 5 hours.*	7. All He flow indicators read zero.		
8. Loss of secondary coolant functions needed for removing residual heat.	8. All secondary coolant flow indicators read zero.		
9. Loss of normal ability to place the reactor in a subcritical condition by scram of the control rods.	9. a) Indication of insufficient rods inserted; or, b) neutron count rate not decreasing.		
10. Serious fire which could lead to substantial degradation of plant safety systems.	10.a) any of various alarms on Fire Control Alarm Panel; b) Fire Pump 1A auto start; or, c) verbal reports.		

* These times are from LOFC at 100% power. Times may be correspondingly longer for lower power levels (LCO 4.2.18).

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Radiological effluents exceed 10 times technical specification instantaneous limits.	11. RT 7324-1 indicating a) greater than or equal to 2.5 x 10 micro Ci/cc mixed noble gas b) RT 7324-2 indicating greater than or equal to 2.5 x 10 micro Ci/cc mixed noble gas c) RT 7325-1 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131 d) RT 7325-2 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131 e) RT 73437-1 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131 f) RT 4801 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131		
12. Ongoing security compromise.	12.a) As observed or reported.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
13. Severe natural phenomenon being experienced or projected, such as: a) earthquake exceeding Operating Basis Earthquake levels; b) flood near design level; or, c) tornado striking facility.	13.a) Seismic recorder operate (greater than or equal to .05g); or b) As Reported c) As Reported.		
14. Other hazards being experienced or projected such as: a) aircraft crash on facility; b) missile impact on facility; c) explosion damage affecting plant operation; or, d) entry into facility environs of toxic or flammable gas. (Some effect on facility experienced or anticipated.)	14. As reported by, or or to, station personnel.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
15. Evacuation of control room anticipated or required, with control of shutdown systems established from local stations. (Control room integrity breached.)	15. As deemed necessary by Shift Supervisor		
16. All alarms (annunciators) lost for more than 15 minutes and reactor is not shutdown; or, plant transient experienced while all alarms lost. (Parameter indication still functional.)	16. Control room observation.		
17. Other plant conditions warranting precautionary activation of the PCC, TSC, and FCP.	17. As deemed necessary by Shift Supervisor.		

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. Loss of primary coolant forced circulation for over 5 hr from 100% power. (Lower power levels preceeding LOFC extends time available before core damage is incurred. See LCO 4.2.18.)	1. All He flow indicators read zero.	Inform state and/or local authorities of SITE AREA EMERGENCY status/cause as declared.	Provide any assistance requested.
		Augment resources by activating TSC, PCC, ECP, and FCP.	Initiate immediate public notification of SITE AREA EMERGENCY status; provide periodic public updates.
2. Non-isolable primary coolant leakage through a steam generator reheat section.	2. Loop 1 or 2 HRH activity alarm-high with Shift Supervisor determination that leakage is non-isolable.	Assess and respond.	
		Dispatch radiological monitoring teams with communications equipment.	Augment resources by activating FCP and EOCs.

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
3. PCRV relief valve remains open.	3. RT 93252-12 alarm and rapidly decreasing Reactor pressure.	Provide a dedicated individual for plant status updates to offsite authorities and and periodic press briefings.	Dispatch key emergency personnel, including communications equipment.
4. Determination of inability to restore onsite AC power.	4. 230 KV OCB trips and RAT undervoltage/loss of power alarm accompanied by 4Kv bus undervoltage, 480V bus undervoltage and Diesel Trouble alarms; Standby Diesel Fail to Start.	Make senior technical and management staff available for periodic press briefings.	Alert other personnel to standby status (e.g., those needed for traffic control or evaucation) and dispatch personnel to near-site duty stations.
5. Loss of functions needed for plant hot shutdown.	5. Inability to insert sufficient control rods accompanied by failure of emergency reserve shutdown system - resulting in inability to maintain -.01 delta Rho at 220 degrees F.	Provide meteorological data and dose estimates (for actual releases) to offsite authorities via a a dedicated individual.	Provide offsite monitoring results to PSC and jointly assess them.
6. Major damage to spent fuel due to severe shipping cask damage resulting in release of radioactivity to plant environs.	6. a) Visual observation b) area radiation monitor alarms		Continuously assess information from PSC and offsite monitoring teams with regard to initiating/modifying public protective actions.

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
7. Fire adversely affecting safety systems.	7. a) Fire pump 1A start; b) Fire Control Alarm Panel c) Various alarms according to affected safety system d) Shift Supervisor determines fire beyond capability of station staff.	Provide release and dose projections based on available plant condition information and forseeable contingencies.	Evaluate data and initiate ingestion pathway protective actions as aproppriate.
8. a) Effluent monitors detect levels corresponding to greater than 50 mrem/hr W.B. for 1/2 hr, or greater than 500 mrem/hr W.B. for two minutes, at the site boundary under adverse meteorology (or levels 5 times the above for thyroid dose rate).	8. Stack monitor alarm with corresponding stack concentration indications on: a) RT7343-1, RT4802, & RT7325-1,2 greater than or equal to 6.7 x 10 micro Ci/cc I-131 b) RT 7324 -1,2 and RT 4803 - greater than or equal to 6.6 x 10 micro Ci/cc mixed noble gases	Terminate (or recommend reduction of) emergency class verbally at FCP followed by written summary within 8 hours. or Escalate to GENERAL EMERGENCY	Provide press briefings. Maintain SITE EMERGENCY status until termination or reduction of emergency class. or Escalate to GENERAL EMERGENCY.
b) These dose rates are projected based on other plant parameters or are measured in the environs.			

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrumen Reading, etc.)	PSC Actions	State/Local Actions
9. Imminent loss of physical control of the plant due to security breach. (Response detailed in station security plan.)	9. Situation evident.		
10. Severe natural phenomenon being experienced or projected (with plant not in cold shutdown), such as:	10.		
a) earthquake greater than Safe Shutdown Earthquake	a) Seismic Recorder Operate alarm with indication of ground motion greater than 0.10g horizontal or greater than 0.067g vertical.		
b) flood greater than design levels.	b) As reported or observed.		
c) winds in excess of design levels	c) average wind velocity greater than 90 mph or 10 second gusts exceeding 99 mph.		
d) tornado in excess of design levels	d) horizontal wind velocity greater than 202 mph.		

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Other hazards being experienced or projected with reactor not shutdown, such as; a) aircraft crash affecting vital structures; b) severe damage to safe shutdown equipment; c) entry of toxic/flammable gas into vital areas.	11. As observed by or reported to, station personnel.		
12. Reactor building louvers open due to building being overpressurized by primary coolant. (DBA #2)	12. a) Louvers Open alarm (3" water) b) Reactor building radiation alarms.		
13. Evacuation of control room accompanied by inability to locally control shutdown systems within 15 minutes.	13. Remote shutdown instrumentation indications (panel 1-49)		
14. Other plant conditions warranting activation of FCP/EOCs, monitoring teams, and precautionary public notification.	14. As determined by Shift Supervisor.		

TABLE 4.1-4

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

GENERAL EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. a) Effluent monitors detect levels corresponding to 1rem/hr W.B. (or 5 rem/hr thyroid) at the exclusion area boundary under actual meteorological conditions.	1. Stack monitor RT-7324-1,2 alarm, or corresponding dose rates determined with E-500 or Cutie Pie detector per procedure HPP-56 and associated graphs.	Inform State and/or local authorities of GENERAL EMERGENCY status/ cause within 15 min. of detection.	Provide assistance.
		Augment resources by activating TSC, PCC, ECP, and FCP.	Initiate immediate public notification of GENERAL EMERGENCY status and provide periodic public updates.
b) These dose rates are projected based on other plant parameters or are measured in the environs.		Assess and respond.	
		Dispatch radiological monitoring teams with communications equipment.	Consider/implement protective actions based on current assessment.
2. Loss of physical control of the facility (due to security breach)	2. Situation evident.	Provide a dedicated individual for plant status updates to offsite authorities and periodic press breifings.	Augment resources by activating FCP and EOCs.
3. Other plant conditions exist that make release of large amounts of radioactivity possible.	3. As determined by Shift Supervisor.	Make senior technical and management staff available for periodic consultation with NRC.	Dispatch key emergency personnel, including monitoring teams, with communications equipment.
		Provide meteorological data and dose estimates (for actual releases) to offsite authorities via a dedicated individual.	Dispatch other emergency personnel to duty stations within a 5-mile radius and alert others to standby status.

TABLE 4.1-4

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

GENERAL EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
		Provide release and dose projections based upon information and foreseeable contingencies.	Provide offsite monitoring results to PSC and jointly assess these.
		Terminate (or recommend reduction of) emergency class by briefing authorities at the FCP, followed by written summary within 8 hours.	Continuously assess information from PSC and offsite monitoring teams with regard to initiating or modifying public protective actions.
			Evaluate data and initiate ingestion pathway protective actions as appropriate.
			Provide press briefings.
			Maintain GENERAL EMERGENCY status until termination or reduction of emergency class.

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 5

ISSUANCE AUTHORIZED BY	8-2-84		
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5.0 Organizational Control of Emergencies

5.1 The Normal Station Organization is shown, in chart form, on Figure 5.1-1 and is detailed in station Operating Technical Specifications. A shift of 8 operating and 9 security personnel, under the direction of a Shift Supervisor, is on duty at all times (Figure 5.1-2). Duties and responsibilities of operating personnel are set forth in station administrative procedures.

5.2 The Onsite Emergency Organization for the four categories of incident classification is depicted on Figures 5.2-1 and 5.2-2. In the event of an emergency, the on-duty Shift Supervisor has the responsiblity to initiate immediate actions to limit the consequences of the emergency and to return the plant to a safe and stable condition. He is, further, assigned the authority for direction of site emergency operations (Emergency Coordinator) and retains this authority until relieved by the Control Room Director or Technical Support Center Director. In this interim capacity, he is responsible for: classification of the emergency event; initial notification of appropriate governmental emergency response agencies; and, initiation of protective actions for station personnel. He may confer with FSV and PSC management for advice or concurrence with initial accident classification, if desired. (In the event the Shift Supervisor is unable to perform as Emergency Coordinator, the most senior Reactor Operator assumes that role.)

The Emergency Coordinator is responsible for initially classifying the incident, recommending protective actions, initiating corresponding emergency actions, notifying offsite authorities of the incident, and establishing communications with the TSC. Responsibility for the decision for notification and protective action recommendation may not be delegated.

Further responsibilities include: diagnosing the accident condition and estimating radiological exposures based on radioactive material releases and prevailing

meteorological conditions. To ensure this function is covered at all times, the Shift Supervisor is an authorized Emergency Coordinator. The on-duty Shift Supervisor continues to function as the Emergency Coordinator at least until the emergency organization is activated.

The Fort St. Vrain Nuclear Generating Station emergency organization operates from three onsite emergency centers - Control Room (CR), Technical Support Center (TSC), and Personnel Control Center (PCC). It is supported by three offsite emergency centers - Forward Command Post (FCP), State Emergency Operations Center (State EOC), and Executive Command Post (ECP). The station emergency organization will be manned and operational within 90 minutes after classification of an ALERT or higher level incident.

Onsite and offsite emergency organization interrelationships are shown in schematic form in Figure 5.2-3. PSC's role in the offsite (local and state) emergency control centers is diagrammed in Figure 5.2-4 (FCP) and Figure 5.2-5 (State EOC). Augmentation in the form of headquarters support is shown in Figure 5.2-6 (ECP) and is discussed in Section 5.3. The function, responsiblities, and staffing of the offsite emergency organization is also described in Section 5.3 and is shown in Figure 5.2-7. Post-emergency plant recovery plans and organization are described in Section 9.0. Emergency personnel assignments are shown by function. For clarity, normal job titles are also indicated. Qualification requirements (per the normal titles) are given in corporate job descriptions.

5.2.1 Direction and Coordination

Initial direction and coordination of onsite emergency operations will be the responsibility of the Shift Supervisor, as shown in Figure 5.2-1 and discussed in Section 5.2. This responsiblity will remain with the Shift Supervisor until such time as the emergency organization for an ALERT or higher level accident is activated (Figure 5.2-2).

During an ALERT, or higher level accident, overall command of PSC emergency operations will be exercised by the Corporate Emergency Director (Vice President of Production) at the FCP. He will provide direction to, and coordination for, the TSC Director (Manager, Nuclear Production) and the Manager, Nuclear Engineering (assigned to the State EOC). He will coordinate additional headquarters support via the ECP.

a. The Corporate Emergency Director (CED) - (Vice President of Production) is in command of PSC emergency operations and is responsible for direction and coordination of:

1. PSC onsite and offsite emergency functions;

2. Interface between PSC and local/state/federal emergency response activities;

3. Transmission of plant status updates and radiological release data to FCP and State EOC emergency response and media center personnel;

4. Notification of state and local agencies concerning recommended protective actions;

5. Provision of administrative, technical, and logistic support to station emergency operations; and,

6. Continuity of emergency organization resources.

In the event the Vice President of Production is not available, the Vice President of Engineering and Planning will assume command of PSC emergency operations.

b. The TSC Director - (Manager, Nuclear Production) is in command of onsite emergency operations. The TSC Director is authorized to initiate emergency actions, including declaring a particular class of emergency and providing protective action recommendations to offsite authorities. (The alternate TSC Director is the Station Manager).

Duties and responsibilities of the TSC Director include direction and coordination of:

1. The TSC staff, which is responsible for collecting and analyzing the tecnnical information necessary for assessment of plant operational aspects, providing technical counsel in support of the Control Room (CR), and assessment of radiological release consequences.

2. The CR Director (Superintendent of Operations), who is responsible for control of plant operations, assessing plant operational aspects, and implementing recommended corrective actions. (The alternate for the CR Director is the Shift Supervisor, Training).

3. The PCC Director (Scheduling/Stores Coordinator), who is responsible for continued personnel accountability, assembling personnel for repair/damage control or radiological survey teams, search and rescue teams, reserve operating staff, and establishing radiological control areas as directed. (The alternate for the PCC Director is the Training Supervisor).

5.2.2 Plant Staff Emergency Assignments

Three principal onsite groups comprise the station emergency organization. Each group operates under the supervision of a director at an emergency center (TSC, PCC, and CR) as discussed in Section 5.2.1. Each center Director is responsible for center communications and for assigning an individual to keep a record of important events, decisions, and actions. Plant staff emergency assignments and functions for these centers are summarized in the following paragraphs. Primary and alternate leads are shown for continuous 24-hour operation.

a. Technical Support Center

1. Plant Condition Assessment

Diagnose plant conditions, provide recommended corrective actions, and coordinate systems analysis and procedures. (Primary and Alternate: Off-duty Shift Supervisors)

2. Engineering & Technical Analysis

Direct core physics analysis, electrical and mechanical engineering, licensing, procedures development, and system analysis. Maintain liaison with offsite technical support such as NSSS, AE, EPRI. (Primary: Technical Services Engineering Supervisor; Alternate: Senior Plant Engineer)

3. Health Physics/Radiological Monitoring

Assess onsite radiological doses, direct radiological/radiochemical surveys and decontamination actions. (Primary: Health Physics Supervisor; Alternate: Health Physicist)

4. Radiological Assessment

Assess offsite radiological doses and consequences, determine potentially affected offsite areas, and confer with the Technical Support Center Director and the Radiological Assessment Coordinator at the FCP regarding plant status, offsite dose computations, and protective actions (Primary: Senior Plant Engineer; Alternate: Technical Services Engineer)

5. Emergency Maintenance

Determine and recommend repair/damage control and corrective actions for plant mechanical and electrical systems. (Primary: Superintendent of Maintenance; Alternate: Maintenance Supervisor - Electrical)

6. Emergency I&C Support

Determine alternative I&C capabilities or configurations; repair/install/modify instrument and control equipment. (Primary: Superintendent of Nuclear Betterment Engineering; Alternate: Results Engineering Supervisor)

7. Administrative & Logistics Support

Provide needed technical documents, communications and analytical equipment, clerical assistance, and food, transportation/housing support. (Primary: Nuclear Documents Supervisor; Alternate: Nuclear Documents Specialist)

8. Computer Services

Provide technical support in the areas of computer hardware and software development/modification. Provide assistance to TSC Radiological Assessment individual as needed. (Primary: Senior Analyst; Alternate: Senior Programmer)

b. Personnel Control Center

1. Personnel Accountability

Maintain continued personnel accountability, including personnel contamination surveys, control areas, and exposure records. Handle search and rescue efforts, first aid, medical transportation, and personnel decontamination. (Health Physics Technicians, Scheduling/QC staff, and other personnel)

2. Operating Staff Support

Relieve and support plant operations personnel as necessary in operating plant equipment, processing effluents, and performing emergency maneuvers. (Off-duty operations personnel)

3. Maintenance, Repair & Damage Control

Perform mechanical and electrical repair/damage control, emergency maintenance, and temporary modifications. (Maintenance staff and I&C Technicians, augmented as necessary by PSC personnel from offsite locations)

4. Hazards Control

Extinguish fires, purge hazardous gases, combat natural emergencies. (Fire Brigade personnel) During the day shift, the Fire Brigade receives initial direction from the CR Director and is subsequently assigned to the PCC.

5. Security

Coordinate site access security with the Security Supervisor. The Lead Security Officer is the alternate for the Security Supervisor.

c. Control Room

1. Plant Control

Direct plant operation to terminate the incident, regain plant control, and minimize accident consequences. See Section 5.2 for further details. (Shift Supervisor)

2. Plant Operation

Assist the Shift Supervisor in implementing plant corrective actions. (Reactor Operators)

3. Technical Assistance

Provide technical analysis/advice and recommend corrective actions necessary to bring the plant to a safe and stable condition. (Technical Advisor)

5.3 Augmentation of Onsite Emergency Organization

Onsite emergency operations are augmented by headquarters support (corporate resources) dispatched directly to the PCC or to an appropriate onsite location. Agreements have been executed with local and Denver-based service organizations to provide ambulance, firefighting, and medical aid services. Augmentation for detailed core physics analysis, thermal-hydraulic analyses, radiation monitoring, dose assessment, and decontamination/radioactive waste disposal will be provided on a contract basis. Headquarters and service agency augmentation and support are described in the following sections.

5.3.1 PSC Headquarters Support

Provision for direct augmentation to the staffing of onsite emergency functions by non-station personnel may be quickly accomplished. These personnel may be utilized in support roles to supply additional manpower for repair/damage control teams, survey teams, access control, and logistical assistance.

Additional headquarters management, administrative, and technical support requested by the Corporate Emergency Director will be coordinated by the Executive Command Post Director.

The ECP is manned by senior corporate personnel with the authority to activate corporate personnel, facilities, equipment, and financial resources in an emergency situation. The ECP supports PSC personnel stationed at onsite and offsite emergency centers. The ECP is located in Room 620, PSC Headquarters Building, Denver. In the event the ECP cannot utilize this location for any reason, an alternate facility located at the PSC Lookout Center in Golden, Colorado will be activated.

The ECP contains up-to-date copies of station, state, and local government emergency plans, the corporate Emergency Plan, maps of the Fort St. Vrain area and its environs, regional maps, and station layout drawings. Other equipment, facilities and services located within, or immediately adjacent and available to the ECP, include stenographic assistance, reproduction equipment, simultaneous commercial television station monitoring equipment (all VHF channels) and radio-television recording equipment for media announcements.

The ECP will be operational within ninety (90) minutes after classification of an ALERT or higher level accident. The ECP staff includes a Director and four functional Managers. The roles and responsibilities of key members of the ECP staff are described in the following sections.

a. The Director of the ECP - (President & CEO) will assume overall responsiblity for providing the Corporate Emergency Director with the counsel, expertise, and resources available within the PSC organization. He coordinates emergency assistance, provides reentry and recovery support, station and site modifications review by Nuclear Facilities Safety Committee, and supervises the following ECP emergency operations managers. (Alternate: Executive VP & General Counsel)

b. The Manager of Technical Support - (Nuclear Design Manager) will provide the Corporate Emergency Director and onsite emergency operations with technical advice in nuclear, mechanical, civil, and electrical engineering. He provides engineering support, technical experts, and consultants as requested. (Alternate: Nuclear Services Manager)

c. The Manager of Media Relations - (VP of Public Affairs) will coordinate communications between the ECP and the site, the FCP, the State EOC, and federal emergency operations not included in the site communications system. He assists the Director of the ECP and PSC media relations personnel in preparation of press releases, announcements, and interviews. (Alternate: Manager of Public Relations)

d. The Manager of Resources - (VP of Accounting and Corporate Secretary) will coordinate provision of manpower and equipment from within PSC, and from consultants/contractors, to support onsite emergency operations. He provides requested technical and craft manpower; personnel or consultants for engineering/design and construction reviews; temporary housing, office, transportation, and construction equipment; purchasing, financial, legal, and general office support; and, food deliveries and related logistics support to designated emergency operations. (Alternate: VP of Finance & Treasurer)

e. The Manager of Security - (Manager of Claims, Safety, & Security) will coordinate PSC security operations with public law enforcement agencies. He acquires additional security manpower, hardware, and equipment, as requested. (Alternate: Security Coordinator)

5.3.2 Local Services Support

In emergency situations, assistance from outside companies and services may be required. Assistance available from outside companies includes ambulance service to transport injured and/or contaminated personnel, medical treatment, and hospital facilities for station personnel who require such assistance. In addition, a specific agreement has been developed with the Platteville Volunteer Fire Department for onsite fire protection assistance.

Letters of agreement for these services are contained in Section 10, Appendix A. Table 5.3-1 lists these agencies by the type of service provided. The State RERP, to which participating agencies and PSC are signatory, is cited in lieu of letters of agreement for emergency assistance from other local service agencies.

5.3.3 Contract Support

Specialized assistance from contractors may also be required in an emergency situation. Contract support may include nuclear steam supply system (NSSS), architect-engineer, construction, dosimetry and laboratory analysis, and decontamination and rad-waste disposal assistance. Provision has been made for selected contract support firms to provide this assistance, on request. Table 5.3-1 lists these contractors by type of service provided. (Section 10, Appendix A contains Letters of Agreement covering these contracted services).

5.4 Coordination with Participating Government Agencies

The State of Colorado, through the Division of Disaster Emergency Services (DODES), has responsibility for control of offsite actions during a radiological emergency. The concept of operations for discharging this responsibility, together with a discussion of action responsibilities assigned to various state/local governmental agencies is contained in the State RERP. Since participating agencies and PSC are Plan signatories, the State RERP is cited in Section 10, Appendix A in lieu of separate letters of agreement.

Governmental entities having jurisdiction within the 5 mile plume exposure EPZ are the State of Colorado; Weld County; and, the towns of Platteville, Johnstown, and Gilcrest.

A brief summary of the involvement and responsibilities of the major governmental agencies is shown in tabular form in Table 5.4.1. For a complete discussion of authority, assigned responsibilities, capabilities, and activation and communication arrangements, refer to the State RERP.

5.4.1 Station personnel coordinate onsite emergency operations with state/local government offsite emergency centers (Forward Command Post and State Emergency Operations Center). The role and function of PSC emergency personnel stationed at the FCP and the State EOC are described in the following sections.

a. The Forward Command Post (FCP) functions as the control and coordination center for on-scene state/local/federal emergency response forces. The FCP communicates with the State EOC (the primary point through which the Governor exercises overall control and coordination of offsite emergency operations) and with the Weld County EOC (Weld County Communications Center) for effective coordination of county forces.

The FCP is located in the PSC Garage at Ft. Lupton, approximately 12 miles south-southeast of the Station. Provision is made adjacent to the FCP for a facility to accomodate the needs of the media (State RERP, Annex S). A senior representative of DODES is responsible for control and coordination of FCP emergency response activities.

Staffing of the FCP, as shown on Figure 5.2-4, consists of authorized representatives of:

1. State Division of Disaster Emergency Services

2. Weld County Sheriff's Office

3. Colorado State Patrol

4. Colorado Department of Health

Radiological monitoring, and health units, as required.

Public information representative.

5. Public Service Company of Colorado

Vice President of Production
Station Technical Liaison
Radiological Assessment Coordinator
Public Relations Representative
Nuclear Documents Staff

6. Others, as notified/required.

The Vice President of Production is in overall command of PSC emergency operations and is the main link between the station and governmental authorities. A PSC technical liaison representative (Primary: Technical/Administrative Services Manager; Alternate: Quality Assurance Manager) from the station, the Radiological Assessment Coordinator (Radiation Protection Manager), one public relations representative from PSC corporate headquarters, and members of the station clerical staff are also assigned to the FCP. Communications between the FCP, the site Technical Support Center, the State Emergency Operations Center, and the PSC Executive Command Post will be accomplished through commercial telephone service and/or radio.

The responsibilities of PSC personnel assigned to the FCP include:

- Providing assistance and substantiated data on site emergency status and conditions;
- Coordinating company emergency response actions with those of state/local/federal agencies;
- Coordinating radiological assessment activities between PSC and those of state/local/federal agencies;
- Providing assistance to the FCP Public Information Coordination Team (PICT) in the preparation of news and related media releases, and control of rumours in accordance with the PSC RERP Public Information Plan; and,

- Maintaining communications flow between PSC personnel stationed at onsite and offsite emergency centers.

b. The State Emergency Operations Center (State EOC) is the primary point through which the Governor, or his authorized designee, exercises overall control and coordination of emergency response operations through the Colorado Division of Disaster Emergency Services (DODES).

The State EOC is located in DODES headquarters at Camp George West in Golden, Colorado, approximately 40 miles southwest of the Fort St. Vrain Nuclear Generating Station. Provision is made at Camp George West for a facility to accomodate the needs of the media (State RERP, Annex S).

Staffing of the State EOC, as shown on Figure 5.2-5, consists of authorized representatives of:

1. Office of the Governor
2. Division of Disaster Emergency Services
3. Colorado Department of Health
4. Colorado State Patrol
5. Colorado National Guard
6. Federal Emergency Management Agency
7. Public Service Company of Colorado
8. Others, as notified/required

PSC staffing at the State EOC includes the Vice President of Governmental Affairs or the Manager of Nuclear Engineering, the Manager of Corporate Communications or Media Relations Director, technical assistance personnel, a radiation specialist, and supporting clerical personnel.

The responsbilities of PSC personnel assigned to the State EOC include:

- Providing assistance and substantiated data regarding site emergency status and conditions to local/state/federal emergency response agencies assigned to the State EOC;

- Coordinating company emergency response activities with those of state/local/federal agencies; and,

- Providing up-to-date site information to the Public Information Coordination Team (PICT) Chief (Governor's Office representative) and assisting the PICT in the preparation of mutually acceptable news releases, fact sheets, rumor control in accordance with the PSC RERP Public Information Plan, and background material media releases.

5.4.2 In addition to extensive coordination with state/local governmental entities, technical assistance from certain federal agencies in the area of communications, radiological monitoring and laboratory analysis, transportation, weather forecasts, and disaster relief may be required in an emergency situation. The State of Colorado, through DODES, will officially request federal assistance. PSC will, therefore, channel contacts with federal agencies (except NRC) through DODES. The following agencies will be notified/requested to provide assistance, as necessary:

a. The Nuclear Regulatory Commission, Office of Inspection and Enforcement, Region IV, and the NRC Incident Response Center Bethesda, MD.

b. The Department of Energy (DOE) - Radiological Assistance Teams (RAT), Idaho Falls, Idaho and Rocky Flats, Colorado; Aerial Monitoring System (AMS), Las Vegas, Nevada. DOE will activate the Interagency Radiological Assistance Plan (IRAP) as necessary.

c. Federal Emergency Management Agency (FEMA), Region VIII, Denver, Colorado.

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FIGURE 5.1-1

NORMAL STATION ORGANIZATION
FORT ST. VRAIN NUCLEAR GENERATING STATION

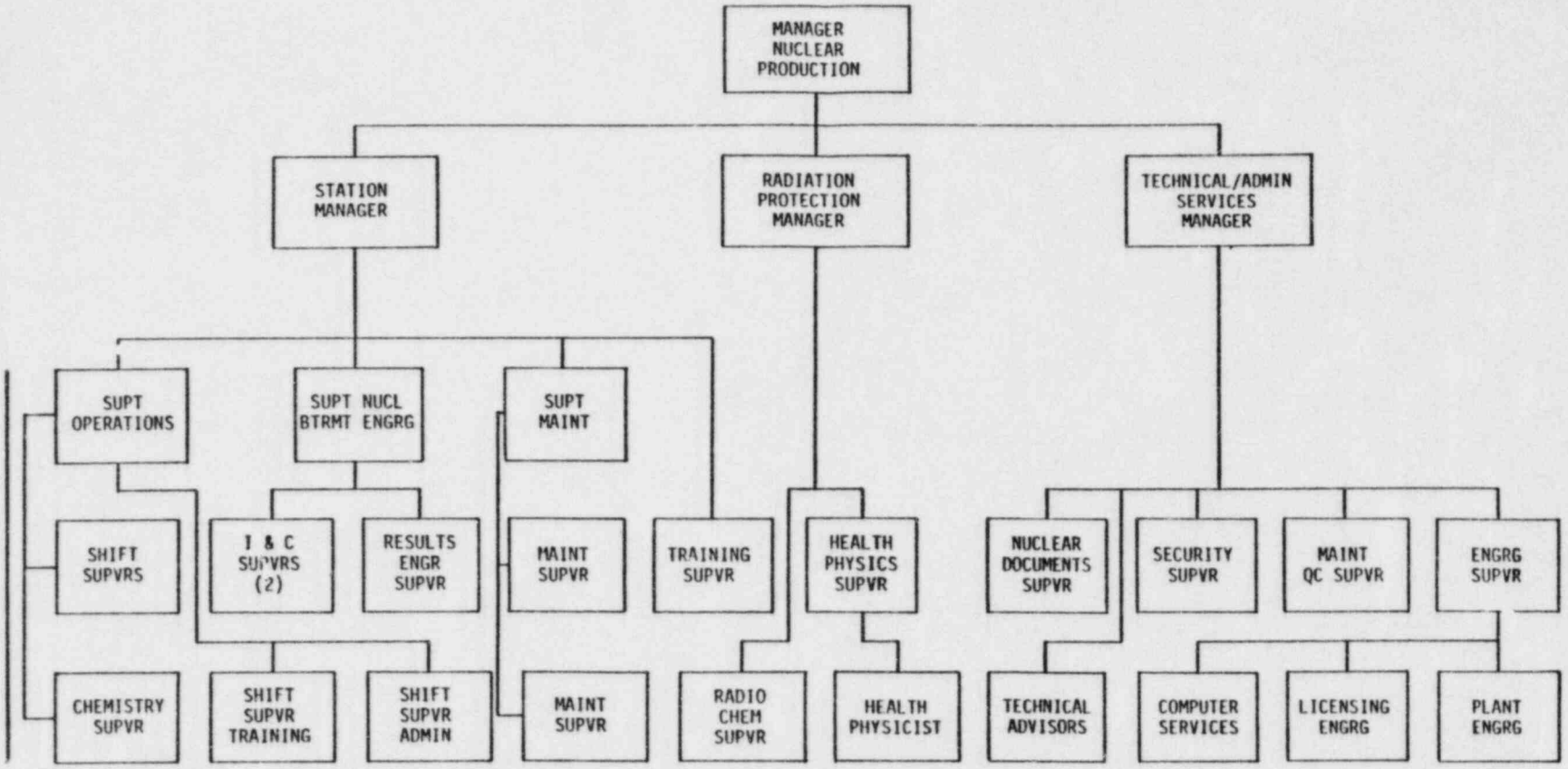
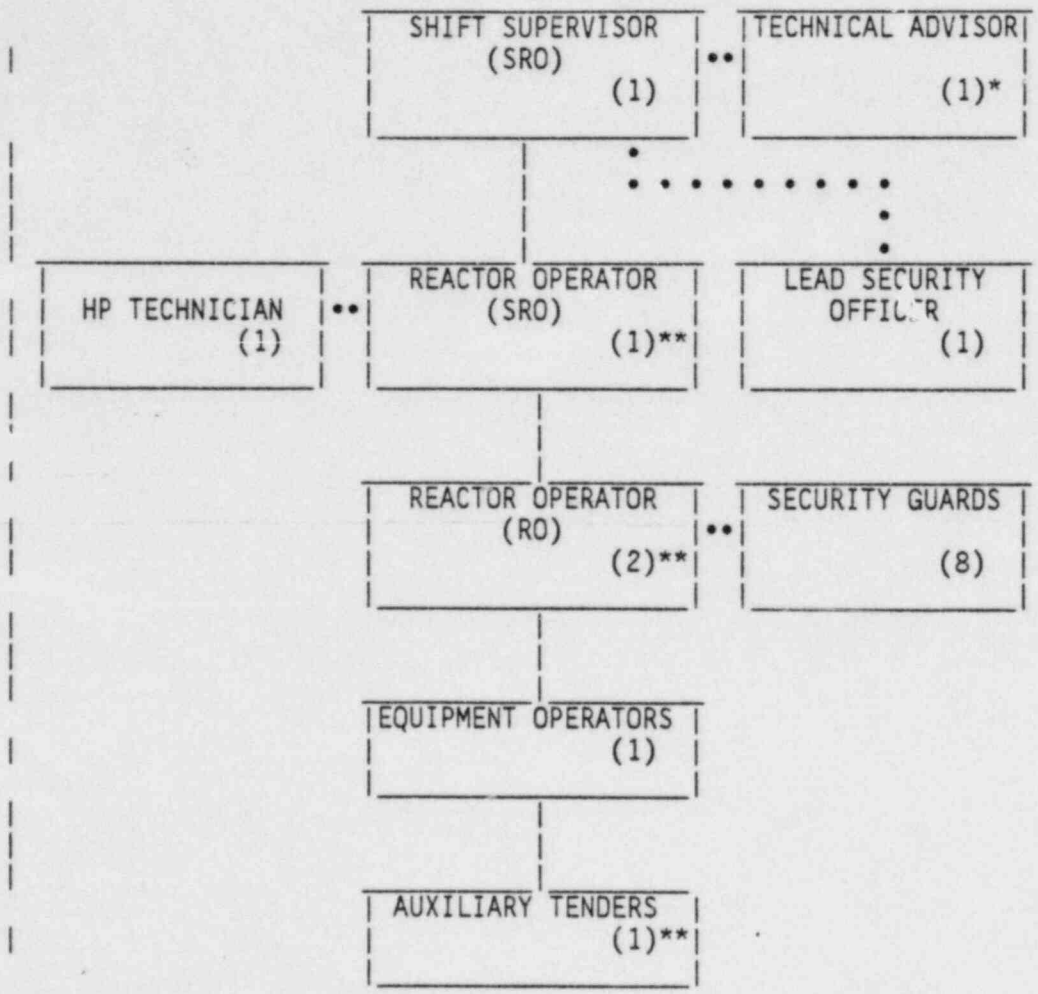


Figure 5.1-2

NORMAL SHIFT ORGANIZATION

Fort St. Vrain Nuclear Generating Station



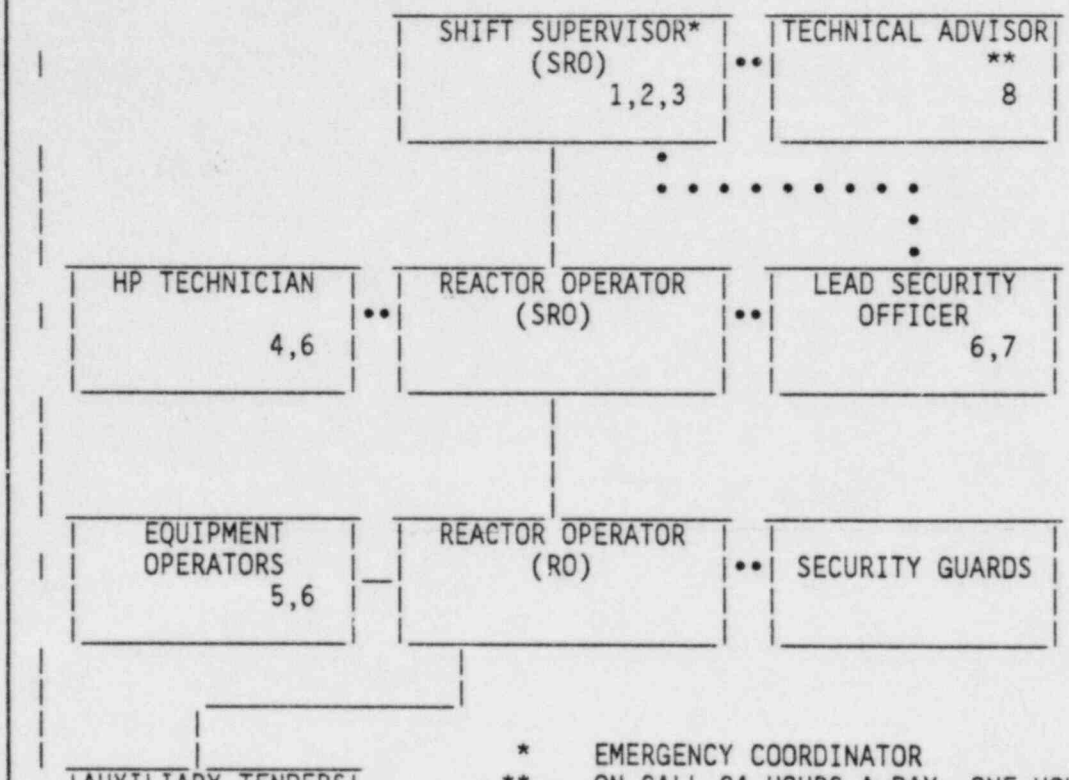
NOTES:

SRO	SENIOR REACTOR OPERATOR.
RO	REACTOR OPERATOR.
HP	HEALTH PHYSICS TECHNICIAN
*	TECHNICAL ADVISOR IS ON CALL 24 HOURS PER DAY AND WILL REPORT TO THE CONTROL ROOM WITHIN 1 HOUR.
**	DURING HOT, COLD, OR REFUELING SHUTDOWN, ONLY ONE RO IS REQUIRED TO BE ON DUTY. AN INDIVIDUAL WITH AN SRO LICENSE OTHER THAN THE ON-DUTY SHIFT SUPERVISOR IS NOT REQUIRED, NOR IS AN AUXILIARY TENDER.
--------	LINE OF AUTHORITY
••••••••	COMMUNICATION

Figure 5.2-1

EMERGENCY ORGANIZATION
(NOTIFICATION OF UNUSUAL EVENT)

Fort St. Vrain Nuclear Generating Station



* EMERGENCY COORDINATOR

** ON CALL 24 HOURS A DAY, ONE HOUR MAXIMUM RESPONSE TIME

1 PLANT OPERATIONS AND CONTROL
2 OFFSITE NOTIFICATION
3 PLANT CONDITION ASSESSMENT
4 HEALTH PHYSICS & RADIOLOGICAL ASSESSMENT
5 REPAIR AND DAMAGE CONTROL
6 HAZARDS CONTROL
7 PERSONNEL ACCOUNTABILITY
8 TECHNICAL ASSISTANCE

FIGURE 5.2-2

FIGURE 5.2-2
EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY)
FORT ST. VRAIN NUCLEAR GENERATING STATION

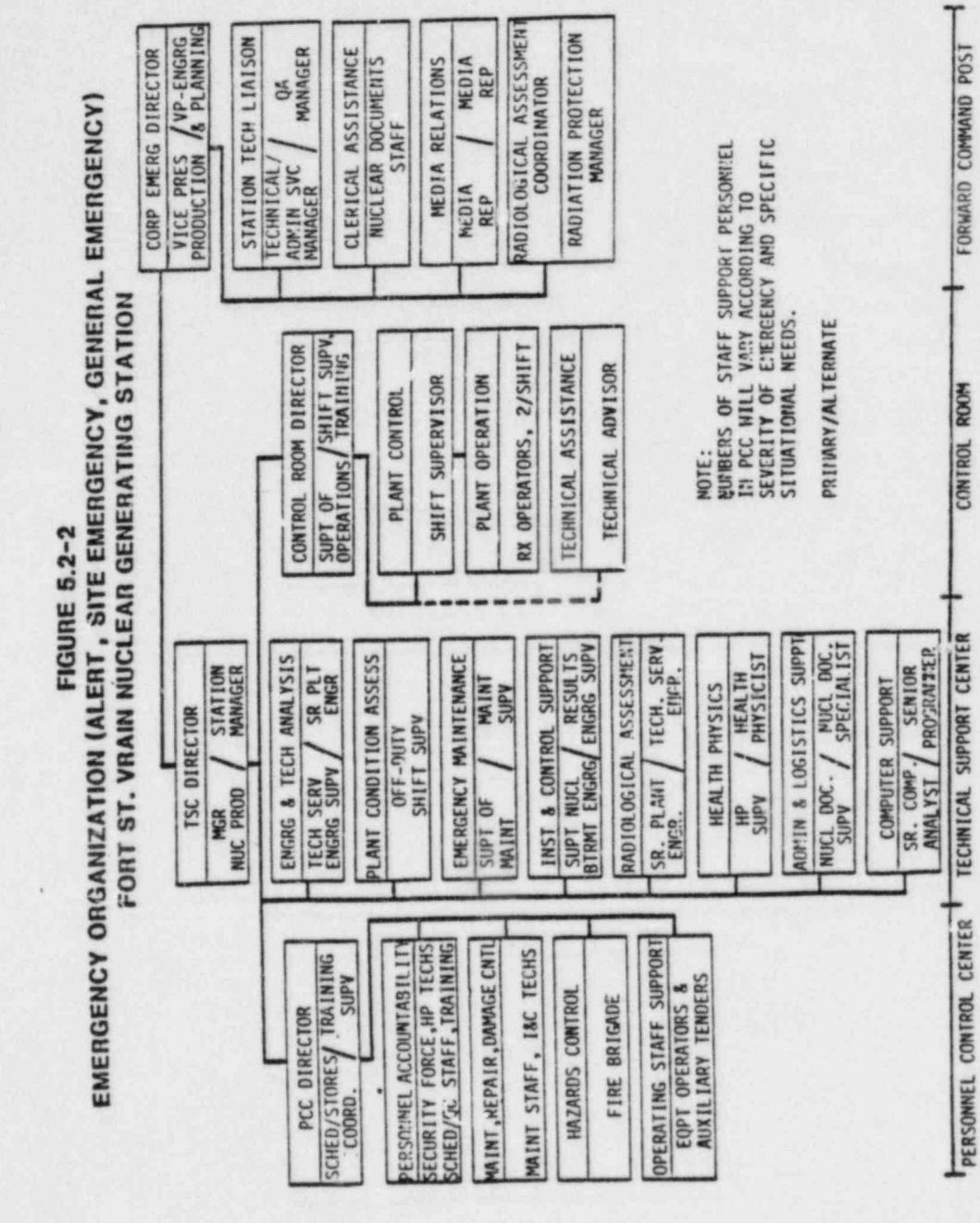


Figure 5.2-3

ONSITE-OFFSITE EMERGENCY ORGANIZATION

Fort St. Vrain Nuclear Generating Station

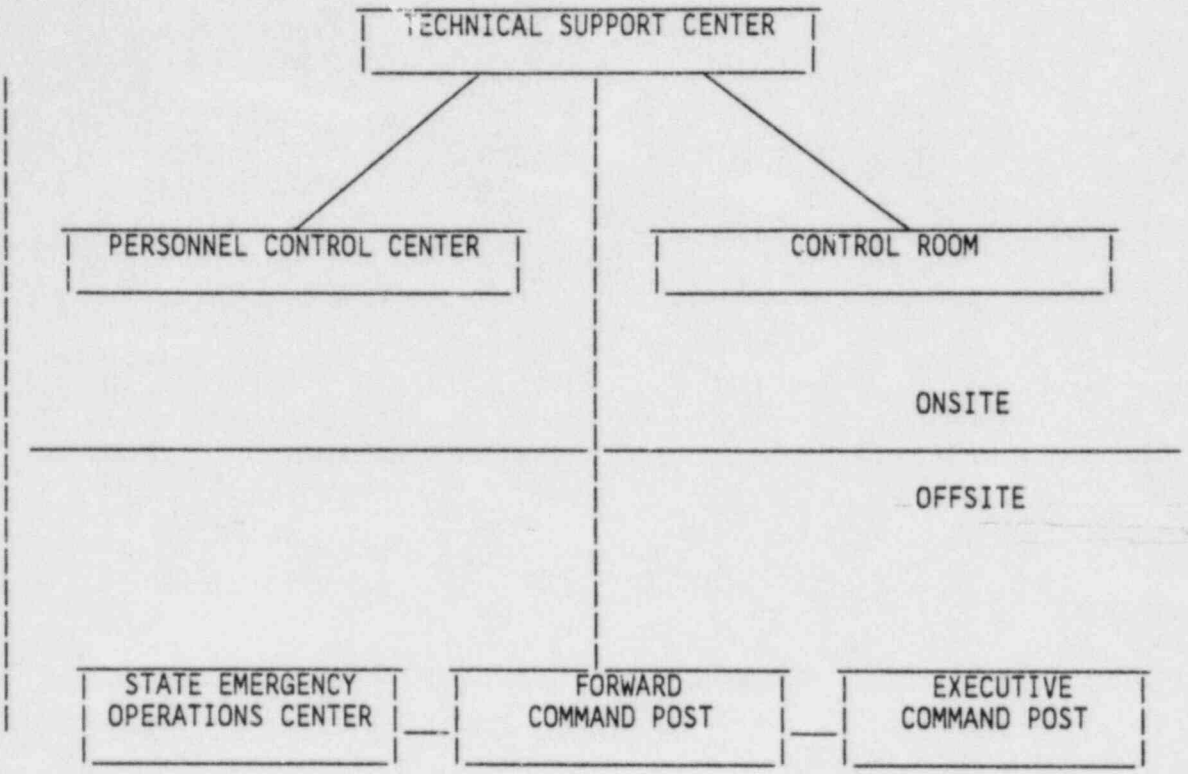


FIGURE 5.2-4

Figure 5.2-4
FORWARD COMMAND POST ORGANIZATION
Fort St. Vrain Nuclear Generating Station

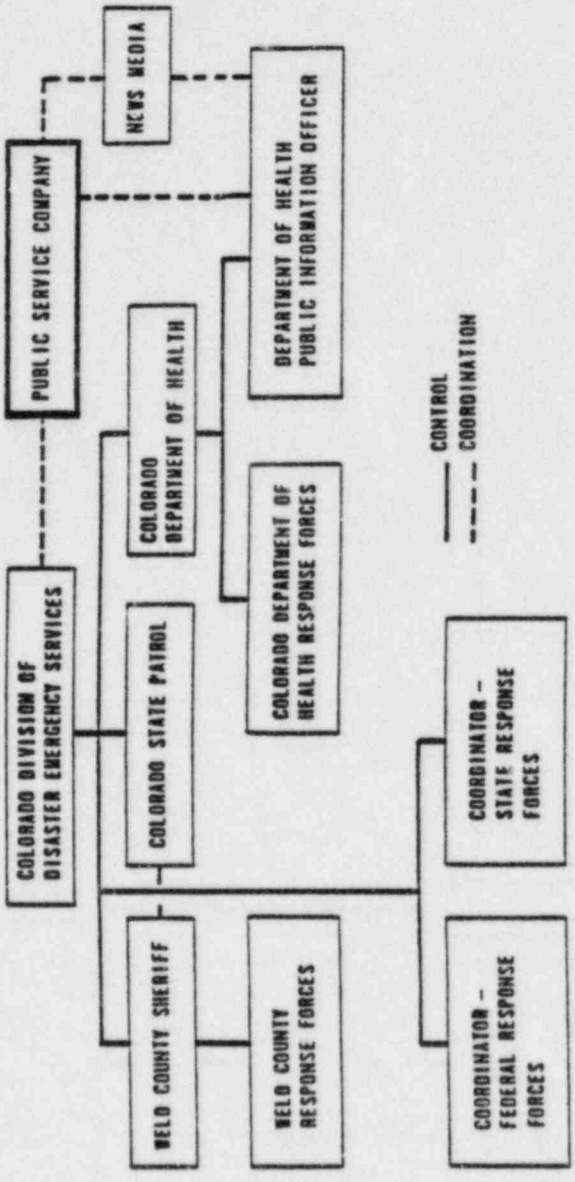


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Figure 5.2-5
STATE EMERGENCY OPERATIONS CENTER ORGANIZATION
Fort St. Vrain Nuclear Generating Station

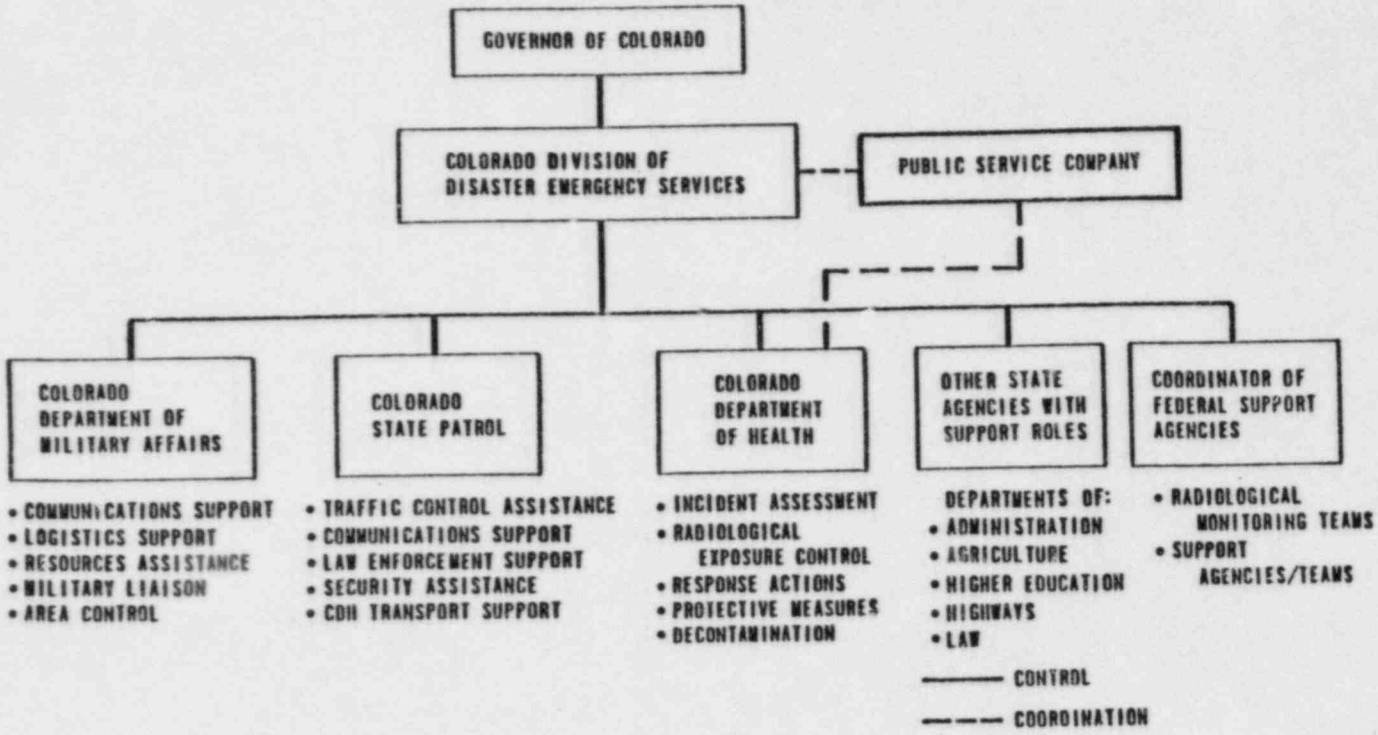

FIGURE 5.2-5

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FIGURE 5.2-6

Figure 5.2-6

EXECUTIVE COMMAND POST ORGANIZATION

Fort St. Vrain Nuclear Generating Station

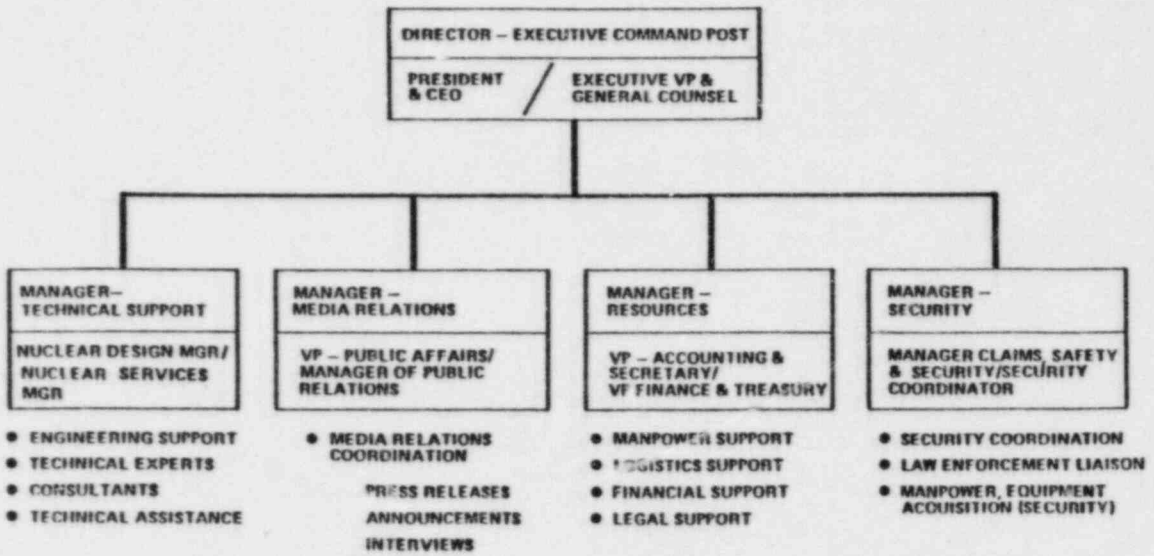


FIGURE 5.2-7

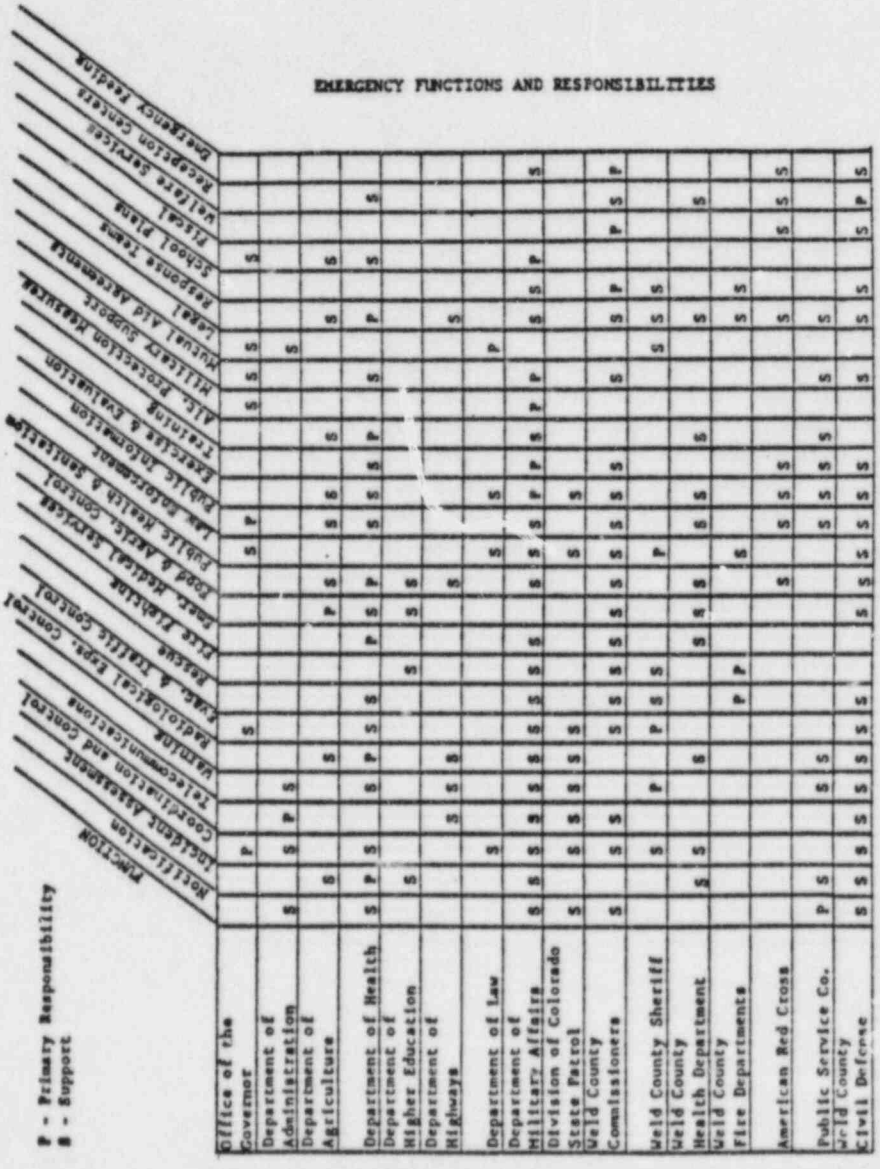


FIGURE 5.2-7
EMERGENCY FUNCTIONS
AND RESPONSIBILITIES MATRIX

Fort St. Vrain Nuclear Generating Station

TABLE 5.3-1

LOCAL AGENCY AND CONTRACT SUPPORT SERVICES

Fort St. Vrain Nuclear Generating Station

Local Agency	Support Service
Volunteer Fire Department Platteville, Colorado	Onsite Fire Protection Assistance/Ambulance Service
Volunteer Fire Departments Milliken, Johnstown, Gilcrest, Colorado	Mutual Aid Fire Protection Assistance

Facility Support	Support Service
Weld County Greeley, Colorado	Alternate Personnel Control Center - Johnstown, Colorado

Contract Agency	Support Service
General Atomic Corporation San Diego, California	NSSS, Reactor Physics, and Systems Modification Assistance

Other Support Agency	Support Service
Stone & Webster Engineering Corp. Denver, Colorado	Engineering/Construction/ System Modification Assistance
Nuclear Power Consultants, Inc. Rockville, Maryland	Engineering/Quality Assurance Assistance
Proto-Power Management Corp. Groton, Connecticut	Technical Assistance - Nuclear/Balance of Plant Systems

TABLE 5.3-1 (Continued)

LOCAL AGENCY AND CONTRACT SUPPORT SERVICES

Fort St. Vrain Nuclear Generating Station

Other Support Agency	Support Service
NUS Corporation Portland, Oregon	Safety-Training Assistance
Controls For Environmental Pollution, Inc. Santa Fe, New Mexico	Chemical-Radiochemical Laboratory Analysis
Colorado State University Fort Collins, Colorado	Environmental Monitoring Assistance
St. Luke's Hospital Denver, Colorado	Medical Treatment/Decontamination Assistance
Dr. Hilding G. Olson Fort Collins, Colorado	Nuclear Engineering Consultant
Donald T. Klodt Denver, Colorado	Metallurgical Consultant
R. S. Landauer, Jr. & Co. Glenwood, Illinois	Environmental Monitoring, Dosimetry Processing
Western Radiation Consultants, Inc. Fort Collins, Colorado	Radiation Protection
EBASCO Services, Inc. Golden, Colorado	Engineering, Construction, Procurement Assistance
INPO Atlanta, Georgia	Procurement, Industry Support

TABLE 5.4-1

SUMMARY OF STATE/LOCAL INVOLVEMENT

AGENCY	PRINCIPAL RESPONSIBLITIES	LOCATION
State of Colorado:		
1) Division of Disaster Emergency Services (DODES)	a) emergency planning b) command & control c) communications d) coordination of Colorado National Guard & federal assistance	State EOC (Camp George West, Golden, CO) & FCP (Ft. Lupton, CO)
2) Colorado Department of Health (CDH)	a) incident dose assessment b) recommendation of protective actions c) contamination control/ decontamination measures	FCP, CDH HQ (Denver), State EOC, & deployed personnel
3) Colorado Department of Agriculture (CDA)	ingestion pathway protective actions	State EOC, FCP, CDA HQ (Denver)
4) Colorado State Patrol (CSP)	a) traffic control b) communication and transportation assistance	State EOC, FCP, & deployed personnel
5) Office of the Governor	a) issue proclamations for emergency preparedness b) utilize the National Guard c) issue evacuation orders d) handle media relations	State EOC and Governor's office (Denver)

TABLE 5.4-1 (Continued)

SUMMARY OF STATE/LOCAL INVOLVEMENT

AGENCY	PRINCIPAL RESPONSIBLITIES	LOCATION
Weld County:		
6) Weld County Commissioners	authorize and ensure appropriate county emergency planning and response	County Bldg (Greeley, CO)
7) Weld County Civil Defense	a) handle county EOC & communications b) coordinate local agency planning c) handle emergency feeding and sheltering	County Bldg (County EOC, Greeley, CO)
8) Weld County Sheriff	a) traffic control b) public notification c) conduct and confirm evacuation d) maintain law and order	FCP and deployed personnel

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 6

ISSUANCE AUTHORIZED BY	J.W. Gahm 8-13-84		
PORC REVIEW	PORC 582 AUG 14 1984	EFFECTIVE DATE	8-21-84

6.0 Emergency Measures

Station emergency measures will be initiated upon, and according to, incident classification. This section identifies segments of the station emergency organization that will be activated by class of emergency, details methods and procedures for assessment actions, specifies actions to correct or minimize the emergency situation, describes protective actions to prevent or minimize radiological exposure, and sets forth measures to assist persons injured or exposed to radiation and radioactive material.

6.1 Activation of Emergency Organization

The four classes of emergency defined in Section 4.1 require a varying degree and scope of emergency responses. The emergency organization activated in each emergency classification is shown in Figures 5.2-1 and 5.2-2. The Shift Supervisor will immediately initiate action to limit the consequences of the event and to return the plant to a safe and stable condition. The emergency organization for a NOTIFICATION OF UNUSUAL EVENT consists of normal shift personnel (Figure 5.2-1). No augmentation is required. For ALERT events, onsite and offsite emergency centers will be manned and activated in situations where the Emergency Coordinator or Corporate Emergency Director deem it necessary. In SITE AREA EMERGENCY or GENERAL EMERGENCY level accidents, onsite and offsite emergency response facilities will, in all cases, be manned and activated. The Plant Emergency Alarms are sounded for ALERT and higher level accident classifications. The location and extent of the event is announced over the station Gaitronics system or public address system. If the emergency occurs during a back shift period, the Shift Supervisor in the role of Emergency Coordinator, establishes the plant emergency organization per Section 5.2.

Upon incident assessment and classification of an UNUSUAL EVENT, notification will be made to the State (State EOC and Governor's Office) and to the Nuclear Regulatory Commission. Updates are made to keep these agencies

informed of event status, although activation of offsite response centers is not expected unless the event escalates to an ALERT or more severe category. The initial emergency message for NOTIFICATION OF UNUSUAL EVENT (Figure 6.1-2) is based upon an agreement between the Governor of Colorado and PSC.

Classification of an incident as an ALERT or higher event requires notification consisting of three telephone contacts as indicated in Figure 6.1-1. The Nuclear Regulatory Commission (Region IV) is notified via "hot line" (preferably) or commercial telephone service. The state and local emergency response organization is notified by a telephone call to the Weld County Communications Center after notification is authenticated by call-back. The PSC emergency organization is notified by a single call to the Public Service Company Operator at corporate headquarters, who notifies the appropriate fanout list set forth in emergency plan notification procedures. The initial emergency message for ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY classes, together with followup messages for these accident levels are contained in Figures 6.1-3 and 6.1-4.

Emergency center functions remain constant for ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY classifications. Personnel/equipment augmentation may vary according to specific circumstances. The functions, as shown on Figure 5.2-2 include:

Technical Support Center

Command (Onsite)

Plant Condition Assessment

Recommendation of Corrective Actions

Radiological Consequence (Dose Projections)

Health Physics Assessment

Notification/Communications

Onsite Protective Action

Offsite Communications

Control Room

Assessment of Plant Operating Conditions

Implementing Corrective Actions

Fire Fighting Direction

Personnel Accountability (Initial)

Personnel Control Center

Personnel Accountability (Continued)

Emergency Repair/Damage Control

Onsite/Inplant Surveys

Radiation Protection (Personnel Monitoring/Dosimetry/ Decontamination/Access/Reentry Control)

Search and Rescue/First Aid

Fire Brigade

Security

Forward Command Post (PSC functions only)

Command (PSC Overall)

Government Notification/Communications

Radiological Assessment Coordination

Logistics Support

Media Relations

6.2 Assessment Actions

The assessment of plant conditions, radiation levels, and offsite consequences is initially coordinated by the Shift Supervisor (Emergency Coordinator). Upon relief of the Shift Supervisor by the Control Room Director (Primary: Superintendent of Operations; Alternate: Shift Supervisor, Training) and activation of the Technical Support Center (TSC) and the Personnel Control Center (PCC), these duties will be assumed by the emergency organization described in Section 5.0. The different types of assessment actions

are described in Table 6.2-1. Assessment will continue throughout the emergency period. Continued assessment may result in reclassification of the incident and consequent alteration in emergency response actions.

Incidents involving potential or actual release of radioactive materials to the environment (ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY) require special methods of assessment to ensure that responses are appropriate for protection of the population-at-risk and station personnel. The Fort St. Vrain Nuclear Generating Station has installed capability for measuring radioactive Iodine concentration in the coolant. Post-accident sampling is described in appropriate Health Physics and Radiochemistry procedures. It also has an extensive system for monitoring radioactive materials released to the environment (e.g., gaseous, process liquid, reactor building ventilation exhaust, and steam jet air ejector vent). The station is equipped with process and system monitors capable of initiating appropriate alarms and/or actuating control equipment for containment of radioactive materials if pre-established limits are reached.

These systems will monitor activity releases during accident conditions. In any accident where releases are not monitorable, emergency procedures provide "theoretical worst-case release rates corresponding to the Design Base Accidents outlined in Section 14 of the Fort St. Vrain Nuclear Generating Station FSAR."

The site has a permanent meteorological installation which indicates and records wind speed and direction and temperature differentials on a continuous basis in the Control Room. Additional readout capability is provided in the TSC via plant computer links. In the event that meteorological information in both the Control Room and TSC is unavailable, arrangements and procedures have been developed to secure necessary meteorological information from the 10 meter National Oceanic and Atmospheric Administration (NOAA) tower located onsite to the North of the plant. Guidance for the acquisition of meteorological data from existing instrumentation and displays, as well as backup data from NOAA tower instrumentation, is provided in RERP implementing procedure RERP-MET, Meteorological Data Acquisition.

The methodology and technique used to predict offsite concentrations of radioactive noble gases and iodine is summarized as follows:

Upon determination that an emergency, or potential emergency, could result in offsite dose consequences, the Radiation Protection Manager, or his designee in accordance with RERP implementing procedure RERP-DOSE, "Offsite Dose Calculations"...

- Notes present weather conditions (wind speed and direction, atmospheric stability, cloud cover, and precipitation) and calls the Stapleton Airport National Weather Service to obtain a forecast for the next 12 hours to anticipate changes in weather conditions that might affect dispersion and alter the zones affected.

- Determines radioactivity release rates by reading the Reactor Building Ventilation Exhaust Stack Monitors. If the monitors are inoperative, or if an anticipated release has not started, an estimate of the release rate is obtained from prepared tables. The basis for these tables is the actual circulating coolant activity and/or 10CFR100 accident siting criteria.

- Selects an atmospheric dispersion graph (corresponding to the downwind distance(s) of interest and the atmospheric stability class) and identifies the dispersion factor for the zone(s) of interest. The graphs consist of plots of dispersion factors (X/Q values) calculated from standard Gaussian plume equations for ground level sources as shown in Meteorology and Atomic Energy (Reference 1) and based upon USNRC Regulatory Guide 1.145 (Reference 2).

- Multiplies the iodine release rate by the dispersion factor to obtain an air concentration of radioiodines. He uses the expected plume duration in the zone(s) of interest as the exposure time and calculates the thyroid dose by multiplying the appropriate thyroid dose conversion factor for that post-shutdown time by the air concentration and then by the exposure time. He calculates doses by zone and compares the integrated doses to Protective Action Guide (Reference 3) Criteria presented in Table 6.2-2.

- Multiplies the noble gas release rate by the dispersion factor to obtain an air concentration of noble gases. He uses the expected plume duration in the zone(s) of interest as the exposure time and calculates whole body gamma dose by multiplying the appropriate whole body gamma dose conversion factor for that post-shutdown time by the air concentration and then by the exposure time. He calculates doses by zone and compares the integrated doses to Protective Action Guide Criteria presented in Table 6.2-2.

Air concentration levels are verified by field monitoring teams consisting of an HP technician and an assistant deployed in captive vehicles with portable emergency radiological instrumentation including air samplers with silver zeolite cartridges, radiation survey meters, and portable radios on the PSC frequency. These teams are deployed within 30 minutes of activation of the emergency organization, and have the capability to sample radioiodine concentrations as low as 1×10^{-7} µCi/cc under field conditions. Information so developed will assist offsite emergency response authorities to reach appropriate decisions on modification of emergency protective actions initiated as a result of previous estimates of exposure levels (see RERP implementing procedure RERP-FIELD, Field Monitoring Procedure).

Unmonitored releases will be treated as unfiltered releases for the duration of the time that they went unmonitored, and will be assessed by utilization of data provided by the on-line noble gas monitor for circulating activity and reactor pressure instrumentation. These actions are described in detail in RERP implementing procedure RERP-DOSE, Offsite Dose Calculation.

6.3 Corrective Actions

Station procedures contain steps for preventive and/or corrective actions to avoid or mitigate serious consequences of an incident. Instrumentation and control system monitors provide indications/recordings and automatically control systems necessary for the safe and orderly operation of the station. These systems provide the operator with the information and controls needed to start up, operate at power, shut down, and, if necessary, to cope with an abnormal operating condition or emergency, should it occur. Control and display of information from these systems are centralized in the Control Room. The information provided by this instrumentation forms the basis for declaration of emergency classes.

Corrective actions will also involve response by the following onsite organizations:

- Fire Fighting

  Fire Brigades will respond to station fire calls. If outside assistance is required, a call will be placed to the Platteville Volunteer Fire Department (VFD). The Platteville VFD will, upon arrival, be escorted to the firescene by security personnel.

- Damage Control, Repair, and Decontamination

  For minor emergencies, station personnel will handle cleanup, repair, and damage control. For more major site emergencies, the support of company personnel, or specialized outside contractors, may be required to assist in damage control, cleanup, and repair operations. Recovery from a GENERAL EMERGENCY will be handled with the assistance of agencies available for that purpose and the cooperative effort of industrial organizations such as AIF, EPRI, and EEI. The organization for post-emergency recovery is described in Section 9.0.

6.4 Protective Actions

Protective actions will be taken to ensure that personnel, onsite and offsite, are notified and actions initiated for their protection in the event radiation or airborne activity levels exceed predetermined values, or when other situations threaten personnel safety.

Onsite actions to protect station personnel and visitors are the responsibility of the Shift Supervisor (as Emergency Coordinator) until he is relieved. Measures for the protection of the general public are detailed in the State RERP.

6.4.1 Protective Cover, Evacuation, and Personnel Accountability

a. Onsite

Protective actions for onsite personnel will be taken whenever a radiological emergency has occurred, or may occur, which will result in concentrations of airborne activity or radiation levels in excess of normal limits for a specified area or areas, that cannot be readily controlled. In addition, protective actions will be taken for onsite personnel in other emergency situations such as fires,

floods, and tornadoes where personnel safety is threatened. Notification of onsite personnel will be by actuation of plant alarm systems, telephone calls, and Gai-tronics announcements as applicable. Notification will be accomplished as soon as assessment actions permit a determination of the emergency class and corresponding actions. Personnel will be notified of appropriate actions to be taken at their respective personnel accountability stations.

1. Personnel Accountability

FSV Visitors Center personnel will be notified within 15 minutes and advised of appropriate protective actions. Site visitors inside the owner-controlled area will be escorted by station personnel to the Security Building where they will be monitored for contamination and normally depart the site. Their escorts will then report to their predesignated personnel accountability stations. Contract personnel will exit via the security building, where they will be monitored for contamination, and report to the Visitor's Center to await further instruction. Non-essential station personnel (i.e., personnel not specifically assigned to predesignated emergency functions) are required to assemble at pre-assigned personnel accountability stations where supervisors, or their designees will make accountability checks. Accountability status is reported to the Central Alarm Station (Security Desk in Lobby) which in turn reports to the Shift Supervisor. Initial accountability should be completed within 30 minutes. Subsequently, the PCC Director has responsibility for maintaining personnel accountability. Refer to the Administrative Procedures Manual procedure G-5, "Personnel Emergency Response" for specific details of the personnel accountability process.

2. Security and Access Control

The security program at the Fort St. Vrain Nuclear Generating Station is designed to meet the access control requirements of 10 CFR 73.55. Support personnel reporting to the station during an emergency may assemble first at the Personnel Control Center, if the Center is activated. The entry of required personnel will be coordinated through normal security routine, either by the PCC Director or the Shift Supervisor.

Provisions to restrict access to areas of the site outside the fenced protected area have been made. The PCC Director will assign designated security personnel to control traffic access to the owner-controlled area. Access control will be performed with the aid and cooperation of the Weld County Sheriff's Department.

3. Evacuation

The PCC Director will assure survey of the designated PCC to determine habitability, establish a controlled area at the appropriate PCC location (either the Training Center or the Engineering/QA complex, dependening upon prevailing wind direction), and prepare to receive personnel, should plant evacuation be required.

In the event that radiation levels are greater than, or equal to, 2.5 mrem/hr outside the Reactor Building, or there is unidentified airborne contamination greater than, or equal to, 9×10^{-8} µCi/cc above backround outside of the Reactor Building (i.e., in the Turbine Building), or if conditions are such that the TSC Director deems it circumspect, such as during a SITE AREA or GENERAL EMERGENCY, non-essential personnel will be evacuated from the plant.

If a plant evacuation was deemed appropriate, there are two Personnel Control Centers within the Owner Protected Area to evacuate to. These

PCCs are the Training Center and the QA/Engineering Complex Complete Emergency Kits, including radiological monitoring equipment and field radios are stored at the Training Center and at the QA/Engineering Complex.

The selection of a PCC is largely dependent upon the prevailing wind condition and the accessibility of that location. Personnel will be monitored for contamination, and accountability checks will be made by PCC staff as appropriate. Personnel onsite, but outside of the protected (fenced) area, will be notified of the emergency and directed to buildings in areas unaffected by the event. Should evacuation of the site become necessary, privately owned vehicles will be used. Tenants on PSC property are notified by telephone or personal contact of actions considered necessary to their protection (PCC procedure emergency call list).

In the event that the two onsite Personnel Control Center assembly areas are uninhabitable (i.e., radiation levels are greater than, or equal to 2.5 mrem/hr, or there is unidentified airborne activity greater than, or equal to, 9×10^{-9} µCi/cc above background), non-essential personnel will be directed to evacuate to one of three designated offsite PCC locations. The preferred offsite PCC area is the Johnstown County Shops. The alternate offsite PCCs are the PSC Longment Service Center and the Platteville Firehouse. The PCC Director is responsible for the transport of emergency equipment, including decontamination supplies, necessary to establish the offsite PCC. Personnel in the protected area will exit the security building where they will be monitored for contamination and carded out of the plant.

4. Rescue Operations

The search and rescue function is handled by trained Fire Brigade or Health Physics personnel. When station personnel are unaccounted for in the initial or subsequent emergency accountability, the Shift Supervisor assigns a search and rescue team to locate and, if necessary, rescue personnel, observing the emergency exposure limits outlined in Table 6.5-1.

b. Offsite

The Emergency Coordinator will recommend appropriate initial protective actions to offsite authorities, to include either evacuation or sheltering, as alternatives, based upon consideration of relative benefits of the alternatives. The action which affords the greatest amount of dose avoidance for accidents (where projected or measured offsite doses are expected to exceed Protective Action Guides - Table 6.2-2) will generally be preferred. However other factors such as release duration, mobilization time relative to plume arrival time, or adverse weather may be important considerations affecting the decision.

Protective actions for offsite areas are initiated by state/local emergency response organizations as detailed in the State RERP. The State of Colorado has adopted the USEPA Protective Action Guides (Reference 3) for initiating actions to protect the general public. Plans for activating state/local emergency response agencies and performing various protective actions and services are specified in the State RERP. Estimated sector evacuation times are shown in Appendix C, Figure 10.C-2. These evacuation times were formally published in detail in PSC report "Evaluation Time Study of the 10-Mile Radius Area About the Fort St. Vrain Nuclear Generating Station," as transmitted to the U.S. Nuclear Regulatory Commission April 1, 1981 (P-81110). These estimates have been modified in RERP implementing procedure RERP-PAG, Protective Action Guideline Recommendations, to account for use of the tone alert Early Warning Alert (EWA) System.

Approximate initiation times for these protective actions are shown in Table 6.4-1.

The means of public notification is the use of tone alert NOAA weather radios distributed to residents living within the plume exposure EPZ (5 mile radius). A brief prepared message is broadcast over the radio issuing general instructions regarding protective actions and informing the public to tune to a local Emergency Broadcast System (EBS) radio station for further information. Additional coverage is provided, if required, by personal notification by Weld County Sheriff's Department personnel (with possible augmentation by the Platteville Volunteer Fire Department). Notification times are stated to approximate 15 minutes. Content of messages for the public and the decision to implement notification means is a State of Colorado responsibility (State RERP, Annex C).

PSC emergency procedures provide for prompt notification of state, local, and federal agencies and keeping these agencies updated on the overall status of the emergency. PSC will coordinate onsite actions with local, state, and federal agencies involved in offsite emergency response actions.

Notification of offsite businessmen, property owners and tenants, school administrators, recreation facility operators, and the general public within the emergency planning zone will be accomplished by local tone alert radio or emergency forces, as noted in the State RERP.

6.4.2 Use of Onsite Protective Equipment and Supplies

A variety of protective equipment is available onsite to minimize radiological exposures, contamination problems, and fire fighting hazards. The types of equipment, their criteria for issuance, location, and means of distribution are noted in Table 6.4-2. Radiothyroid protective drugs in sufficient quantity to administer to 100 employees is stockpiled at FSV. Criteria for issuance and location is noted in Table 6.4-2.

6.4.3 Contamination Control Measures

a. Plant Site

Measures will be taken to prevent, or minimize, direct or subsequent ingestion of radioactive materials deposited within the exclusion area. As necessary, affected areas will be isolated. Details of contamination control measures for onsite areas are contained in station procedures. The following is an outline of those procedural controls:

1. Radioactive Contamination of Personnel

- Controls have been established to insure that levels of removable contamination outside radiologically controlled areas will be maintained at less than allowable limits of 10dpm/100cm² alpha activity and 100dpm/100cm² beta-gamma activity.

- The environment of personnel working within radiological control areas are supervised by Health Physics personnel. Radiation Work Permits (RWPs) may be required for personnel in such areas. Specific instructions, precautions, and limitations are listed on RWPs.

- Protective clothing is required for individuals entering contaminated areas. Individuals leaving radiological control areas are monitored for contamination upon departure.

- Quarterly integrated accumulations of radionuclides in the body will not exceed accumulation levels which would result from exposure to the maximum permissible concentrations (MPC) of radionuclides in air or drinking water for occupational exposure as indicated in 10CFR20.103. Food for emergency personnel will be provided from offsite sources.

- Exposure to airborne concentrations higher than the MPC will be prevented or avoided. If exposures are necessary, wearing appropriate, properly fitted respiratory protective equipment will be required, as determined by Health Physics. Periodic air samples will be taken in selected operational and work areas to ensure that MPC levels are not exceeded.

2. Radioactive Contamination of Equipment

- Tools and equipment used in radiological control areas will be checked for contamination before they are taken outside the control area. If any equipment is found to be contaminated and decontamination is not practical, the item will remain controlled.

- Equipment and tools will be unconditionally released for use outside the area only if removable contamination and radiation levels are less than allowable limits previously stated.

- Removal of material from radiological control areas with radiation and contamination levels in excess of specified limits must be approved for release by Health Physics personnel. Any contaminated material approved for release will be packaged, sealed, and labeled with a properly executed radioactive material tag and handled in accordance with approved procedures.

b. Offsite

For areas beyond the site boundary, Colorado Department of Health (CDH) radiation monitoring teams will identify levels and control access. Until CDH teams arrive for dispatch, Public Service Company EPZ teams may be dispatched from the PCC to perform offsite monitoring. For areas where public access normally occurs, criteria for offsite areas will be applied. Criteria and measures for

contamination control in offsite areas are detailed in the State RERP.

6.5 Aid to Affected Personnel

6.5.1 Emergency Personnel Exposure Criteria

Exposure records are maintained for station personnel at each emergency center. This information will be utilized in determining emergency team assignments. Criteria used for limiting doses to emergency workers are based on recommendations of the USEPA (Reference 3) and are shown in Table 6.5-1. Emergency workers will carry self-reading dosimeters in addition to film badges. Emergency dosimetry services will be provided through contract with R.S. Landauer Corporation.

Emergency dosimetry service response is provided on a 24-hour basis. Every effort will be made to minimize emergency worker doses through the use of protective equipment and supplies. The PCC Director is responsible for emergency team assignments and may authorize emergency workers to receive doses in excess of 10CFR20 limits. This authorization to exceed occupational exposure limits shall be performed in accordance with existing RERP implementing procedures (see RERP-EXP), and shall be given only after consultation with the senior Health Physics representative at the TSC, and under direction of the TSC Director. The PCC Director will be notified of accidental or emergency exposure in excess of occupational limits. Those individuals will not be assigned to further emergency team operations. Decisions to accept doses in excess of occupational limits in life saving situations will be on a volunteer basis. In no case will doses be permitted to exceed 75 Rem Whole Body (per USEPA recommendation). The PCC Director is also responsible for assuring the distribution of film badges and self-reading dosimetric devices to emergency personnel and assuring the ongoing accountability of each worker's dose. At the TSC, the TSC Director is responsible for the issuance of dosimeters as needed, and ensuring the ongoing accountability of each worker's dose.

6.5.2 Decontamination and First Aid

Provisions have been made to assist personnel who are injured, or who may have received high radiation doses. There are personnel onsite who

are trained in first aid and decontamination procedures. In addition, onsite decontamination areas are equipped with decontamination facilities and other specialized equipment. Personnel found to be contaminated (any detectable activity above background) will undergo decontamination under the control of Health Physics procedures. Where contamination of large or open wounds is involved, personnel will be immediately transported to designated medical facilities offsite where they will receive prompt medical attention in accordance withthe FSV Medical Emergency Plan.

Each emergency team will include members trained in first aid. First aid kits are available at onsite locations in accordance with PSC policy specified in General Instructions, as well as in the onsite first aid facility.

6.5.3 Medical Transportation

Injured/contaminated personnel who require medical attention will be transported to St. Luke's Hospital by the St. Anthony's Hospital Flight for Life, or by Weld County Ambulance Service. A personal vehicle may be utilized if the situation necessitates. Ambulance crews have been trained to handle contamination cases. PSC Health Physics personnel will accompany contaminated patients to the hospital. Communications between FSV and emergency medical vehicles will be channeled through the Weld County Communications Center.

6.5.4 Medical Treatment

Arrangements for treating contaminated patients have been made with St. Luke's Hospital in Denver. In situations where there isn't time to transport a patient to St. Luke's, North Colorado Medical Center, Greeley, may be utilized. In these cases, FSV Health Physics personnel will respond to assist in contamination control at the hospital. Hospital staff at St. Luke's are trained to treat contaminated patients (Section 10, Appendix A). Following decontamination, personnel suspected to have ingested radionuclides will undergo whole body counting at PSC or CDH facilities. Communications between FSV and fixed medical facilities are via commercial telephone and are handled in accordance with the FSV Medical Emergency Plan.

REFERENCES

(1) Slade, D.H., ed., Meteorology and Atomic Energy - 1968, USAEC, July 1968.

(2) USNRC, Regulatory Guide 1.145, Atmospheric Dispersion Models For Potential Accident Consequence Assessments at Nuclear Power Plants, Revision 1, November 1982.

(3) USEPA, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, June, 1980.

(4) USEPA, Appendix D to the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Technical Bases for Dose Projection Methods, January 1979.

FIGURE 6.1-1

FIGURE 6.1-1
NOTIFICATION FANOUT
FORT ST. VRAIN NUCLEAR GENERATING STATION

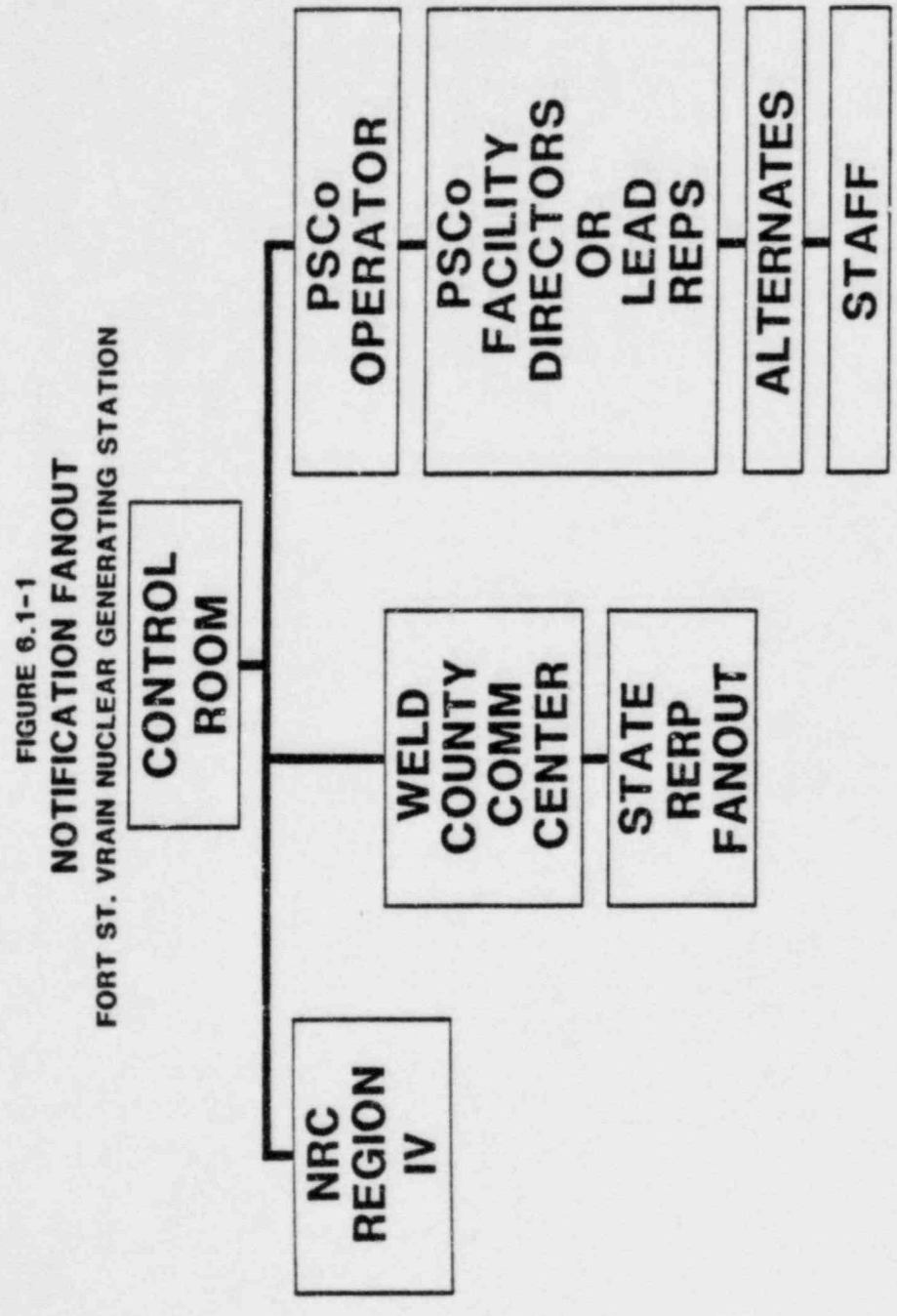


Figure 6.1-2

INITIAL MESSAGE CONTENT

(NOTIFICATION OF UNUSUAL EVENT)

Fort St. Vrain Nuclear Generating Station

A. The Emergency Coordinator and first management contact will complete the following information jointly:

1. Name and identity of caller_____

2. Date of Event_____ Time of Event_____

3. General Category of Event

_____ Unplanned Radiological Release to Reactor Building

_____ Fuel Failure

_____ Fire

_____ Natural Phenomenon (circle one)

Earthquake Flood Tornado Winds

_____ Unusual Hazards (circle one)

Aircraft Explosion Toxic Material

Other (Specify)_____

_____ Spent Fuel Incident

4. Description of Event _____

_____

5. Actions Taken _____

_____

6. Status:

_____ Under control by onsite staff, no offsite assistance anticipated.

_____ Under control by onsite staff. Will keep State and NRC advised.

_____ Offsite assistance may be required. Will advise. (See Item 7.)

_____ Offsite assistance required. (See Item 7.)

7. If offsite assistance is anticipated or required, describe assistance that has been or may be required: _____

_____

_____

_____

_____

8. At the present time, the event does not involve offsite release or the potential for offsite releases that would affect the general health and safety of the public.

B. The Emergency Coordinator will make notifications as follows:

Contact with State EOC (279-8855) and Governor's Office (866-2471) or Mansion (837-8350)

1. READ the following statement verbatim:

"THIS IS A NOTIFICATION OF AN UNUSUAL EVENT AT THE FORT ST. VRAIN NUCLEAR GENERATING STATION. THIS NOTIFICATION DOES NOT REQUIRE ACTIVATION OF EMERGENCY RESPONSE CENTERS. THIS NOTIFICATION REQUIRES VERIFICATION OF RECEIPT BY THE STATE. VERIFY BY CALLING 571-7436 or 785-2223."

2. READ all the information recorded in Step A (Page 1 of this ATTACHMENT).

3. RECORD the following information:

Name of State EOC contact_____Date/Time _____

Name of Governor's Office/Mansion Contact_____

Date/Time _____

Call back verification from State EOC, Date/Time _____

Call back verification from Governor's Office/Mansion

Date/Time _____

_____

Contact with NRC Operations Center (Hot Line or 202-951-0550)

(Alternate means of notification are given in Attachment 1.)

1. READ the following statement verbatim:

> "THIS IS NOTIFICATION OF AN UNUSUAL EVENT AT THE FORT ST. VRAIN NUCLEAR GENERATING STATION AT PLATTEVILLE, COLORADO. THIS NOTIFICATION APPEARS TO BE REQUIRED PURSUANT TO 10CFR50.72, PARAGRAPH (a)(3). THIS NOTIFICATION DOES NOT REQUIRE ACTIVATION OF FEDERAL OR STATE EMERGENCY RESPONSE ORGANIZATIONS."

2. READ the NRC Operations Center all of the information recorded in Step A (Page 1 of this Attachement).

3. RECORD the following information:

Name of NRC Contact_____Date/Time _____

FIGURE 6.1-3

NOTIFICATION OF EMERGENCY EVENT

(INITIAL MESSAGE CONTENT)

Fort St. Vrain Nuclear Generating Station

A. The Emergency Coordinator will complete Pages 1 and 2 of this attachment with the assistance of the first management contact.

1. This is (Name), Shift Supervisor at the Fort St. Vrain Station.

2. At (Time) we experienced an (ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY) Class incident.

3. a) There is NO, repeat NO, radioactive release taking place, and no special protective actions are recommended at this time.

OR

b) A small release IS taking place, but at this time NO protective actions are recommended and are not anticipated to be.

OR

c) A radioactive release IS, repeat IS, taking place, and we recommend that people in areas _____ remain indoors with windows and doors closed.

OR

d) A radioactive release IS, repeat IS, taking place, and we recommend that evacuation of areas _____ be considered.

4. Further information on incident conditions will be provided in followup messages.

5. Personnel Control Center to be located _____

_____

FIGURE 6.1-4

NOTIFICATION OF EMERGENCY EVENT

Fort St. Vrain Nuclear Generating Station

SUPPLEMENTAL INFORMATION

NOTE: This information is to be supplied to the NRC and the Colorado Department of Health when requested. The radiological data can be determined as specified in RERP-DOSE.

1. Date and Time of Incident _____

2. Class of emergency (ALERT)(SITE AREA EMERGENCY)
(GENERAL EMERGENCY)

3. Type of release (airborne, waterborne, surface) _____

4. Estimated duration of release _____ (Hours)

5. Current release rate:

Noble Gas _____Ci/sec; Iodine _____Ci/sec

6. Estimated curies released:

Noble Gas _____Ci; Iodine _____Ci

7. Wind Velocity _____MPH, from _____degrees.

to _____degrees, Air Temp _____°F

8. Stability Category _____. Form of Precip. _____

9. Dose rate at EAB: WB _____rem/hr; Thyroid _____rem/hr

2 Miles: WB _____rem/hr; Thyroid _____rem/hr

5 Miles: WB _____rem/hr; Thyroid _____rem/hr

10. Projected dose at EAB: WB _____rem; Thyroid _____rem

2 Miles: WB _____rem; Thyroid _____rem

5 Miles: WB _____rem; Thyroid _____rem

12. Areas expected to be impacted by release _____

_____

_____

13. Estimate of any surface radioactive contamination _____

_____ _____

14. On-site response actions under way _____

_____

15. Recommended Protective Action based on the projected dose at the EAB (Read appropriate Protective Actions)

Projected Dose (rem)	Recommended Protective Action
Whole Body <1 Thyroid <5	No planned protective actions. State may issue advisory to seek shelter and await instructions. Monitor radiation levels.
Whole Body 1 to 5 Thyroid 5 to 25	Take shelter and consider selective evacuation. Monitor radiation levels. Establish Controlled Area and limit access.
Whole Body 5 and above Thyroid 25 and above	Conduct mandatory evacuation. Monitor radiation levels and adjust area for mandatory evacuation based on these levels Control Access.

16. Prognosis for worsening of event _____

17. Date and time of report _____

TABLE 6.2-1

ASSESSMENT ACTIONS

Action	Description
1. Surveillance of Control Room instrumentation	Plant radiation levels, pressures, temperatures, flows and meterological data are monitored. The control room operators can assess plant status by observing sensor readout. Most sensors have visual and audio alarms. Data will be provided to the Emergency Coordinator as necessary for his assessment. Control room operators will take corrective actions as necessary.
2. Personnel Accountability	Accountability of all personnel onsite is made at the respective personnel accountability stations. Security printouts and personnel rosters may assist in this assessment.
3. In Plant Radiological Surveys	Radiation monitoring teams will perform these surveys. The radiation levels on the station's fixed area and ventilation monitoring systems will be obtained from the control room to assist in these evaluations. Contamination surveys of equipment and personnel is done with portable equipment from the emergency kits or at routine personnel monitoring stations.
4. Site Boundary/EPZ Surveys	Handled in same fashion as in-plant surveys by radiation monitoring teams.
5. Offsite Consequence Assessment	Radiological Assessment personnel will be using effluent monitors, meteorological data,and field monitoring results to make assessments of offsite consequences.
6. Environmental Monitoring	For less immediate actions, samples of various environmental media are collected and analyzed by an oustide contract laboratory. Results will be evaluated by company personnel and the contract laboratory.
7. Assessment Reporting	In the case of actual or potential offsite consequences, the state and local authorities are immediately notified in accordance with the State RERP. Predetermined criteria are used to initiate various protective actions for the public by the local authorities as illustrated in Tables 4.1-1 through 4.1-4.

TABLE 6.2-2

Recommended protective actions to reduce whole body and thyroid dose from exposure to a gaseous plume

General Public

Projected Dose (Rem) to the Population	Recommended Actions (a)	Comments
Whole Body less than 1 Thyroid less than 5	No planned protective actions (b). State may issue an advisory to seek shelter and await further instructions. Monitor environmental radiation levels.	Previously recommended protective actions may be reconsidered or terminated.
Whole Body 1 to 5 Thyroid 5 to 25	Seek shelter as a minimum. Consider evacuation. Evacuate unless constraints make it impractical. Monitor environmental radiation levels. Control access.	If constraints exist, special consideration should be given for evacuation of children and pregnant women.
Whole body 5 and above Thyroid 25 and above	Conduct mandatory evacuation. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these levels. Control access.	Seeking shelter would be an alternative if evacuation were not immediately possible.

(a) These actions are recommended limits for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration (refer to RERP implementing procedure RERP-PAG, "Protective Action Guideline Recommendations").

(b) At the time of the incident, officials may implement low-impact protective actions in keeping with the principle of maintaining radiation exposures as low as reasonably achievable.

TABLE 6.2-2 (Continued)

Recommended protective actions to reduce whole body and thyroid dose from exposure to a gaseous plume

	Emergency Workers	
Projected Dose (Rem) to Emergency Team Workers	Recommended Actions (a)	Comments
Whole body 25 Thyroid 125	Control exposure of emergency teams members to these levels except for lifesaving missions. (Appropriate controls for emergency workers, include time limitations, respirators, and stable iodine.)	Although respirators and stable iodine should be used where effective to control dose to emergency team workers, thyroid dose may not be a limiting factor for lifesaving missions.
Whole Body 75	Control exposure of emergency team members performing lifesaving missions to this level. (Control of time of exposure will be most effective.)	

(a) These actions are recommended limits for planning purposes and any exposures in excess of occupational (10CFR20) limits must be handled in accordance with RERP implementing procedure RERP-EXP, "Emergency Exposure Guidelines." Protective action decisions at the time of the incident must take existing conditions into consideration.

TABLE 6.4-1

Initiation Times for Protective Actions for the General Public

Approximate Initiation Time	Exposure Pathway	Action to be Initiated
0 - 4 Hours	Inhalation of gases or particulates	Evacuation, shelter, access control, respiratory protection, prophylaxis (thyroid protection).
	Direct radiation	Evacuation, shelter, access control.
4 - 48 Hours	Milk	Take cows off pasture, prevent cows from drinking surface water, quarantine contaminated milk, utilize stored feeds.
	Harvested fruits and vegetables	Wash all produce, or impound produce.
	Drinking water	Cut off contaminated supplies, substitute from other sources.
	Unharvested produce	Delay harvest until approved.
2 - 14 Days	Harvested produce	Substitute uncontaminated produce.
	Milk	Discard or divert to stored products, such as cheese.
	Drinking water	Filter, demineralize, test.

TABLE 6.4-2

Use of Protective Equipment and Supplies

Equipment	Criteria for Issuance	Location	Means of Distribution
1) Full Face Canister Respirator	As needed by onsite Emergency Teams in areas of high airborne radioactivity	a) Selected Emergency Monitoring Kits b) Respiratory Issue Lockers-Turbine Deck.	a) Issued at Personnel Control Center b) Picked up at nearest station as directed by Health Physics Personnel.
2) Self-Contained Breathing Apparatus	a) Inhalation hazard during fire fighting b) Airborne radioactivity in excess of administratively set levels c) Toxic gas hazard	a) Control Room b) Various Areas in Station	a) Used as needed by operators. b) Issued as needed by Health Physics Personnel.
3) Protective Clothing (Coveralls, Hoods, Boots, Gloves)	As needed in areas of known contamination	a) Various Areas of the station. b) Emergency Kits	a) Issued as needed by Health Physics Personnel. b) Issued at Personnel Control Center.
4) Air-Fed Respirator	Airborne radioactivity in excess of administratively set levels.	a) Control Room b) Respiratory Issue Lockers-Turbine Deck.	a) Used as required by operators. b) Issued by Health Physics Personnel.
5) THYRO-BLOCK (Potassium iodide) tablets. (130 mg)	Airborne radioiodine concentrations elevated to the extent that an individual properly fitted with respiratory protection may be expected to receive a thyroid inhalation dose in excess of 10 rem (Refer to RERP implementing procedure RERP-THYROID, "Thyroid Blocking Agent Administration").	a) Respiratory Issue Lockers-Turbine Deck b) Emergency kits at Training Center and QA/Engineering complex facilities (PCCs).	Issued only by Health Physics Personnel under direction of the Radiation Protection Manager with consent of the PSC Medical Department.

TABLE 6.5-1

Exposure Criteria for Emergency Workers*

Situation	Whole Body	Thyroid**
1. Emergency duties not related to protecting equipment, personnel, or the public.***	5 Rem	25 Rem
2. Prevent extensive equipment damage, further escape of effluents, or control fires.	25 Rem (planned) 12 Rem (unplanned)	125 Rem
3. Lifesaving missions, e.g., search and rescue of injured people, prevent conditions that would injure numbers of people.	75 Rem	Unlimited****

* Administered in accordance with RERP implementing procedure RERP-EXP, "Emergency Exposure Guidelines".

** Respiratory protection will be provided as necessary.

*** Includes performing accident assessment, providing first aid, performing personnel decontamination, providing ambulance service, and providing medical treatment services.

**** Although respirators and potassium iodide blocks should be used where effective to control dose to emergency team workers, thyroid dose may not be a limiting factor for a lifesaving mission.

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 7

ISSUANCE AUTHORIZED BY	8-13-84		
PORC REVIEW	PORC 582 AUG 14 1984		EFFECTIVE DATE 8-21-84

7.0 Emergency Facilities and Equipment

This section describes: emergency control centers; onsite and offsite communication systems links; assessment equipment and facilities; protective facilities; first aid and medical facilities; and damage control equipment and supplies.

7.1 Emergency Control Centers

7.1.1 Technical Support Center (TSC)

Site emergency command activities will be centered in the Technical Support Center (TSC) located immediately adjacent to the Reactor Building and within short walking distance to the Control Room. The TSC is equipped with intercoms, telephones, NRC hotline, dedicated Health Physics Network (HPN) telephone, telecopier, and radios for communications with the CR, Personnel Control Center (PCC), and Forward Command Post (FCP).

The TSC is equipped with a CDC-1700 terminal for visualization of plant parameters and offsite dose calculations, essential drawings, specifications, and procedures. Radiation monitoring equipment, protective clothing, communications equipment, portable lighting, protective breathing apparatus, and first-aid equipment are located in Emergency Kits. The TSC meets habitability requirements similar to those imposed upon the CR.

7.1.2 Forward Command Post (FCP)

The Forward Command Post is the focal point for the coordination of onsite and offsite emergency response activities. Management and technical personnel assigned to the FCP are responsible for protective action recommendations and liaison with offsite authorities and response facilities. The FCP serves as the point from which the Corporate Emergency Director (CED), Vice President of

Production, exercises overall control of the FSV Emergency Response Organization.

The FCP has work space allocated for PSC emergency personnel, state and local personnel, and the NRC. The FCP is adequately equipped with dedicated phone lines, PSC PBX phone lines, commercial phone lines, radio, and telecopy facilities to provide efficient communications with the TSC, ECP, State EOC, NRC, and the Weld County Communication Center. Onsite-offsite communcations are channelled through the TSC and FCP.

The FCP is located at the PSC garage facility in Ft. Lupton, well out of the plume exposure EPZ. Generally, the FCP will be activated and manned for an ALERT or more severe incident classification. (There are cases where, at the ALERT classification, activation of the FCP is not necessary. This is at the discretion of the Corporate Emergency Director, based upon his assessment of the situation.)

There are plans to equip the the FCP with a CDC-1700 terminal to provide rapid access to plant parameters and to provide for offsite dose calculations.

Briefings with the media are to take place at the Ft. Lupton Methodist Church, located in close proximity to the FCP.

7.1.3 Personnel Control Center (PCC)

The primary and secondary locations for the Personnel Control Center (PCC) are the Training Center and the QA/Engineering Office Complex, respectively. Emergency radiological monitoring equipment, first-aid and decontamination equipment, protective clothing, communications equipment, camera, portable lighting and protective breathing apparatus are stored in emergency kits at both onsite locations. There are three designated offsite areas which may be utilized as the PCC if it becomes necessary to evacuate the onsite location(s). The preferred alternate offsite location is the Johnstown County Shops. The other alternate offsite PCC locations are the Longmont PSC Service Center and the Platteville Volunteer Fire Department. Routes to these locations are shown in RERP implementing procedure RERP-PCC, Personnel Control Center Procedure.

7.1.4 Control Room (CR)

Emergency assessment and control is initially directed from the CR by the Shift Supervisor prior to activation of the TSC. The CR, located adjacent to the Reactor Building, is designed to be habitable during Design Basis Accidents. The CR contains full plant instrumentation, technical drawings, protective breathing apparatus, radio, telephone, and intercom systems. Emergency radiological monitoring equipment and protective clothing are located nearby.

7.2 Communications Systems

The primary station-offsite link is between the TSC and the FCP. Communications between the station and the FCP consist of commercial telephone service backed by two-way radios. From the FCP, messages are relayed to designated agencies via Weld County, Colorado Division of Disaster and Emergency Services (DODES), and Colorado National Guard radio communication systems. Two-way radios will be used to maintain communications between the TSC and Emergency Monitoring Teams. Primary telephone and radio communication links between the TSC and other emergency centers are shown on Figure 7.2-1. For a comprehensive discussion of overall emergency response communications, refer to Annex F of the State RERP. PSC, DODES, and Weld County Communcations facilities are manned on a 24-hour basis. These are the principle entities involved in the notification fanout.

7.3 Assessment Facilities

Emergency measures described in Section 6 depend upon the availability of the monitoring instruments and laboratory facilities necessary for assessment of problems. This section describes onsite and offsite facilities and monitoring equipment used in intial and continuing assessment.

7.3.1 Onsite Systems and Equipment

a. Geophysical data are grouped into meteorological and seismic categories.

1. Meteorological Monitors

Information is obtained from installed instrumentation on the primary 60 meter meteorological tower with readout in the CR. The following information is obtained: wind direction, windspeed,

standard deviation of wind direction (sigma theta), precipitation, dewpoint, temperature, and temperature differential with height. Backup meteorological data is readily accessible on a round-the-clock basis from the 10 meter (National Oceanic and Atmospheric Administration (NOAA) meteorological tower located onsite North of the plant in the same general area as the primary 60 meter meteorological tower.

2. Seismic Instruments

Information is obtained from passive and active instruments giving absolute peak acceleration in three orthogonal directions. The system determines whether operating basis or safe shutdown maximum accelerations are exceeded in any of three directions.

b. Area and process radiation monitoring systems are divided into seven basic groups.

1. Area Monitors

There are 21 area monitors, 17 in the reactor building and 4 in the turbine building. Each area monitor uses a Geiger-Mueller tube as a detector and has a self-contained check source. The area monitors share two common annunciators, one which may be cleared before the problem is resolved (readout in Control Room), and another in conjunction with local annunciators which may not be cleared until the problem is resolved. In addition, there is an area monitor located in the TSC with remote readout and local alarm.

2. Equipment Monitors

These monitors determine radiation levels in specific effluent streams. Redundant monitors are provided separate power sources.

3. Liquid Monitors

These devices are specifically designed to monitor liquid effluents. They utilize gamma scintillation detectors consisting of an NaI(Tl) crystal optically coupled to a photomultiplier tube.

4. Gas Monitors

These monitors consist of a plastic Beta scintillator which is coupled to a photomultiplier tube to monitor effluents in the gaseous phase.

5. Particulate and Iodine Monitors

These monitors continuously draw a portion of the airborne effluent through a filter assembly. Any buildup of radioactivity on the filter is measured with a gamma scintillation detector. The filter is backed by an activated charcoal cartridge for adsorption of iodine and may be removed to be counted and isotopically analyzed on a multichannel analyzer.

6. Emergency Stack Monitor (PING)

This device is a single unit containing particulate, iodine, and noble gas monitors to measure Reactor Building ventilation exhaust effluent during a loss of power to the normal operating stack monitors.

7. Reactor Building Ventilation Exhaust Stack Monitor

This system monitors exhaust air from the reactor building for Beta particulates and Iodine-131 contaminants.

c. System Monitors

These monitors detect and/or control problems within plant systems. These may be pressure detectors, heat detectors, flow elements, heat rise detectors, or similar devices designed to monitor plant parameters. Many of these detectors are capable of initiating control actions to prevent or mitigate damage or release of radioactive material.

d. Fire Protection Systems

There is an extensive Fire Protection System in operation at Fort St. Vrain. The Pyralarm Fire Detection System is designed to detect fires in the Three Room Control Complex (Control Room, Auxiliary Electric Room, and 480V Room), G-Wall Cable Area, J-Wall Cable Area, and the Reactor Building. These detectors are smoke detectors. In addition, there are Fixed Heat Detectors and Rate of Heat Rise Detectors serving other parts of the station. Fire extinguishing is by use of Halon System (Three Room Control Complex), or sprinkler/deluge systems with either automatic or manual initiation. Specific information regarding Fire Detection/Suppression at FSV is contained in the System Abstracts (System 45), System Operating Procedures (SOPs), and in the Administrative Procedures (P-8).

e. Radiation Analysis

Radiochemical laboratory equipment, radiation monitoring stations, and fixed air sampling stations provide capability for detailed, isotopic analysis.

f. Portable Survey Instruments

These instruments provide flexibility and backup capability for radiation measurements in areas not served by installed monitors or where installed monitors may be inoperative.

Specific equipment and their locations for Fort St. Vrain onsite radiological assessment is summarized in Table 7.3-1.

7.3.2 Offsite Systems and Equipment

The environmental radiological monitoring program for the Fort St. Vrain environs is provided under contract by Colorado State University (CSU). It consists of a comprehensive sampling system to monitor radioactivity in the ecosystems and atmosphere near the station. Biota samples are routinely collected and analyzed, as are air, water, soil, precipitation, vegetation, and milk samples. The agreement with CSU includes provision for environmental monitoring in the event of an emergency. In the event of an emergency, CSU can respond within four (4) hours. CSU also has facilities for radiochemistry and gamma spectrometry which would be accessible if required. Weather observations and forecasting may also be obtained through the National Weather Service (NWS) radio or from the Stapleton Airport National Weather Service Station. Offsite facilities are summarized in Table 7.3-2.

7.4 Protective Facilities and Equipment

Control Room shielding and ventilation are designed to allow personnel habitability during Design Basis Accident conditions. The TSC is located to the east of the Reactor Building in close proximity to the CR and is provided shielding and HVAC similar to the CR. Portable radiation monitoring instrumentation, respiratory equipment, protective clothing, and portable lighting are available near the CR. Communications equipment is in the CR.

7.5 First Aid and Medical Facilities

Necessary treatment supplies are located at the First-Aid Station on level five of the Turbine Building immediately adjacent to the West Building entrance. In the event of an emergency, an alternate first-aid area is provided in the PCC. First-aid treatment of injured individuals will be administered by trained personnel. Advanced medical care, if required, will be obtained by transporting the individuals to St. Luke's Hospital and/or North Colorado Medical Center. (Section 10, Appendix A contains agreements with offsite medical facilities).

7.6 Damage Control Equipment and Supplies

Fire hose stations, extinguishers, and hydrants are strategically located throughout the station for use in the event of fire. Self-contained breathing apparatus (SCBA) is located strategically throughout the station to be used as necessary for fire fighting, entry into airborne radioactivity areas, or entry into toxic gas areas. A chlorine container repair kit is available to seal the cover on a chlorine cylinder in the event of a valve leakage. Selected equipment spare parts are stored in the warehouse for equipment repair.

FIGURE 7.2-1

PRIMARY AND SECONDARY COMMUNICATION LINKS
ONSITE - OFFSITE EMERGENCY OPERATIONS
Fort St. Vrain Nuclear Generating Station

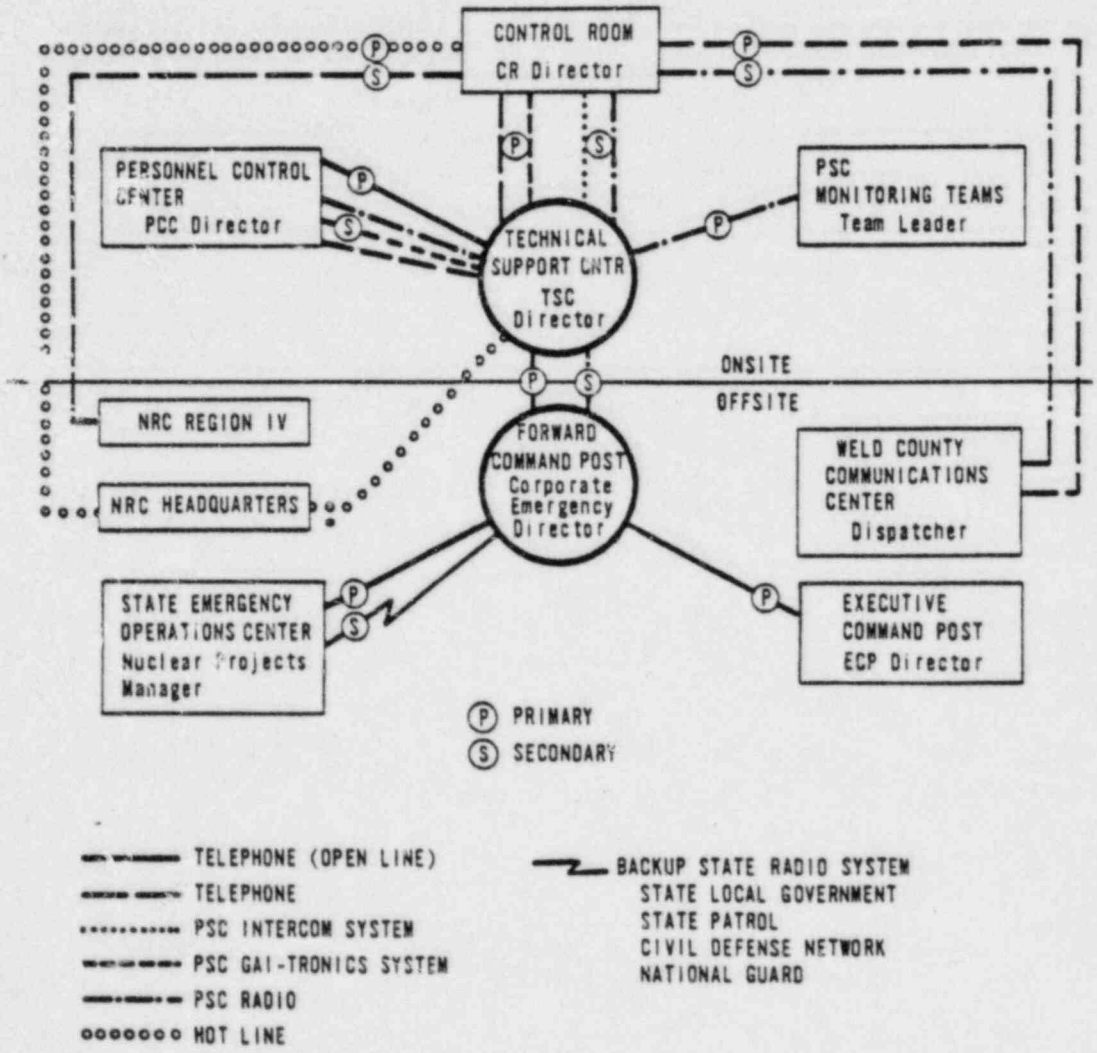


TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Instrument System	Description and Location	Functional Applicability
1. Geophysical Monitors		
Meteorological	Wind Speed Indicators located North of plant on 60m tower North of the plant.	Measures Wind Speed @ 58m above ground level and 10 m above ground level.
	Wind Speed Indicator located North of plant on 60m tower-Same Instrument as previous listing	Measures Wind Direction @ 58m and 10m above ground level
	Delta Temperature Sensors located on 60m tower north of plant	Measures temperature differential between 10m and 58m elevation
	Rain Guage on 60m tower	Measure precipitation
Ten Meter Tower	Windspeed, Wind direction temperature, Solar Radiation, etc. located North of plant.	Provide backup Meteorological parameters (Operated by NOAA)-available via data logger, modem dial-up (see RERP implementing procedures), or via remote readouts at tower.
Strong Motion Accelographs	2 Detectors Below PCRV 1 Detector on Top of PCRV 1 Detector at N.W. Corner of Visitor Center	Record gound Accelerations in three mutually or orthogonal directions with respect to time. Ground motion activates the SMA's and trips an annunciator in the Control Room.

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Seismoscopes	2 detectors below PCRV 1 detector on top of PCRV	Smoked glass supported on a Pendulum. As relative motion occurs, a stylus scribes a record on the glass.

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
2. Radiation Monitors			
Liquid Monitors			
RT6212 & RT6213	Radioactive liquid effluent monitors. Reactor bldg.- Elev. 4771'	10^{-5} µCi/ml (also, if cooling tower blowdown drops to < 1100 gpm), closes HV-6212 & HV-62249, trips transfer pump P-6202 & 6202S, and trips reactor building sump pumps to prevent 1 X 10^{-7} µCi/ml MPC value at site perimeter from being exceeded. (ELCO 8.1.2)	750 cpm > BKG 750 cpm > BKG
RT21251	Low pressure separator drain line monitor. Reactor bldg.- Elev. 4740'	Bearing water removal pumps trip, water diverted to liquid waste sump. (Operator must go to recycle mode).	10,000 cpm
RT2263 RT2264*	Reheat steam condensate monitor. Turbine bldg.- Elev. 4811'	No control action	600 cpm 570 cpm
RT46211 RT46212	Gas waste compressor cooling water monitor. Reactor bldg. - Elev. 4740'	No control action	600 cpm 600 cpm

*NOTE: RT-2264 is normally lined up to monitor loop 2 steam generator penetration interspace for primary coolant in-leakage. Detection of activity in Steam Jet Air Ejector Discharge (RT31193) without correspondingly high indication on RT-2264 would suggest the need to switch RT-2264 to Reheat Steam Condensate, as directed by Emergency Procedure EP H-3.

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
Gas Monitors (Plastic Beta Scintillators)			
RT7324-1 RT7324-2	Reactor building ventilation exhaust monitors. The monitors are located on the Turbine Deck Elev. 4829'	Close block valve FV-6351, divert exhaust from filters to gas waste vacuum tank, shutdown turbine building and service building ventilation and begin recirculation of control room ventilators. Also, closes reactor supp. inlet dampers. (ELCO 8.8.1)	35,000 cpm 1,300 cpm
RT7312	Building Radioactivity Monitor. Five point monitor-samples: 1) PCRV Bottom Head 2) A & I Room 3)Health Physics Access 4) Control Room 5) Turbine Deck Monitor is located on the Turbine Deck Elev. 4829'.	The primary action is to terminate flow to panel I-9325 by closing valves: HV-6342 HV-6341 HV-9316 HV-93256 HV-2325 HV-2326 HV-2357-1 HV-2357-2 Close all AI room sample valves. Normally samples a point for 7 minutes. All take suction from an exhaust vent duct.	1,000 cpm
RT31193	Air Ejector Exhaust Monitor. Located on the mezzanine level of the Turbine Building, east of the main condenser, Elev. 4811'.	No control action. (ELCO 8.8.1)	500 cpm

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
RT9301	Primary Coolant Monitor-Online Beta scintillator to monitor the primary coolant. Located in the AI room, Elev. 4829'.	No automatic action.	4.6 X 10^6 cpm
RT9302	Kr-85 Monitor. Shielded monitor located on the Turbine Deck - Elev. 4829'.	No automatic action. Operator will swap purification trains.	500 cpm
RT6314-2	Gas Waste Exhaust Monitor. Operated in series with the iodine and particulate monitors. Located on Elev. 4781' on the east wall outside the gas waste cubicles.	High alarm diverts the flow to the gas waste vacuum tank. (ELCO 8.8.1)	1.7 X 10^6 cpm
Particulate and Iodine Monitors (NaI gamma scintillation detectors)			
RT6314-1	Monitor the gas waste effluent stream up stream of the gas monitor RT6314-2. Located inside the gas waste blower cubicle on Elev. 4781'.	Has the same control action as RT6314-2. (ELCO 8.8.1)	7.0 X 10^6 cpm

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
RT73437-1	Reactor Plant Ventilation Exhaust Iodine-131 Monitor Loc: Sampler/Detector: El. 4916 Turbine Side Readout El. 4829 Control Room	ELCO 8.8.1 -Close valve FV6351, divert flow to gas waste vacuum tank. Shutdown turbine building ventilation and place the control room ventilation on recirculation.	10,000 cpm
	This iodine monitor consists of two single channel analyzers, one window being set for the photopeak energy of interest (i.e. ^{131}I), and one being set for an adjacent energy region. The adjacent region window provides a background subtraction capability, thus allowing the monitor to discriminate ^{131}I from noble gas radioisotopes. A 2 inch by 2 inch NaI(TL) crystal is utilized as the detector for this monitor.		
RT73437-2	Reactor Plant Ventilation Exhaust Beta Particulate Monitor Loc: Samples/Detector: El. 4916 Turbine Side Readout El. 4829 Control Room	Same automatic action as RT73437-1.	20,000 cpm
	This particulate monitor consists of an alpha detector and a plastic beta scintillation detector viewing a fixed filter for particulate radioactivity. The alpha channel provides a live measurement of radon concentration which is subtracted from the beta measurement.		

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Alarm Setpoint
Emergency Stack Monitors (PING - Particulates, Iodine, Noble Gases)		
Provided to Monitor Reactor Building Ventilation exhaust effluent during loss of power to the normal operating stack monitor.		
RT 4801	Reactor Plant Ventilation Exhaust Beta Particulate Monitor Loc: El. 4885, turbine side	10,000 cpm
RT 4802	Reactor Plant Ventilation Exhaust Iodine Monitor Loc: El. 4885, turbine side	19,000 cpm
RT 4803	Reactor Plant Ventilation Exhaust Noble Gas Monitor Loc: El. 4881, turbine side	23,000 cpm
Reactor Building Ventilation Exhaust Stack Monitor		
RT 7325-1	Reactor Plant Ventilation Exhaust Iodine and Particulate Monitor Loc: Samples/Detector: El. 4921 Turbine Side Readout El. 4829 Control Room	1,600 cpm
RT 7325-2	Reactor Plant Ventilation Exhaust G-M Detector Loc: Sampler/Detector: El. 4921 Turbine Side Readout El. 4829 Control Room	10 mr/hr

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location			Alarm Setpoint
TSC Ventilation Monitors				
RIT 7937	TSC Ventilation Inlet		(P)	30,000 cpm
	Particulate, Iodine, Noble Gas		(I)	3,000 cpm
	Loc:		(G)	400 cpm
	Sampler/Detector:	El. 4791 TSC Building		
	Readout	El. 4791 TSC Building		
RIT 7936	TSC Ambient Atmosphere		(P)	30,000 cpm
	Particulate, Iodine, Noble Gas		(I)	3,000 cpm
	LOC:		(G)	400 cpm
	Sampler/Detector:	El. 4811 TSC		
	Readout	EL. 4811 TSC		

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Location	Elevation	Alarm Setpoint mrem/hr
Reactor Building Area Radiation Monitors			
RT93250-1	Refueling Machine Control Room	4881	2.5
RT93252-1	Northeast Refueling Floor	4881	2.5
RT93250-2	East Walkway Outside HSF	4854	2.5
RT93252-2	South Stairwell	4864	2.5
RT93250-3	Hot Service Facility Platform	4856	10.0
RT93251-3	Hot Service Blower Section	4868	100
RT93250-4	Outside HSF Door	4839	2.5
RT93252-4	Instrument Room-Analytical Instrument Board	4829	2.5
RT93251-5	Gas Waste Filters	4781	2.5
RT93251-6	Truck Bay	4791	2.5
RT93252-6	Near South Stairwell	4791	2.5
RT93251-7	Core Support Filter	4781	2.5
RT93252-7	East Walkway	4781	2.5
RT93250-8	North East Walkway	4771	2.5
RT93251-8	Decontamination Laundry	4771	2.5
RT93251-9	Buffer Helium Dryer Loop I	4740	2.5
RT93250-14	Refueling Floor/ East Wall	4881	2500

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Location	Elevation	Alarm Setpoint mrem/hr	Control Action
Turbine Building Area Radiation Monitors				
RT93250-13	Near Condensate Demineralizers	4791	2.5	
RT93251-1	Reactor Plant Exhaust Filter Room	4864	1000	
RT93251-4	General Office Area	4816	1.0	
RT93250-5	Control Room	4829	1.0	
Technical Support Center Area Radiation Monitor				
RIA-7951	Technical Support Center	4811	2.5	
Equipment Radiation Monitors				
RT93250-12	Steam/Water Dump Tank Monitor	4740	2.5	Alarm blocks opening HV-22156 vent valve to atmosphere
RT93251-12	Steam/Water Dump Tank	4740	2.5	Alarm blocks opening HV-22156 vent valve to atmosphere
RT93250-10	Reheat Steam Header Monitor Loop	4811	1 (alarm) 3 (trip)	
RT93251-10	Reheat Steam Header Monitor Loop 1	4811	3	

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Location	Elevation	Alarm Setpoint mrem/hr	Control Action
RT93252-10	Reheat Steam Header Monitor Loop 1	4811	1 (alarm) 3 (trip)	
RT93250-11	Reheat Steam Header Monitor Loop 2	4811	1 (alarm) 3 (trip)	
RT93251-11	Reheat Steam Header Monitor Loop 2	4811	1 (alarm) 3 (trip)	
RT93252-11	Reheat Steam Header Monitor Loop 2	4811	1 (alarm) 3 (trip)	
RT93252-12	PCRV Relief Valve Piping Monitor	4885	2.5	

3. System Monitors

Process Monitors affecting the Assessment of Radiological Accidents are shown in the EAL column of Tables 4.1-1 - 4.1-4.

4. Fire Detection

Smoke Detectors	Detect Products of Combustion
Rate of Heat Rise Detector	Detects Quick Ri e of Temperature
Fixed Heat Detector	Detects a Set Temperature

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Instrument System	Description and Location	Functional Applicability
5. Facilities		
	Whole Body Counter	Detect, identify, and quantify internal deposition of radioactivity
	Radiochemistry Laboratory	Equipped for Radiological Analysis
	Radiation TLD Monitoring Stations Outside Security Fence, inside owner controlled	Measure radiation dose rates (operated by contract with Colorado State University) area.
	4 Fixed Air Sampling Stations-Just Outside Security Fence	Sample particulates and radioiodines (operated by contract with Colorado State University)
	Emergency Lab	Ge-Li Detector Multi-Channel Analyzer
6. Portable Survey Instruments		
	Airborne Particulate Monitors	Detect Airborne Contamination
	Beta-Gamma Air Monitor	Detect Airborne Radioactivity
	Tritium Air Monitors	Detect Airborne Tritium
	Alpha Survey Meters	Detect Surface Contamination
	Neutron Detectors	Determine Neutron Flux rate
	Ion Chambers	Determine Gamma Dose rate

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Instrument System	Description and Location	Functional Applicability
	Beta-Gamma Geiger-Mueller Survey Meters	Surface and Area Radiation Levels
	SAM-II Portable Multi-Channel Analyzers	Verification of airborne I-131 levels in the field
	Scintillation Counters	Determine Gamma Dose Rate
	Pancake Geiger-Mueller Monitors	Determine Surface Contamination Levels
	Proportional Counter	Determine Alpha-Beta-Gamma Contamination
	Hi and Lo Vol Air Samplers	Detect Airborne Iodine and Particulate Contamination

TABLE 7.3-2

OFFSITE ASSESSMENT EQUIPMENT AND FACILITIES

Individual Detector	Functional Applicability
1. Geophysical Monitoring	
Meteorological	
National Weather Service Denver Stapleton Airport	Weather Forecasting
2. Radiological Monitors	
Environmental Monitoring Radiation monitoring stations (12 TLD locations between one and ten miles from reactor: 12 locations between ten and fourteen miles from reactor)	Measure radiation dose rate (operated by contract with Colorado State University)
Fixed Air Sampling Stations	Measure particulates and radioiodines (operated by contract with Colorado State University)
Colorado State University	
Ge-Li Detector	Gamma Spectrometry for Isotopic identification and Analysis
NaI(Tl) Detector	Gamma Spectrometry for Isotopic identification and Analysis
Radiochemistry Laboratory	Chemical and radiological Analysis

TABLE 7.3-2

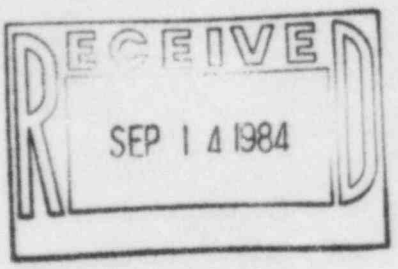
OFFSITE ASSESSMENT EQUIPMENT AND FACILITIES

Individual Detector	Functional Applicability
Colorado State Department of Public Health	
Whole Body Counter	Identification and quantification of inhaled or ingested radioisotopes. Serves as backup to FSV System.

Public Service Company of Colorado

16805 WCR 19 1/2, Platteville, Colorado 80651

September 7, 1984
Fort St. Vrain
Unit No. 1
P-84348



Mr. Eric H. Johnson
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Dear Mr. Johnson:

We are transmitting herein revisions to several emergency preparedness related documents. The changes affect the following document binders:

Radiological Emergency Response Plan - Plant

The following procedures are being transmitted for filing in the RERP - Plant Procedures.

Section 4, Issue 5
Section 5, Issue 6
Section 6, Issue 7
Section 7, Issue 6

If there is confusion as to which issue is most recent whenever multiple copies are received in a short period of time, the highest issue number is always the most recent issue of a given procedure.

If difficulties or questions arise in filing these procedures, please feel free to contact Ms. Sharilyn Johnson at (303) 785-2224, extension 275 for assistance.

Very truly yours,

J. W. Gahm
Manager, Nuclear Production

JWG/cjs

H005
ORIGINAL
TO RIII

GA Sm
NRC #6 Johnson
8/21/84

RADIOLOGICAL EMERGENCY RESPONSE PLAN - PLANT

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
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TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 4

ISSUANCE AUTHORIZED BY	J.W. Gahm 8-14-84		
PORC REVIEW	PORC 582 AUG 14 1984	EFFECTIVE DATE	8-21-84

4.0 Emergency Conditions

Emergencies are classified into four categories as provided by "Emergency Action Level Guidelines For Nuclear Power Plants", Appendix 1, USNRC NUREG-0654, Rev. 1. Each succeeding classification is more severe than its predecessor and results in a higher level of response. The classification system results in responses and procedures that are both timely and appropriate for a wide range of emergency conditions.

4.1 Classification

The classifications described in the following sections comprise the system. Each classification description includes appropriate levels of station and state/local government agency emergency response actions. The classifications given match those employed in the State RERP.

4.1.1 NOTIFICATION OF UNUSUAL EVENT

This classification applies to situations where unusual events are in process (or have occurred) which indicate a potential for degradation of the level of safety of the plant.

In these situations, time is available to take precautionary and constructive steps to prevent a more serious event and/or to mitigate any consequences that may occur. This event status places the plant in a readiness position for a possible cessation of routine activities and/or an augmentation of on-shift resources. State officials are promptly notified of an unusual event. No releases of radioactive material requiring offsite response or monitoring are expected at this level.

Table 4.1-1 outlines initiating events and response actions for the NOTIFICATION OF AN UNUSUAL EVENT class of incident.

4.1.2 ALERT

This classification comprises events which are in process, or have occurred, that involve the potential for a substantial degradation of the level of safety of the plant. Any releases of radioactive materials are expected to represent small fractions of the EPA Protective Action Guide limits. The purpose of the ALERT category is to assure that emergency personnel are readily available if the situation degrades and to provide offsite authorities with comprehensive status information. Operator modification of plant operating status is a probable corrective action if such modification has not already been accomplished by automatic protective systems.

Declaration of an ALERT will trigger prompt initial and followup notification to offsite authorities. If applicable, updated meteorological information, verification of releases by surveys, and projected radiological effects on offsite areas will be provided to local and state authorities. The ALERT status is maintained until the event is declared to be terminated or an escalation to a more severe emergency class is declared.

Table 4.1-2 outlines initiating events and response actions for the ALERT class of incident.

4.1.3 SITE AREA EMERGENCY

A SITE AREA EMERGENCY consists of events which are in process, or have occurred, that involve actual or likely major failures of plant protective functions. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near the site boundary. The purpose of the SITE AREA EMERGENCY declaration is to assure that emergency response facilities are manned, that radiation monitoring teams are dispatched, that emergency forces are readily available, and to provide efficient exchange of status information between PSC and offsite authorities. Consideration of appropriate protective actions, based on actual or projected data, is warranted. Onsite and offsite emergency centers are activated. Onsite evacuation is initiated if indicated to be necessary by actual or projected doses. PSC radiological monitoring teams are deployed. The station provides status updates to offsite authorities, including meteorological information, offsite radiological monitoring data (prior to

state monitoring team deployment), and projected doses (calculated on foreseeable plant conditions and projected long-term releases). State monitoring teams are dispatched to assess offsite consequences. If projected exposures approach those noted in the EPA PAGs, state/local authorities institute appropriate actions for public protection. A decision on termination, escalation, or recommended reduction in emergency class will be communicated to governmental authorities.

Table 4.1-3 outlines initiating events and response actions for the SITE AREA EMERGENCY class of incident.

4.1.4 GENERAL EMERGENCY

A GENERAL EMERGENCY consists of events which are in process, or have occurred, that involve actual or imminent substantial core degradation, with the potential for loss of Prestressed Concrete Reactor Vessel (PCRV) integrity. Exposure levels beyond the site boundary may exceed EPA Protective Action Guideline levels. There is prompt notification of appropriate state and local authorities of the GENERAL EMERGENCY status. The purpose of declaration of a GENERAL EMERGENCY is to rapidly initiate predetermined protective actions for the public.

During a GENERAL EMERGENCY, resources and personnel are augmented by the activation of emergency centers. Radiological monitoring teams are dispatched. The station provides plant status updates, as well as data on radioactive releases, meteorological information, radiological field measurements, radiological dose projections, and affected downwind zones to offsite authorities.

A decision on termination or reduction of the GENERAL EMERGENCY class will be communicated to governmental authorities after thorough review of the emergency situation.

Table 4.1-4 outlines initiating events and response actions for the GENERAL EMERGENCY class of incident.

4.2 Offsite Accident Assessment

The station has the responsibility to perform a preliminary assessment of the offsite consequences of an

incident. This preliminary assessment includes: determination of the radiation exposure rate by precalculated analytical methods (see Section 6.2) and/or field surveys; estimation of projected total dose levels for different downwind sectors and distances; and, classification of incident consequences, per Tables 4.1-1 through 4.1-4. Based upon the results of these assessments, notification of state/local authorities of the appropriate incident classification is then made.

After arrival at the Forward Command Post (FCP), the Colorado Department of Health (CDH) assumes responsibility for confirmatory (in-field) and continued offsite accident assessment, and FSV Field Monitoring Teams are recalled to the Personnel Control Center). This responsibility is carried out by dispatching CDH field monitoring teams and by analysis of data provided by PSC. Long-term offsite assessments (secondary incident assessments) are the responsiblity of the CDH staff as noted in the State RERP.

4.3 Spectrum of Possible Accidents and Initiating Events

The accidents which might occur at the Fort St. Vrain Nuclear Generating Station have been analyzed in Section 14 of the FSV FSAR for their severity of consequence and probability of occurrence. These accidents reflect the design characteristics of a High Temperature Gas-cooled Reactor (HTGR) and are addressed in Tables 4.1-1 through 4.1-4 from the viewpoint of initiating events, alarm actuation and/or associated readings, and consequent incident classification.

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. Any unplanned radiological release to the Reactor Bldg. or its ventilation system.	Alarms on: 1. RT 7312 CAM(s) RT 7324-1; RT 4801; RT 7324-2; RT 4802; RT 7325-1; RT 4803; RT 7325-2; RT 73437-1,2	Inform State and local authorities of nature of unusual condition within 2 hours of occurrence, but in any event, within 15 minutes of declaration.	Provide assistance if requested (fire, security, medical, etc).
2. Any liquid waste release resulting in offsite effluent in excess of Technical Specification Limits.	2. a) RT 6212 or 6213 alarm with inability to prevent discharge offsite. b) As determined by station personnel.	Augment on-shift resources Assess and respond.	Continue offsite notification as necessitated by situation.
3. Indication of minor fuel damage detected in primary coolant	3. a) 25% increase in circulating activity from previous equilibrium conditions at the same power level. RT 9301 b) SR 5.2.11 results.	Terminate with verbal summary to offsite authorities followed by written summary within 24 hours. or Escalate to a more severe class.	Standby until verbal termination. or Escalate to a more severe class.

NOTE 1: Assumption implicit throughout Tables 4.1-1 - 4.1-4 that alarms are confirmed to be valid by supporting observations or analysis as specified by abnormal operating or annunciator response procedures.

NOTE 2: Due to instrument characteristics, alarm setpoints for radiation monitors listed in Tables 4.1-1 - 4.1-4 vary with time. Instruments and alarm setpoints are checked/calibrated quarterly. Consult Master Setpoint List for actual settings.

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
4. Serious fire at the plant lasting more than 10 minutes, which could lead to substantial degradation of plant safety systems, or which could result in the release of radiological or toxic materials.	4. a) any of various alarms on Fire Control Alarm Panel; b) Fire Pump 1A auto start; c) verbal reports.	Note: Per agreement with the State of Colorado, PSC will notify the State prior to public information releases concerning FSV.	
5. Abnormal coolant temperatures or core region temperature rises to the extent requiring shutdown in accordance with Technical Specifications.	5. Violations of LCO 4.1.7 or 4.1.9 for region outlet mismatch, or region Delta-T respectively, to the extent that shutdown per Station Technical Specifications is required (SOP 12-04).		
6. Natural phenomenon that may be experienced or threatened that represent risks beyond normal levels: a) earthquake b) floods c) tornadoes d) extremely high winds	6. a) Seismic Recorder Operate; b)-d) as visually observed by, or reported to, station personnel.		

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
7. Unusual Hazards Experienced: a) Aircraft crash on site or near the site that is subject to public concern because of possible detrimental effect on the plant; b) Onsite explosions or near onsite explosions that may be subject to public concern because of possible detrimental effect on the plant; or, c) Onsite or near on-site plant related accidents that could result in the release of toxic material or spills of flammable materials.	7. As visually observed by, or reported to, station personnel		
8. Any serious radiological exposure of plant personnel or the transportation to offsite facilities of contaminated personnel who may have been injured.	8. As occurring.		

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
9. Accidents within the state that may involve plant spent fuel shipments or plant radioactive waste shipments.	9. As occurring or reported by shipper.		
10. Loss of Engineered Safety Feature or Fire Protection System to the extent requiring shutdown in accordance with station Technical Specifications.	10. Shutdown required in accordance with applicable LCOs: a) Engineered Safeguards 1) Plant Ventilation - LCO 4.5.1 2) Steam/Water Dump System-LCO 4.3.3 3) PCRV penetration flow restriction devices - LCO 4.2.7 and LCO 4.2.9 4) PCRV penetration secondary closures - LCO 4.2.7 and LCO 4.2.9 5) PCRV Safety Valves - LCO 4.2.8 SL 3.2 LSSS 3.3.2.c b) Fire Protection System - LCO 4.2.6 and, LCO 4.10.1 - LCO 4.10.5		

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPOND!NG ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Indication or alarms on radiological effluent monitors not functional.	11. Data Logger Alarm/ Alarm Summary indication of non-operational alarm or indication on: a) RT-7324-1,2 and RT 4803; or b) RT-7325-1,2, RT 4802, and RT 73437-1; or c) RT 73437-2 and RT 4801; or d) RT 6212 and RT 6213 NOTE: Use ELCO 8.1.1 Technical Specification limits as basis.		

The initiating events for the NOTIFCATION OF UNUSUAL EVENT category are per Public Service Company separate written agreement with the State of Colorado.

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. Rapid, severe fuel particle coating failure.	1. Coolant inventory of a) greater than 2.4 (Ci)(Mev) Beta-Gamma / lb b. circulating I-131 activity equivalent greater than 24Ci c. plate out I-131 greater than 1 x 10 Ci. d. SR 5.2.6 or SR 5.2.11 results.	Inform State and/or local authorities of ALERT status/cause as declared	Provide assistance, if requested (fire, security, medical, etc.)
2. Rapid, gross failure of one steam generator reheat section with loss of offsite power.	2. Loop 1 Hot Reheat Header (HRH) activity high (5mrem/hr); or, Loop 2 HRH activity high (5mrem/hr), accompanied by 230 KV OCB trips and RAT undervoltage/ loss of power alarm.	Augment resources by activating TSC, PCC, and FCP. Assess and respond.	Augment resources by activating FCP and State/local EOCs.
3. Primary coolant pressure decay (to a value greater than 100 psi less than normal pressure, accompanied by area and stack radiation monitor alarms).	3. PAL 9335 PAL 9347 PAL 9359 and area monitor or stack monitor alarm.	Dispatch onsite monitoring teams with associated communications. Provide periodic plant status updates to offsite authorities as conditions warrant (at least every 15 minutes.)	Place key emergency personnel (including monitoring teams and associated communications) on standby status.

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
4. High radiation levels or high airborne contamination which indicates severe degradation in control of radioactive materials. (Increase by factor of 1,000 over normal.) e.g., lifting PCRV relief valve or abnormal release to cooling tower blowdown.	4. RT 7312 CAM(s) alarm RT 6212 RT 6213 RT 93252-12 Area Monitors Alarms with corresponding meter readings on area or process monitors.	Provide meteorological assessments to offsite authorities and, if releases are occurring, dose estimates for actual releases. Terminate by verbal summary to offsite authorities followed by written summary within 8 hours. or Escalate to a more severe class.	Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections if actual releases substantially exceed technical specification limits. Maintain ALERT status until verbal termination. or Escalate to a more severe class.
5. Loss of offsite power and vital onsite AC power for up to 30 minutes.	5. 230 KV OCB trips and RAT undervoltage/loss of power alarm accompanied by 4 Kv bus undervoltage, 480V bus undervoltage, and Diesel Trouble alarms.		
6. Loss of all vital DC power for up to 30 minutes.	6. DC bus 1 less than 10 volts, and DC bus 2 less than 10 volts.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
7. Loss of primary coolant forced circulation for between 2 and 5 hours.*	7. All He flow indicators read zero.		
8. Loss of secondary coolant functions needed for removing residual heat.	8. All secondary coolant flow indicators read zero.		
9. Loss of normal ability to place the reactor in a subcritical condition by scram of the control rods.	9. a) Indication of insufficient rods inserted; or, b) neutron count rate not decreasing.		
10. Serious fire which could lead to substantial degradation of plant safety systems.	10.a) any of various alarms on Fire Control Alarm Panel; b) Fire Pump 1A auto start; or, c) verbal reports.		

* These times are from LOFC at 100% power. Times may be correspondingly longer for lower power levels (LCO 4.2.18).

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Radiological effluents exceed 10 times technical specification instantaneous limits.	11. RT 7324-1 indicating a) greater than or equal to 2.5 x 10 micro Ci/cc mixed noble gas b) RT 7324-2 indicating greater than or equal to 2.5 x 10 micro Ci/cc mixed noble gas c) RT 7325-1 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131 d) RT 7325-2 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131 e) RT 73437-1 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131 f) RT 4801 indicating greater than or equal to 7.0 x 10 micro Ci/cc - I-131		
12. Ongoing security compromise.	12.a) As observed or reported.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
13. Severe natural phenomenon being experienced or projected, such as: a) earthquake exceeding Operating Basis Earthquake levels; b) flood near design level; or, c) tornado striking facility.	13.a) Seismic recorder operate (greater than or equal to .05g); or b) As Reported c) As Reported.		
14. Other hazards being experienced or projected such as: a) aircraft crash on facility; b) missile impact on facility; c) explosion damage affecting plant operation; or, d) entry into facility environs of toxic or flammable gas. (Some effect on facility experienced or anticipated.)	14. As reported by, or or to, station personnel.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
15. Evacuation of control room anticipated or required, with control of shutdown systems established from local stations. (Control room integrity breached.)	15. As deemed necessary by Shift Supervisor		
16. All alarms (annunciators) lost for more than 15 minutes and reactor is not shutdown; or, plant transient experienced while all alarms lost. (Parameter indication still functional.)	16. Control room observation.		
17. Other plant conditions warranting precautionary activation of the PCC, TSC, and FCP.	17. As deemed necessary by Shift Supervisor.		

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. Loss of primary coolant forced circulation for over 5 hr from 100% power. (Lower power levels preceeding LOFC extends time available before core damage is incurred. See LCO 4.2.18.)	1. All He flow indicators read zero.	Inform state and/or local authorities of SITE AREA EMERGENCY status/cause as declared.	Provide any assistance requested.
		Augment resources by activating TSC, PCC, ECP, and FCP.	Initiate immediate public notification of SITE AREA EMERGENCY status; provide periodic public updates.
2. Non-isolable primary coolant leakage through a steam generator reheat section.	2. Loop 1 or 2 HRH activity alarm-high with Shift Supervisor determination that leakage is non-isolable.	Assess and respond.	
		Dispatch radiological monitoring teams with communications equipment.	Augment resources by activating FCP and EOCs.

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
3. PCRV relief valve remains open.	3. RT 93252-12 alarm and rapidly decreasing Reactor pressure.	Provide a dedicated individual for plant status updates to offsite authorities and and periodic press briefings.	Dispatch key emergency personnel, including communications equipment.
4. Determination of inability to restore onsite AC power.	4. 230 KV OCB trips and RAT undervoltage/loss of power alarm accompanied by 4Kv bus undervoltage, 480V bus undervoltage and Diesel Trouble alarms; Standby Diesel Fail to Start.	Make senior technical and management staff available for periodic press briefings.	Alert other personnel to standby status (e.g., those needed for traffic control or evaucation) and dispatch personnel to near-site duty stations.
5. Loss of functions needed for plant hot shutdown.	5. Inability to insert sufficient control rods accompanied by failure of emergency reserve shutdown system - resulting in inability to maintain -.01 delta Rho at 220 degrees F.	Provide meteorological data and dose estimates (for actual releases) to offsite authorities via a a dedicated individual.	Provide offsite monitoring results to PSC and jointly assess them.
6. Major damage to spent fuel due to severe shipping cask damage resulting in release of radioactivity to plant environs.	6. a) Visual observation b) area radiation monitor alarms		Continuously assess information from PSC and offsite monitoring teams with regard to initiating/modifying public protective actions.

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
7. Fire adversely affecting safety systems.	7. a) Fire pump 1A start; b) Fire Control Alarm Panel c) Various alarms according to affected safety system d) Shift Supervisor determines fire beyond capability of station staff.	Provide release and dose projections based on available plant condition information and forseeable contingencies.	Evaluate data and initiate ingestion pathway protective actions as aproppriate.
8. a) Effluent monitors detect levels corresponding to greater than 50 mrem/hr W.B. for 1/2 hr, or greater than 500 mrem/hr W.B. for two minutes, at the site boundary under adverse meteorology (or levels 5 times the above for thyroid dose rate).	8. Stack monitor alarm with corresponding stack concentration indications on: a) RT73437-1, RT4802, & RT7325-1,2 greater than or equal to 6.7 x 10 micro Ci/cc I-131 b) RT 7324 -1,2 and RT 4803 - greater than or equal to 6.6 x 10 micro Ci/cc mixed noble gases	Terminate (or recommend reduction of) emergency class verbally at FCP followed by written summary within 8 hours. or Escalate to GENERAL EMERGENCY	Provide press briefings. Maintain SITE EMERGENCY status until termination or reduction of emergency class. or Escalate to GENERAL EMERGENCY.
b) These dose rates are projected based on other plant parameters or are measured in the environs.			

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
9. Imminent loss of physical control of the plant due to security breach. (Response detailed in station seculrty plan.)	9. Situation evident.		
10. Severe natural phenomenon being experienced or projected (with plant not in cold shutdown), such as:	10.		
a) earthquake greater than Safe Shutdown Earthquake	a) Seismic Recorder Operate alarm with indication of ground motion greater than 0.10g horizontal or greater than 0.067g vertical.		
b) flood greater than design levels.	b) As reported or observed.		
c) winds in excess of design levels	c) average wind velocity greater than 90 mph or 10 second gusts exceeding 99 mph.		
d) tornado in excess of design levels	d) horizontal wind velocity greater than 202 mph.		

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Other hazards being experienced or projected with reactor not shutdown, such as; a) aircraft crash affecting vital structures; b) severe damage to safe shutdown equipment; c) entry of toxic/flammable gas into vital areas.	11. As observed by or reported to, station personnel.		
12. Reactor building louvers open due to building being overpressurized by primary coolant. (DBA #2)	12. a) Louvers Open alarm (3" water) b) Reactor building radiation alarms.		
13. Evacuation of control room accompanied by inability to locally control shutdown systems within 15 minutes.	13. Remote shutdown instrumentation indications (panel 1-49)		
14. Other plant conditions warranting activation of FCP/ EOCs, monitoring teams, and precautionary public notification.	14. As determined by Shift Supervisor.		

TABLE 4.1-4

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

GENERAL EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. a) Effluent monitors detect levels corresponding to 1rem/hr W.B. (or 5 rem/hr thyroid) at the exclusion area boundary under actual meteorological conditions.	1. Stack monitor RT-7324-1,2 alarm, or corresponding dose rates determined with E-500 or Cutie Pie detector per procedure RPP-56 and associated graphs.	Inform State and/or local authorities of GENERAL EMERGENCY status/ cause within 15 min. of detection.	Provide assistance.
		Augment resources by activating TSC, PCC, ECP, and FCP.	Initiate immediate public notification of GENERAL EMERGENCY status and provide periodic public updates.
b) These dose rates are projected based on other plant parameters or are measured in the environs.		Assess and respond.	
		Dispatch radiological monitoring teams with communications equipment.	Consider/implement protective actions based on current assessment.
		Provide a dedicated individual for plant status updates to offsite authorities and periodic press breifings.	Augment resources by activating FCP and EOCs.
2. Loss of physical control of the facility (due to security breach)	2. Situation evident.		Dispatch key emergency personnel, including monitoring teams, with communications equipment.
3. Other plant conditions exist that make release of large amounts of radioactivity possible.	3. As determined by Shift Supervisor.	Make senior technical and management staff available for periodic consultation with NRC.	Dispatch other emergency personnel to duty stations within a 5-mile radius and alert others to standby status.
		Provide meteorological data and dose estimates (for actual releases) to offsite authorities via a dedicated individual.	

TABLE 4.1-4

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

GENERAL EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
		Provide release and dose projections based upon information and foreseeable contingencies.	Provide offsite monitoring results to PSC and jointly assess these.
		Terminate (or recommend reduction of) emergency class by briefing authorities at the FCP, followed by written summary within 8 hours.	Continuously assess information from PSC and offsite monitoring teams with regard to initiating or modifying public protective actions.
			Evaluate data and initiate ingestion pathway protective actions as appropriate.
			Provide press briefings.
			Maintain GENERAL EMERGENCY status until termination or reduction of emergency class.

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 5

ISSUANCE AUTHORIZED BY	8-2-84 Dan Warembourg	
PORC REVIEW	PORC 582 AUG 14 1984	EFFECTIVE DATE 8-21-84

5.0 Organizational Control of Emergencies

5.1 The Normal Station Organization is shown, in chart form, on Figure 5.1-1 and is detailed in station Operating Technical Specifications. A shift of 8 operating and 9 security personnel, under the direction of a Shift Supervisor, is on duty at all times (Figure 5.1-2). Duties and responsibilities of operating personnel are set forth in station administrative procedures.

5.2 The Onsite Emergency Organization for the four categories of incident classification is depicted on Figures 5.2-1 and 5.2-2. In the event of an emergency, the on-duty Shift Supervisor has the responsiblity to initiate immediate actions to limit the consequences of the emergency and to return the plant to a safe and stable condition. He is, further, assigned the authority for direction of site emergency operations (Emergency Coordinator) and retains this authority until relieved by the Control Room Director or Technical Support Center Director. In this interim capacity, he is responsible for: classification of the emergency event; initial notification of appropriate governmental emergency response agencies; and, initiation of protective actions for station personnel. He may confer with FSV and PSC management for advice or concurrence with initial accident classification, if desired. (In the event the Shift Supervisor is unable to perform as Emergency Coordinator, the most senior Reactor Operator assumes that role.)

The Emergency Coordinator is responsible for initially classifying the incident, recommending protective actions, initiating corresponding emergency actions, notifying offsite authorities of the incident, and establishing communications with the TSC. Responsibility for the decision for notification and protective action recommendation may not be delegated.

Further responsibilities include: diagnosing the accident condition and estimating radiological exposures based on radioactive material releases and prevailing

meteorological conditions. To ensure this function is covered at all times, the Shift Supervisor is an authorized Emergency Coordinator. The on-duty Shift Supervisor continues to function as the Emergency Coordinator at least until the emergency organization is activated.

The Fort St. Vrain Nuclear Generating Station emergency organization operates from three onsite emergency centers - Control Room (CR), Technical Support Center (TSC), and Personnel Control Center (PCC). It is supported by three offsite emergency centers - Forward Command Post (FCP), State Emergency Operations Center (State EOC), and Executive Command Post (ECP). The station emergency organization will be manned and operational within 90 minutes after classification of an ALERT or higher level incident.

Onsite and offsite emergency organization interrelationships are shown in schematic form in Figure 5.2-3. PSC's role in the offsite (local and state) emergency control centers is diagrammed in Figure 5.2-4 (FCP) and Figure 5.2-5 (State EOC). Augmentation in the form of headquarters support is shown in Figure 5.2-6 (ECP) and is discussed in Section 5.3. The function, responsiblities, and staffing of the offsite emergency organization is also described in Section 5.3 and is shown in Figure 5.2-7. Post-emergency plant recovery plans and organization are described in Section 9.0. Emergency personnel assignments are shown by function. For clarity, normal job titles are also indicated. Qualification requirements (per the normal titles) are given in corporate job descriptions.

5.2.1 Direction and Coordination

Initial direction and coordination of onsite emergency operations will be the responsibility of the Shift Supervisor, as shown in Figure 5.2-1 and discussed in Section 5.2. This responsiblity will remain with the Shift Supervisor until such time as the emergency organization for an ALERT or higher level accident is activated (Figure 5.2-2).

During an ALERT, or higher level accident, overall command of PSC emergency operations will be exercised by the Corporate Emergency Director (Vice President of Production) at the FCP. He will provide direction to, and coordination for, the TSC Director (Manager, Nuclear Production) and the Manager, Nuclear Engineering (assigned to the State EOC). He will coordinate additional headquarters support via the ECP.

a. The Corporate Emergency Director (CED) - (Vice President of Production) is in command of PSC emergency operations and is responsible for direction and coordination of:

1. PSC onsite and offsite emergency functions;

2. Interface between PSC and local/state/federal emergency response activities;

3. Transmission of plant status updates and radiological release data to FCP and State EOC emergency response and media center personnel;

4. Notification of state and local agencies concerning recommended protective actions;

5. Provision of administrative, technical, and logistic support to station emergency operations; and,

6. Continuity of emergency organization resources.

In the event the Vice President of Production is not available, the Vice President of Engineering and Planning will assume command of PSC emergency operations.

b. The TSC Director - (Manager, Nuclear Production) is in command of onsite emergency operations. The TSC Director is authorized to initiate emergency actions, including declaring a particular class of emergency and providing protective action recommendations to offsite authorities. (The alternate TSC Director is the Station Manager).

Duties and responsibilities of the TSC Director include direction and coordination of:

1. The TSC staff, which is responsible for collecting and analyzing the technical information necessary for assessment of plant operational aspects, providing technical counsel in support of the Control Room (CR), and assessment of radiological release consequences.

2. The CR Director (Superintendent of Operations), who is responsible for control of plant operations, assessing plant operational aspects, and implementing recommended corrective actions. (The alternate for the CR Director is the Shift Supervisor, Training).

3. The PCC Director (Scheduling/Stores Coordinator), who is responsible for continued personnel accountability, assembling personnel for repair/damage control or radiological survey teams, search and rescue teams, reserve operating staff, and establishing radiological control areas as directed. (The alternate for the PCC Director is the Training Supervisor).

5.2.2 Plant Staff Emergency Assignments

Three principal onsite groups comprise the station emergency organization. Each group operates under the supervision of a director at an emergency center (TSC, PCC, and CR) as discussed in Section 5.2.1. Each center Director is responsible for center communications and for assigning an individual to keep a record of important events, decisions, and actions. Plant staff emergency assignments and functions for these centers are summarized in the following paragraphs. Primary and alternate leads are shown for continuous 24-hour operation.

a. Technical Support Center

1. Plant Condition Assessment

Diagnose plant conditions, provide recommended corrective actions, and coordinate systems analysis and procedures. (Primary and Alternate: Off-duty Shift Supervisors)

2. Engineering & Technical Analysis

Direct core physics analysis, electrical and mechanical engineering, licensing, procedures development, and system analysis. Maintain liaison with offsite technical support such as NSSS, AE, EPRI. (Primary: Technical Services Engineering Supervisor; Alternate: Senior Plant Engineer)

3. Health Physics/Radiological Monitoring

Assess onsite radiological doses, direct radiological/radiochemical surveys and decontamination actions. (Primary: Health Physics Supervisor; Alternate: Health Physicist)

4. Radiological Assessment

Assess offsite radiological doses and consequences, determine potentially affected offsite areas, and confer with the Technical Support Center Director and the Radiological Assessment Coordinator at the FCP regarding plant status, offsite dose computations, and protective actions (Primary: Senior Plant Engineer; Alternate: Technical Services Engineer)

5. Emergency Maintenance

Determine and recommend repair/damage control and corrective actions for plant mechanical and electrical systems. (Primary: Superintendent of Maintenance; Alternate: Maintenance Supervisor - Electrical)

6. Emergency I&C Support

Determine alternative I&C capabilities or configurations; repair/install/modify instrument and control equipment. (Primary: Superintendent of Nuclear Betterment Engineering; Alternate: Results Engineering Supervisor)

7. Administrative & Logistics Support

Provide needed technical documents, communications and analytical equipment, clerical assistance, and food, transportation/housing support. (Primary: Nuclear Documents Supervisor; Alternate: Nuclear Documents Specialist)

8. Computer Services

Provide technical support in the areas of computer hardware and software development/modification. Provide assistance to TSC Radiological Assessment individual as needed. (Primary: Senior Analyst; Alternate: Senior Programmer)

b. Personnel Control Center

1. Personnel Accountability

Maintain continued personnel accountability, including personnel contamination surveys, control areas, and exposure records. Handle search and rescue efforts, first aid, medical transportation, and personnel decontamination. (Health Physics Technicians, Scheduling/QC staff, and other personnel)

2. Operating Staff Support

Relieve and support plant operations personnel as necessary in operating plant equipment, processing effluents, and performing emergency maneuvers. (Off-duty operations personnel)

3. Maintenance, Repair & Damage Control

Perform mechanical and electrical repair/damage control, emergency maintenance, and temporary modifications. (Maintenance staff and I&C Technicians, augmented as necessary by PSC personnel from offsite locations)

4. Hazards Control

Extinguish fires, purge hazardous gases, combat natural emergencies. (Fire Brigade personnel) During the day shift, the Fire Brigade receives initial direction from the CR Director and is subsequently assigned to the PCC.

5. Security

Coordinate site access security with the Security Supervisor. The Lead Security Officer is the alternate for the Security Supervisor.

c. Control Room

1. Plant Control

Direct plant operation to terminate the incident, regain plant control, and minimize accident consequences. See Section 5.2 for further details. (Shift Supervisor)

2. Plant Operation

Assist the Shift Supervisor in implementing plant corrective actions. (Reactor Operators)

3. Technical Assistance

Provide technical analysis/advice and recommend corrective actions necessary to bring the plant to a safe and stable condition. (Technical Advisor)

5.3 Augmentation of Onsite Emergency Organization

Onsite emergency operations are augmented by headquarters support (corporate resources) dispatched directly to the PCC or to an appropriate onsite location. Agreements have been executed with local and Denver-based service organizations to provide ambulance, firefighting, and medical aid services. Augmentation for detailed core physics analysis, thermal-hydraulic analyses, radiation monitoring, dose assessment, and decontamination/radioactive waste disposal will be provided on a contract basis. Headquarters and service agency augmentation and support are described in the following sections.

5.3.1 PSC Headquarters Support

Provision for direct augmentation to the staffing of onsite emergency functions by non-station personnel may be quickly accomplished. These personnel may be utilized in support roles to supply additional manpower for repair/damage control teams, survey teams, access control, and logistical assistance.

Additional headquarters management, administrative, and technical support requested by the Corporate Emergency Director will be coordinated by the Executive Command Post Director.

The ECP is manned by senior corporate personnel with the authority to activate corporate personnel, facilities, equipment, and financial resources in an emergency situation. The ECP supports PSC personnel stationed at onsite and offsite emergency centers. The ECP is located in Room 620, PSC Headquarters Building, Denver. In the event the ECP cannot utilize this location for any reason, an alternate facility located at the PSC Lookout Center in Golden, Colorado will be activated.

The ECP contains up-to-date copies of station, state, and local government emergency plans, the corporate Emergency Plan, maps of the Fort St. Vrain area and its environs, regional maps, and station layout drawings. Other equipment, facilities and services located within, or immediately adjacent and available to the ECP, include stenographic assistance, reproduction equipment, simultaneous commercial television station monitoring equipment (all VHF channels) and radio-television recording equipment for media announcements.

The ECP will be operational within ninety (90) minutes after classification of an ALERT or higher level accident. The ECP staff includes a Director and four functional Managers. The roles and responsibilities of key members of the ECP staff are described in the following sections.

a. The Director of the ECP - (President & CEO) will assume overall responsiblity for providing the Corporate Emergency Director with the counsel, expertise, and resources available within the PSC organization. He coordinates emergency assistance, provides reentry and recovery support, station and site modifications review by Nuclear Facilities Safety Committee, and supervises the following ECP emergency operations managers. (Alternate: Executive VP & General Counsel)

b. The Manager of Technical Support - (Nuclear Design Manager) will provide the Corporate Emergency Director and onsite emergency operations with technical advice in nuclear, mechanical, civil, and electrical engineering. He provides engineering support, technical experts, and consultants as requested. (Alternate: Nuclear Services Manager)

c. The Manager of Media Relations - (VP of Public Affairs) will coordinate communications between the ECP and the site, the FCP, the State EOC, and federal emergency operations not included in the site communications system. He assists the Director of the ECP and PSC media relations personnel in preparation of press releases, announcements, and interviews. (Alternate: Manager of Public Relations)

d. The Manager of Resources - (VP of Accounting and Corporate Secretary) will coordinate provision of manpower and equipment from within PSC, and from consultants/contractors, to support onsite emergency operations. He provides requested technical and craft manpower; personnel or consultants for engineering/design and construction reviews; temporary housing, office, transportation, and construction equipment; purchasing, financial, legal, and general office support; and, food deliveries and related logistics support to designated emergency operations. (Alternate: VP of Finance & Treasurer)

e. The Manager of Security - (Manager of Claims, Safety, & Security) will coordinate PSC security operations with public law enforcement agencies. He acquires additional security manpower, hardware, and equipment, as requested. (Alternate: Security Coordinator)

5.3.2 Local Services Support

In emergency situations, assistance from outside companies and services may be required. Assistance available from outside companies includes ambulance service to transport injured and/or contaminated personnel, medical treatment, and hospital facilities for station personnel who require such assistance. In addition, a specific agreement has been developed with the Platteville Volunteer Fire Department for onsite fire protection assistance.

Letters of agreement for these services are contained in Section 10, Appendix A. Table 5.3-1 lists these agencies by the type of service provided. The State RERP, to which participating agencies and PSC are signatory, is cited in lieu of letters of agreement for emergency assistance from other local service agencies.

5.3.3 Contract Support

Specialized assistance from contractors may also be required in an emergency situation. Contract support may include nuclear steam supply system (NSSS), architect-engineer, construction, dosimetry and laboratory analysis, and decontamination and rad-waste disposal assistance. Provision has been made for selected contract support firms to provide this assistance, on request. Table 5.3-1 lists these contractors by type of service provided. (Section 10, Appendix A contains Letters of Agreement covering these contracted services).

5.4 Coordination with Participating Government Agencies

The State of Colorado, through the Division of Disaster Emergency Services (DODES), has responsibility for control of offsite actions during a radiological emergency. The concept of operations for discharging this responsibility, together with a discussion of action responsibilities assigned to various state/local governmental agencies is contained in the State RERP. Since participating agencies and PSC are Plan signatories, the State RERP is cited in Section 10, Appendix A in lieu of separate letters of agreement.

Governmental entities having jurisdiction within the 5 mile plume exposure EPZ are the State of Colorado; Weld County; and, the towns of Platteville, Johnstown, and Gilcrest.

A brief summary of the involvement and responsibilities of the major governmental agencies is shown in tabular form in Table 5.4.1. For a complete discussion of authority, assigned responsibilities, capabilities, and activation and communication arrangements, refer to the State RERP.

5.4.1 Station personnel coordinate onsite emergency operations with state/local government offsite emergency centers (Forward Command Post and State Emergency Operations Center). The role and function of PSC emergency personnel stationed at the FCP and the State EOC are described in the following sections.

a. The Forward Command Post (FCP) functions as the control and coordination center for on-scene state/local/federal emergency response forces. The FCP communicates with the State EOC (the primary point through which the Governor exercises overall control and coordination of offsite emergency operations) and with the Weld County EOC (Weld County Communications Center) for effective coordination of county forces.

The FCP is located in the PSC Garage at Ft. Lupton, approximately 12 miles south-southeast of the Station. Provision is made adjacent to the FCP for a facility to accomodate the needs of the media (State RERP, Annex S). A senior representative of DODES is responsible for control and coordination of FCP emergency response activities.

Staffing of the FCP, as shown on Figure 5.2-4, consists of authorized representatives of:

1. State Division of Disaster Emergency Services

2. Weld County Sheriff's Office

3. Colorado State Patrol

4. Colorado Department of Health

Radiological monitoring, and health units, as required.

Public information representative.

5. Public Service Company of Colorado

Vice President of Production
Station Technical Liaison
Radiological Assessment Coordinator
Public Relations Representative
Nuclear Documents Staff

6. Others, as notified/required.

The Vice President of Production is in overall command of PSC emergency operations and is the main link between the station and governmental authorities. A PSC technical liaison representative (Primary: Technical/Administrative Services Manager; Alternate: Quality Assurance Manager) from the station, the Radiological Assessment Coordinator (Radiation Protection Manager), one public relations representative from PSC corporate headquarters, and members of the station clerical staff are also assigned to the FCP. Communications between the FCP, the site Technical Support Center, the State Emergency Operations Center, and the PSC Executive Command Post will be accomplished through commercial telephone service and/or radio.

The responsibilities of PSC personnel assigned to the FCP include:

- Providing assistance and substantiated data on site emergency status and conditions;
- Coordinating company emergency response actions with those of state/local/federal agencies;
- Coordinating radiological assessment activities between PSC and those of state/local/federal agencies;
- Providing assistance to the FCP Public Information Coordination Team (PICT) in the preparation of news and related media releases, and control of rumours in accordance with the PSC RERP Public Information Plan; and,

- Maintaining communications flow between PSC personnel stationed at onsite and offsite emergency centers.

b. The State Emergency Operations Center (State EOC) is the primary point through which the Governor, or his authorized designee, exercises overall control and coordination of emergency response operations through the Colorado Division of Disaster Emergency Services (DODES).

The State EOC is located in DODES headquarters at Camp George West in Golden, Colorado, approximately 40 miles southwest of the Fort St. Vrain Nuclear Generating Station. Provision is made at Camp George West for a facility to accomodate the needs of the media (State RERP, Annex S).

Staffing of the State EOC, as shown on Figure 5.2-5, consists of authorized representatives of:

1. Office of the Governor
2. Division of Disaster Emergency Services
3. Colorado Department of Health
4. Colorado State Patrol
5. Colorado National Guard
6. Federal Emergency Management Agency
7. Public Service Company of Colorado
8. Others, as notified/required

PSC staffing at the State EOC includes the Vice President of Governmental Affairs or the Manager of Nuclear Engineering, the Manager of Corporate Communications or Media Relations Director, technical assistance personnel, a radiation specialist, and supporting clerical personnel.

The responsbilities of PSC personnel assigned to the State EOC include:

- Providing assistance and substantiated data regarding site emergency status and conditions to local/state/federal emergency response agencies assigned to the State EOC;
- Coordinating company emergency response activities with those of state/local/federal agencies; and,
- Providing up-to-date site information to the Public Information Coordination Team (PICT) Chief (Governor's Office representative) and assisting the PICT in the preparation of mutually acceptable news releases, fact sheets, rumor control in accordance with the PSC RERP Public Information Plan, and background material media releases.

5.4.2 In addition to extensive coordination with state/local governmental entities, technical assistance from certain federal agencies in the area of communications, radiological monitoring and laboratory analysis, transportation, weather forecasts, and disaster relief may be required in an emergency situation. The State of Colorado, through DODES, will officially request federal assistance. PSC will, therefore, channel contacts with federal agencies (except NRC) through DODES. The following agencies will be notified/requested to provide assistance, as necessary:

a. The Nuclear Regulatory Commission, Office of Inspection and Enforcement, Region IV, and the NRC Incident Response Center Bethesda, MD.

b. The Department of Energy (DOE) - Radiological Assistance Teams (RAT), Idaho Falls, Idaho and Rocky Flats, Colorado; Aerial Monitoring System (AMS), Las Vegas, Nevada. DOE will activate the Interagency Radiological Assistance Plan (IRAP) as necessary.

c. Federal Emergency Management Agency (FEMA), Region VIII, Denver, Colorado.

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FIGURE 5.1-1

NORMAL STATION ORGANIZATION
FORT ST. VRAIN NUCLEAR GENERATING STATION

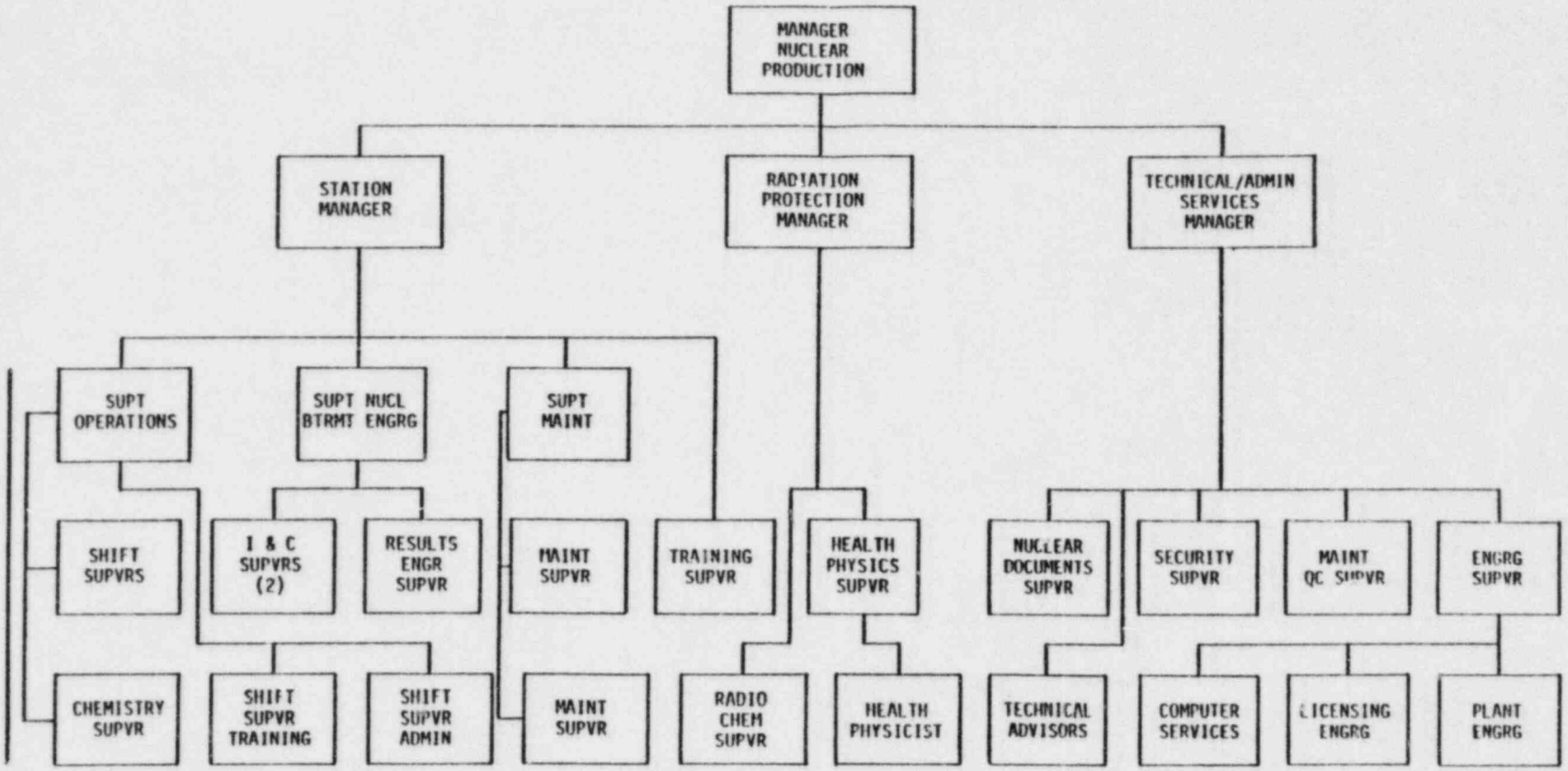
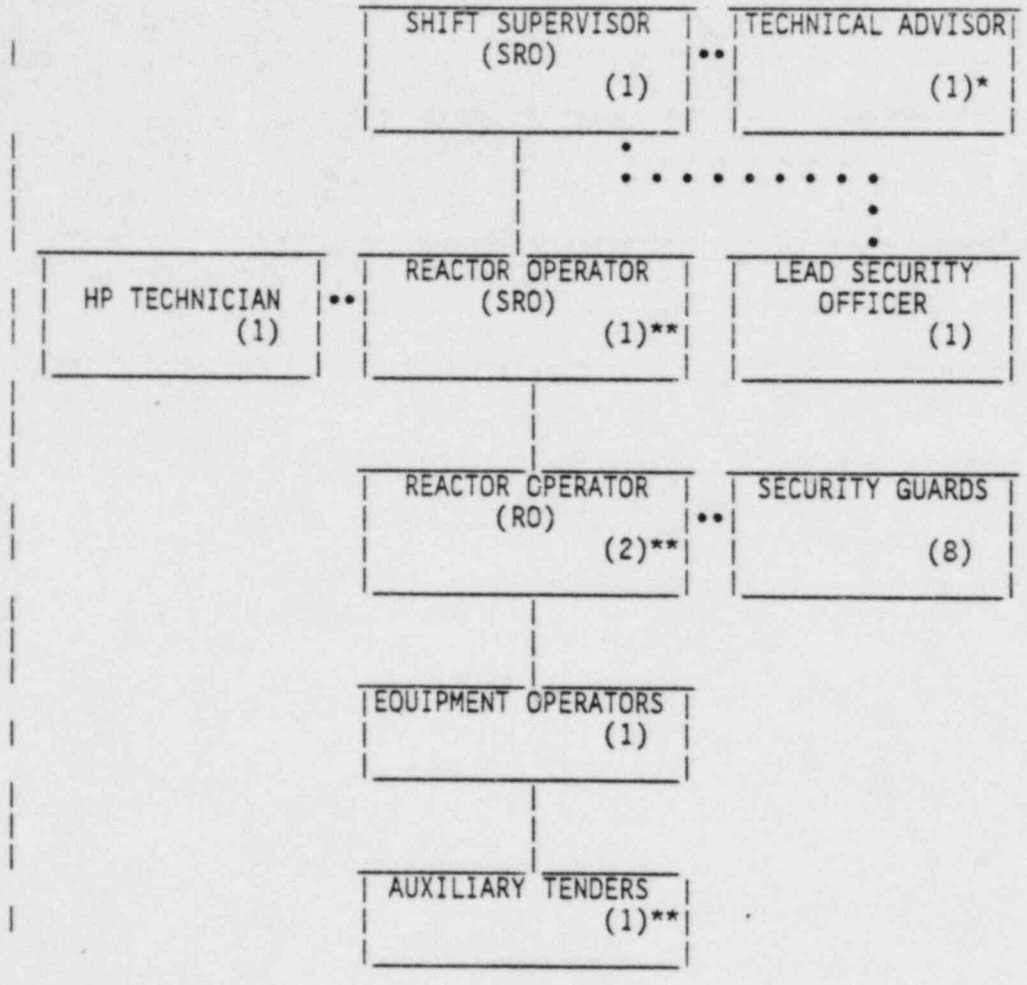


Figure 5.1-2

NORMAL SHIFT ORGANIZATION

Fort St. Vrain Nuclear Generating Station



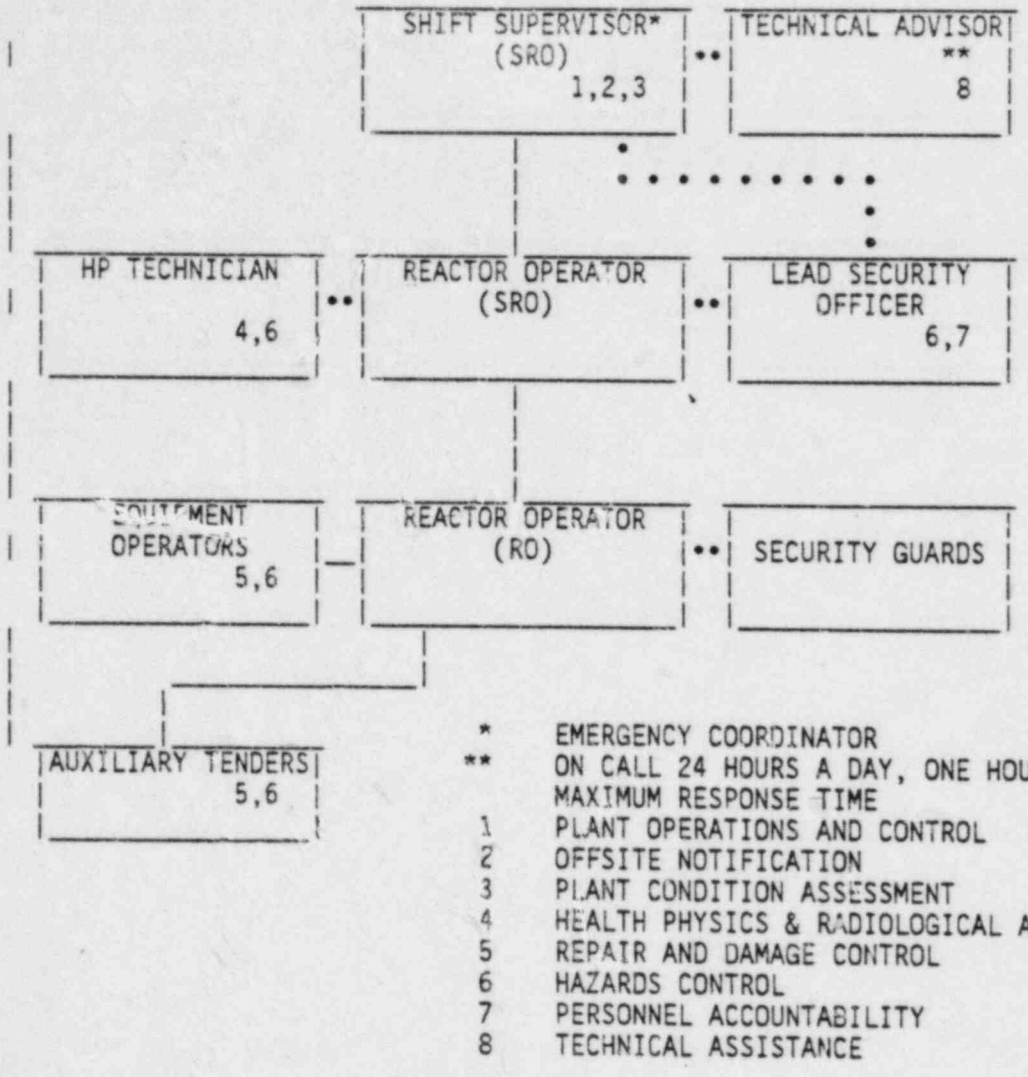
NOTES:

SRO	SENIOR REACTOR OPERATOR.
RO	REACTOR OPERATOR.
HP	HEALTH PHYSICS TECHNICIAN
*	TECHNICAL ADVISOR IS ON CALL 24 HOURS PER DAY AND WILL REPORT TO THE CONTROL ROOM WITHIN 1 HOUR.
**	DURING HOT, COLD, OR REFUELING SHUTDOWN, ONLY ONE RO IS REQUIRED TO BE ON DUTY. AN INDIVIDUAL WITH AN SRO LICENSE OTHER THAN THE ON-DUTY SHIFT SUPERVISOR IS NOT REQUIRED, NOR IS AN AUXILIARY TENDER.
--------	LINE OF AUTHORITY
••••••••	COMMUNICATION

Figure 5.2-1

EMERGENCY ORGANIZATION
(NOTIFICATION OF UNUSUAL EVENT)

Fort St. Vrain Nuclear Generating Station



* EMERGENCY COORDINATOR

** ON CALL 24 HOURS A DAY, ONE HOUR MAXIMUM RESPONSE TIME

1 PLANT OPERATIONS AND CONTROL
2 OFFSITE NOTIFICATION
3 PLANT CONDITION ASSESSMENT
4 HEALTH PHYSICS & RADIOLOGICAL ASSESSMENT
5 REPAIR AND DAMAGE CONTROL
6 HAZARDS CONTROL
7 PERSONNEL ACCOUNTABILITY
8 TECHNICAL ASSISTANCE

FIGURE 5.2-2

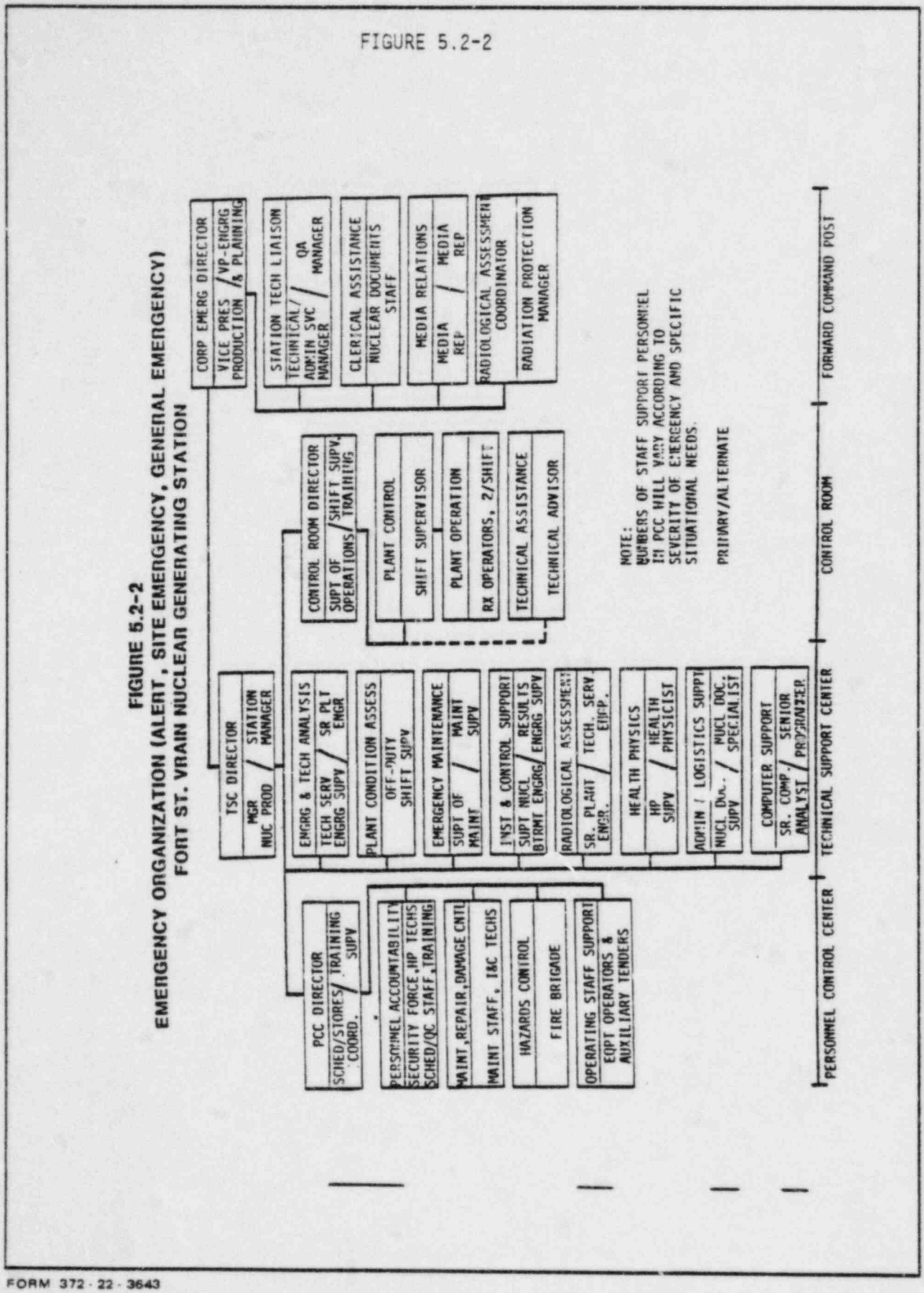


FIGURE 5.2-2
EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY)
FORT ST. VRAIN NUCLEAR GENERATING STATION
CORP EMERG DIRECTOR
VICE PRES PRODUCTION / VP-ENGRG & PLANNING
STATION TECH LIAISON
TECHNICAL/ ADMIN SVC MANAGER / QA MANAGER
CLERICAL ASSISTANCE
NUCLEAR DOCUMENTS STAFF
MEDIA RELATIONS
MEDIA REP / MEDIA REP
RADIOLOGICAL ASSESSMENT COORDINATOR
RADIATION PROTECTION MANAGER
TSC DIRECTOR
MGR NUC PROD / STATION MANAGER
CONTROL ROOM DIRECTOR
SUPT OF OPERATIONS / SHIFT SUPV, TRAINING
PLANT CONTROL
SHIFT SUPERVISOR
PLANT OPERATION
RX OPERATORS, 2/SHIFT
TECHNICAL ASSISTANCE
TECHNICAL ADVISOR
ENGRG & TECH ANALYSIS
TECH SERV ENGRG SUPV / SR PLT ENGR
PLANT CONDITION ASSESS
OFF-DUTY SHIFT SUPV
EMERGENCY MAINTENANCE
SUPT OF MAINT / MAINT SUPV
INVST & CONTROL SUPPORT
SUPT NUCL BTRMT ENGRG / RESULTS ENGRG SUPV
RADIOLOGICAL ASSESSMENT
SR. PLANT ENGR. / TECH. SERV ENGR.
HEALTH PHYSICS
HP SUPV / HEALTH PHYSICIST
ADMIN / LOGISTICS SUPPT
NUCL DVN. SUPV / NUCL DOC. SPECIALIST
COMPUTER SUPPORT
SR. COMP ANALYST / SENIOR PROGRAMMER
PCC DIRECTOR
SCHED/STORES COORD. / TRAINING SUPV
PERSONNEL ACCOUNTABILITY
SECURITY FORCE, HP TECHS
SCHED/QC STAFF, TRAINING
MAINT, REPAIR, DAMAGE CNTL
MAINT STAFF, I&C TECHS
HAZARDS CONTROL
FIRE BRIGADE
OPERATING STAFF SUPPORT
EQPT OPERATORS & AUXILIARY TENDERS
NOTE:
NUMBERS OF STAFF SUPPORT PERSONNEL IN PCC WILL VARY ACCORDING TO SEVERITY OF EMERGENCY AND SPECIFIC SITUATIONAL NEEDS.
PRIMARY/ALTERNATE
PERSONNEL CONTROL CENTER
TECHNICAL SUPPORT CENTER
CONTROL ROOM
FORWARD COMMAND POST

Figure 5.2-3

ONSITE-OFFSITE EMERGENCY ORGANIZATION

Fort St. Vrain Nuclear Generating Station

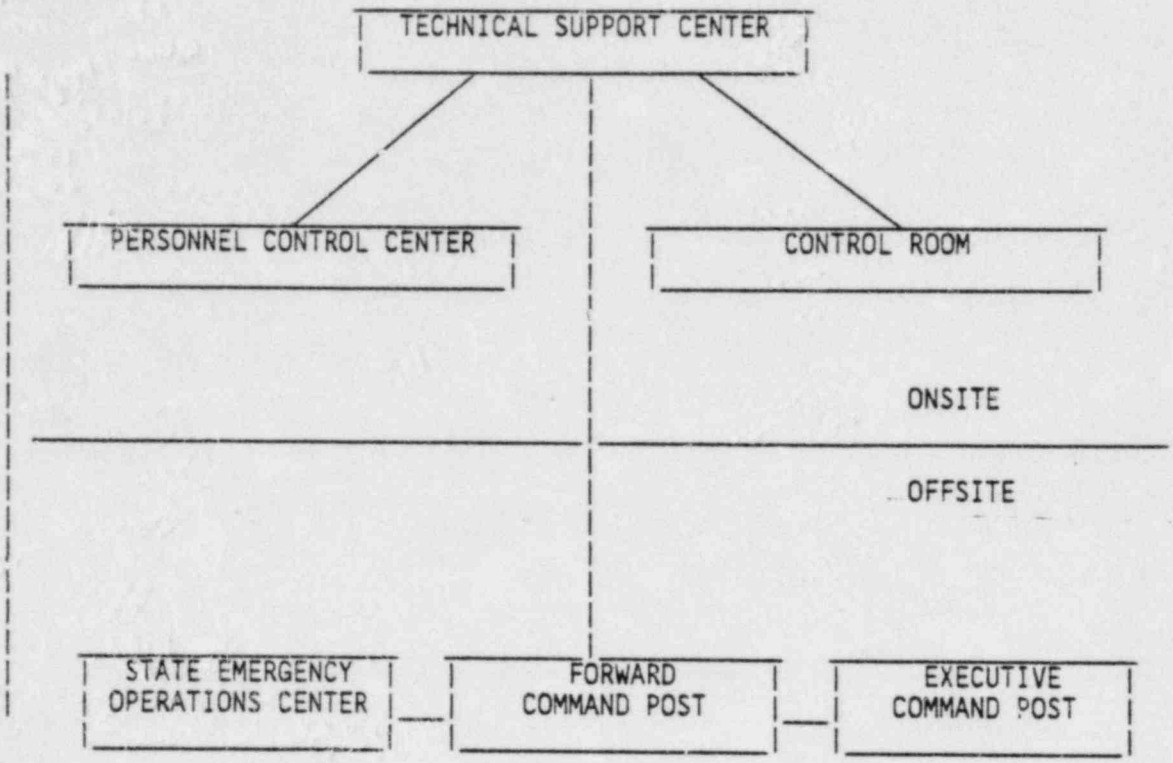


FIGURE 5.2-4

Figure 6.2-4
FORWARD COMMAND POST ORGANIZATION
Fort St. Vrain Nuclear Generating Station

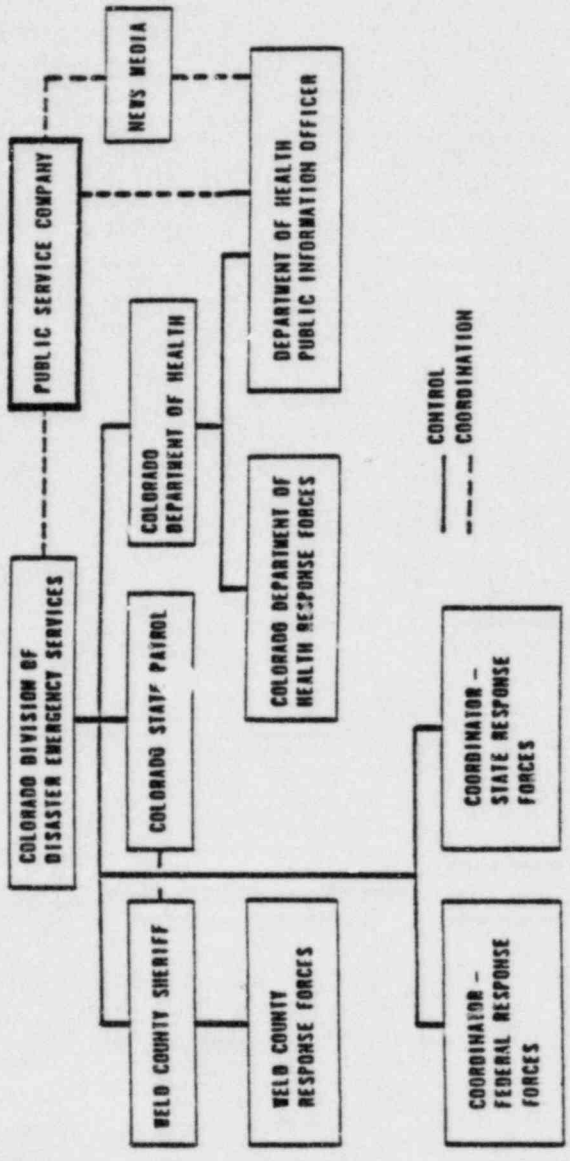


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Figure 5.2-5
STATE EMERGENCY OPERATIONS CENTER ORGANIZATION
Fort St. Vrain Nuclear Generating Station

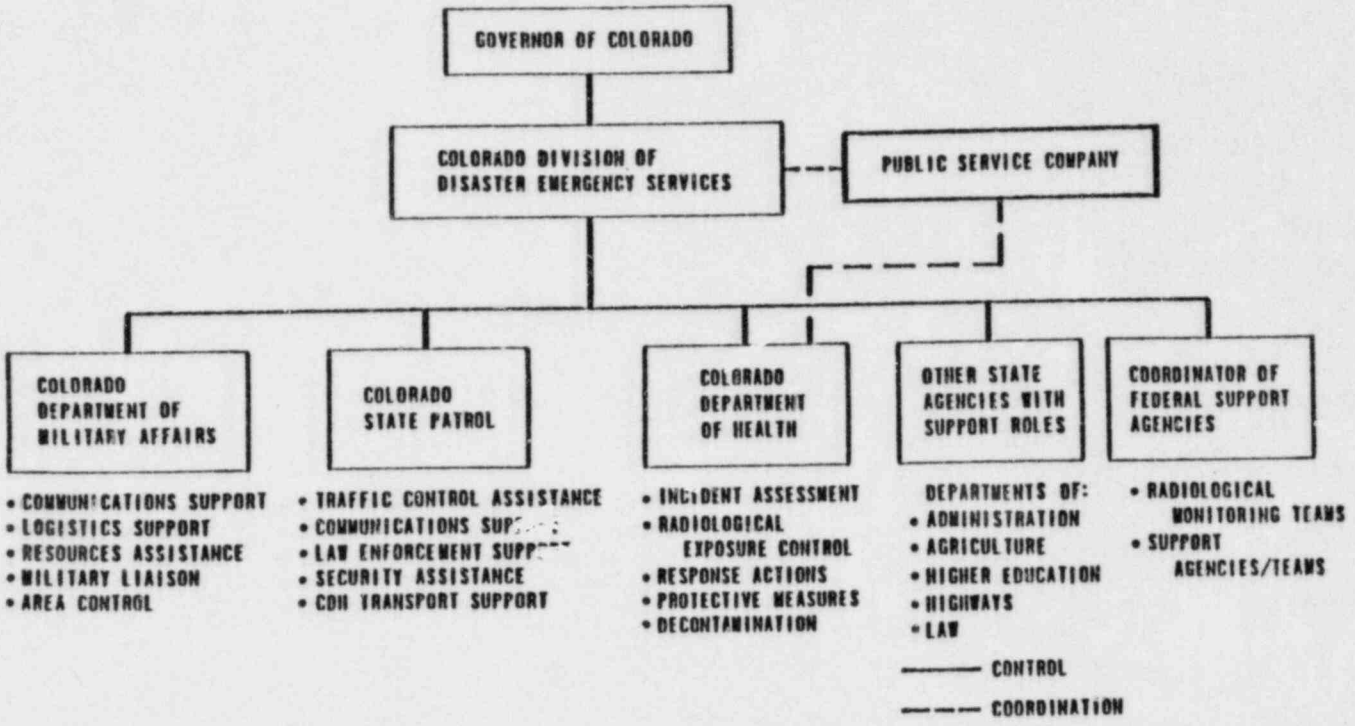


FIGURE 5.2-5

FIGURE 5.2-6

Figure 5.2-6

EXECUTIVE COMMAND POST ORGANIZATION

Fort St. Vrain Nuclear Generating Station

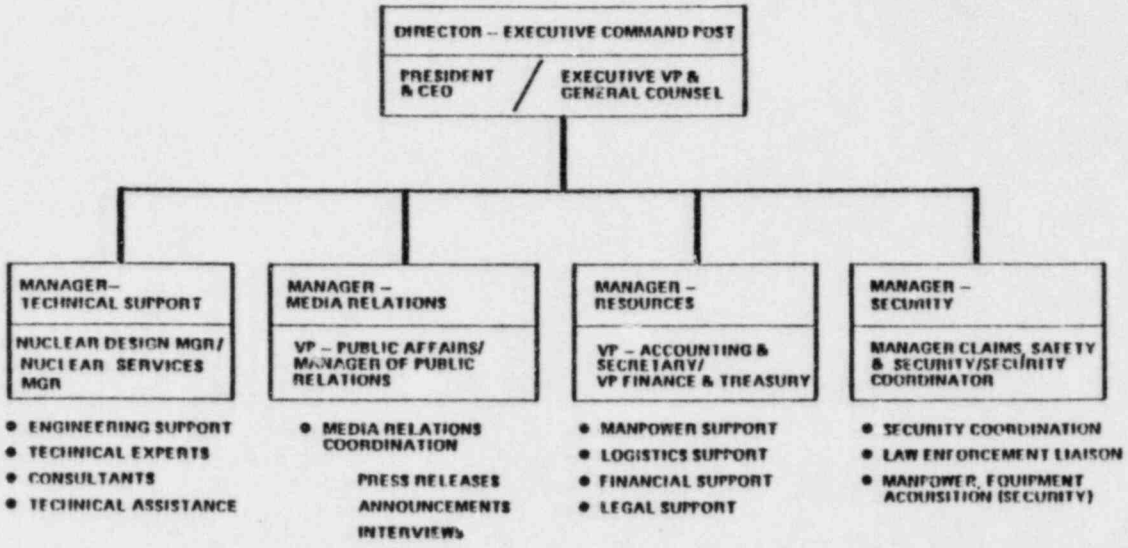


FIGURE 5.2-7

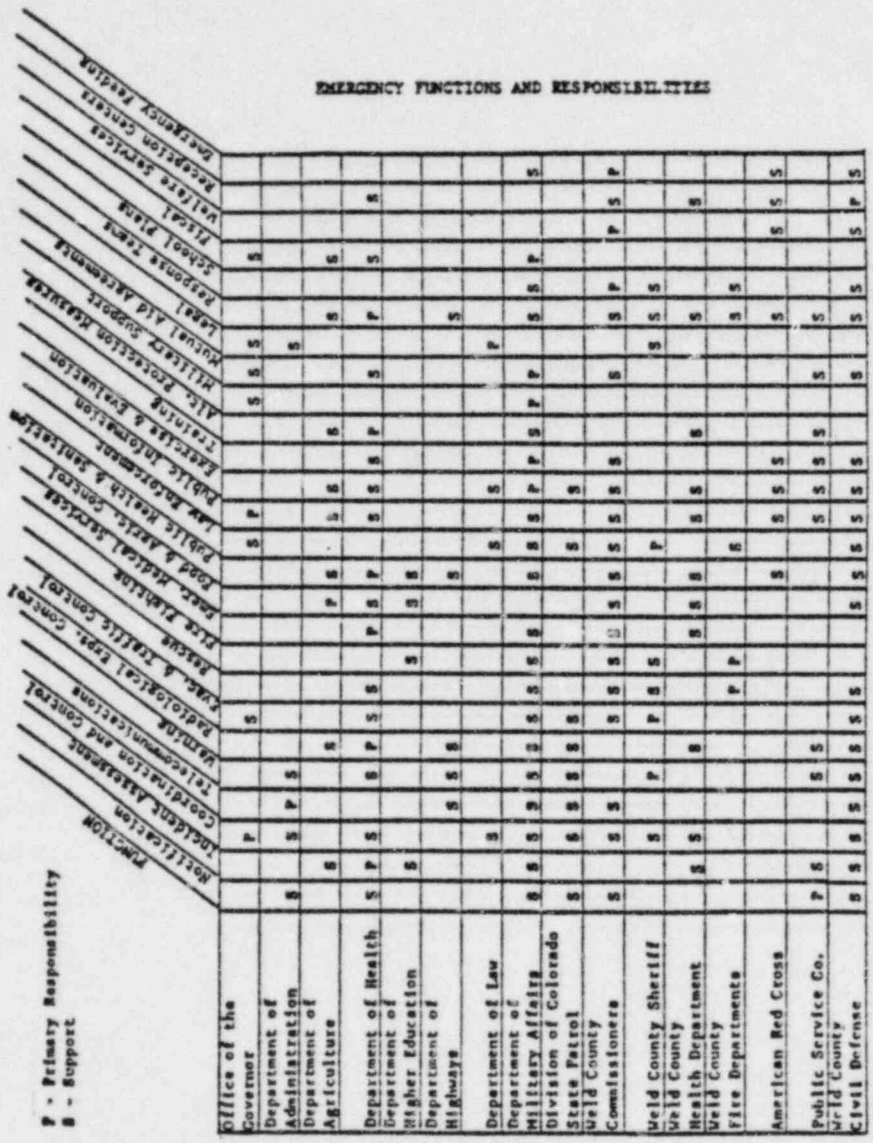


FIGURE 5.2-7
EMERGENCY FUNCTIONS
AND RESPONSIBILITIES MATRIX

Fort St. Vrain Nuclear Generating Station

TABLE 5.3-1

LOCAL AGENCY AND CONTRACT SUPPORT SERVICES

Fort St. Vrain Nuclear Generating Station

Local Agency	Support Service
Volunteer Fire Department Platteville, Colorado	Onsite Fire Protection Assistance/Ambulance Service
Volunteer Fire Departments Milliken, Johnstown, Gilcrest, Colorado	Mutual Aid Fire Protection Assistance
Facility Support	**Support Service**
Weld County Greeley, Colorado	Alternate Personnel Control Center - Johnstown, Colorado
Contract Agency	**Support Service**
General Atomic Corporation San Diego, California	NSSS, Reactor Physics, and Systems Modification Assistance
Other Support Agency	**Support Service**
Stone & Webster Engineering Corp. Denver, Colorado	Engineering/Construction/ System Modification Assistance
Nuclear Power Consultants, Inc. Rockville, Maryland	Engineering/Quality Assurance Assistance
Proto-Power Management Corp. Groton, Connecticut	Technical Assistance - Nuclear/Balance of Plant Systems

TABLE 5.3-1 (Continued)

LOCAL AGENCY AND CONTRACT SUPPORT SERVICES

Fort St. Vrain Nuclear Generating Station

Other Support Agency	Support Service
NUS Corporation Portland, Oregon	Safety-Training Assistance
Controls For Environmental Pollution, Inc. Santa Fe, New Mexico	Chemical-Radiochemical Laboratory Analysis
Colorado State University Fort Collins, Colorado	Environmental Monitoring Assistance
St. Luke's Hospital Denver, Colorado	Medical Treatment/Decontamination Assistance
Dr. Hilding G. Olson Fort Collins, Colorado	Nuclear Engineering Consultant
Donald T. Klodt Denver, Colorado	Metallurgical Consultant
R. S. Landauer, Jr. & Co. Glenwood, Illinois	Environmental Monitoring, Dosimetry Processing
Western Radiation Consultants, Inc. Fort Collins, Colorado	Radiation Protection
EBASCO Services, Inc. Golden, Colorado	Engineering, Construction, Procurement Assistance
INPO Atlanta, Georgia	Procurement, Industry Support

TABLE 5.4-1

SUMMARY OF STATE/LOCAL INVOLVEMENT

AGENCY	PRINCIPAL RESPONSIBLITIES	LOCATION
State of Colorado:		
1) Division of Disaster Emergency Services (DODES)	a) emergency planning b) command & control c) communications d) coordination of Colorado National Guard & federal assistance	State EOC (Camp George West, Golden, CO) & FCP (Ft. Lupton, CO)
2) Colorado Department of Health (CDH)	a) incident dose assessment b) recommendation of protective actions c) contamination control/ decontamination measures	FCP, CDH HQ (Denver), State EOC, & deployed personnel
3) Colorado Department of Agriculture (CDA)	ingestion pathway protective actions	State EOC, FCP, CDA HQ (Denver)
4) Colorado State Patrol (CSP)	a) traffic control b) communication and transportation assistance	State EOC, FCP, & deployed personnel
5) Office of the Governor	a) issue proclamations for emergency preparedness b) utilize the National Guard c) issue evacuation orders d) handle media relations	State EOC and Governor's office (Denver)

TABLE 5.4-1 (Continued)

SUMMARY OF STATE/LOCAL INVOLVEMENT

AGENCY	PRINCIPAL RESPONSIBLITIES	LOCATION
Weld County:		
6) Weld County Commissioners	authorize and ensure appropriate county emergency planning and response	County Bldg (Greeley, CO)
7) Weld County Civil Defense	a) handle county EOC & communications b) coordinate local agency planning c) handle emergency feeding and sheltering	County Bldg (County EOC, Greeley, CO)
8) Weld County Sheriff	a) traffic control b) public notification c) conduct and confirm evacuation d) maintain law and order	FCP and deployed personnel

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 6

ISSUANCE AUTHORIZED BY	8-19-84	
PORC REVIEW	PORC 582 AUG 14 1984	EFFECTIVE DATE 8-21-84

6.0 Emergency Measures

Station emergency measures will be initiated upon, and according to, incident classification. This section identifies segments of the station emergency organization that will be activated by class of emergency, details methods and procedures for assessment actions, specifies actions to correct or minimize the emergency situation, describes protective actions to prevent or minimize radiological exposure, and sets forth measures to assist persons injured or exposed to radiation and radioactive material.

6.1 Activation of Emergency Organization

The four classes of emergency defined in Section 4.1 require a varying degree and scope of emergency responses. The emergency organization activated in each emergency classification is shown in Figures 5.2-1 and 5.2-2. The Shift Supervisor will immediately initiate action to limit the consequences of the event and to return the plant to a safe and stable condition. The emergency organization for a NOTIFICATION OF UNUSUAL EVENT consists of normal shift personnel (Figure 5.2-1). No augmentation is required. For ALERT events, onsite and offsite emergency centers will be manned and activated in situations where the Emergency Coordinator or Corporate Emergency Director deem it necessary. In SITE AREA EMERGENCY or GENERAL EMERGENCY level accidents, onsite and offsite emergency response facilities will, in all cases, be manned and activated. The Plant Emergency Alarms are sounded for ALERT and higher level accident classifications. The location and extent of the event is announced over the station Gaitronics system or public address system. If the emergency occurs during a back shift period, the Shift Supervisor in the role of Emergency Coordinator, establishes the plant emergency organization per Section 5.2.

Upon incident assessment and classification of an UNUSUAL EVENT, notification will be made to the State (State EOC and Governor's Office) and to the Nuclear Regulatory Commission. Updates are made to keep these agencies

informed of event status, although activation of offsite response centers is not expected unless the event escalates to an ALERT or more severe category. The initial emergency message for NOTIFICATION OF UNUSUAL EVENT (Figure 6.1-2) is based upon an agreement between the Governor of Colorado and PSC.

Classification of an incident as an ALERT or higher event requires notification consisting of three telephone contacts as indicated in Figure 6.1-1. The Nuclear Regulatory Commission (Region IV) is notified via "hot line" (preferably) or commercial telephone service. The state and local emergency response organization is notified by a telephone call to the Weld County Communications Center after notification is authenticated by call-back. The PSC emergency organization is notified by a single call to the Public Service Company Operator at corporate headquarters, who notifies the appropriate fanout list set forth in emergency plan notification procedures. The initial emergency message for ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY classes, together with followup messages for these accident levels are contained in Figures 6.1-3 and 6.1-4.

Emergency center functions remain constant for ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY classifications. Personnel/equipment augmentation may vary according to specific circumstances. The functions, as shown on Figure 5.2-2 include:

Technical Support Center

Command (Onsite)

Plant Condition Assessment

Recommendation of Corrective Actions

Radiological Consequence (Dose Projections)

Health Physics Assessment

Notification/Communications

Onsite Protective Action

Offsite Communications

Control Room

Assessment of Plant Operating Conditions

Implementing Corrective Actions

Fire Fighting Direction

Personnel Accountability (Initial)

Personnel Control Center

Personnel Accountability (Continued)

Emergency Repair/Damage Control

Onsite/Inplant Surveys

Radiation Protection (Personnel Monitoring/Dosimetry/ Decontamination/Access/Reentry Control)

Search and Rescue/First Aid

Fire Brigade

Security

Forward Command Post (PSC functions only)

Command (PSC Overall)

Government Notification/Communications

Radiological Assessment Coordination

Logistics Support

Media Relations

6.2 Assessment Actions

The assessment of plant conditions, radiation levels, and offsite consequences is initially coordinated by the Shift Supervisor (Emergency Coordinator). Upon relief of the Shift Supervisor by the Control Room Director (Primary: Superintendent of Operations; Alternate: Shift Supervisor, Training) and activation of the Technical Support Center (TSC) and the Personnel Control Center (PCC), these duties will be assumed by the emergency organization described in Section 5.0. The different types of assessment actions

are described in Table 6.2-1. Assessment will continue throughout the emergency period. Continued assessment may result in reclassification of the incident and consequent alteration in emergency response actions.

Incidents involving potential or actual release of radioactive materials to the environment (ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY) require special methods of assessment to ensure that responses are appropriate for protection of the population-at-risk and station personnel. The Fort St. Vrain Nuclear Generating Station has installed capability for measuring radioactive Iodine concentration in the coolant. Post-accident sampling is described in appropriate Health Physics and Radiochemistry procedures. It also has an extensive system for monitoring radioactive materials released to the environment (e.g., gaseous, process liquid, reactor building ventilation exhaust, and steam jet air ejector vent). The station is equipped with process and system monitors capable of initiating appropriate alarms and/or actuating control equipment for containment of radioactive materials if pre-established limits are reached.

These systems will monitor activity releases during accident conditions. In any accident where releases are not monitorable, emergency procedures provide "theoretical worst-case release rates corresponding to the Design Base Accidents outlined in Section 14 of the Fort St. Vrain Nuclear Generating Station FSAR."

The site has a permanent meteorological installation which indicates and records wind speed and direction and temperature differentials on a continuous basis in the Control Room. Additional readout capability is provided in the TSC via plant computer links. In the event that meteorological information in both the Control Room and TSC is unavailable, arrangements and procedures have been developed to secure necessary meteorological information from the 10 meter National Oceanic and Atmospheric Administration (NOAA) tower located onsite to the North of the plant. Guidance for the acquisition of meteorological data from existing instrumentation and displays, as well as backup data from NOAA tower instrumentation, is provided in RERP implementing procedure RERP-MET, Meteorological Data Acquisition.

The methodology and technique used to predict offsite concentrations of radioactive noble gases and iodine is summarized as follows:

Upon determination that an emergency, or potential emergency, could result in offsite dose consequences, the Radiation Protection Manager, or his designee in accordance with RERP implementing procedure RERP-DOSE, "Offsite Dose Calculations"...

- Notes present weather conditions (wind speed and direction, atmospheric stability, cloud cover, and precipitation) and calls the Stapleton Airport National Weather Service to obtain a forecast for the next 12 hours to anticipate changes in weather conditions that might affect dispersion and alter the zones affected.

- Determines radioactivity release rates by reading the Reactor Building Ventilation Exhaust Stack Monitors. If the monitors are inoperative, or if an anticipated release has not started, an estimate of the release rate is obtained from prepared tables. The basis for these tables is the actual circulating coolant activity and/or 10CFR100 accident siting criteria.

- Selects an atmospheric dispersion graph (corresponding to the downwind distance(s) of interest and the atmospheric stability class) and identifies the dispersion factor for the zone(s) of interest. The graphs consist of plots of dispersion factors (X/Q values) calculated from standard Gaussian plume equations for ground level sources as shown in Meteorology and Atomic Energy (Reference 1) and based upon USNRC Regulatory Guide 1.145 (Reference 2).

- Multiplies the iodine release rate by the dispersion factor to obtain an air concentration of radioiodines. He uses the expected plume duration in the zone(s) of interest as the exposure time and calculates the thyroid dose by multiplying the appropriate thyroid dose conversion factor for that post-shutdown time by the air concentration and then by the exposure time. He calculates doses by zone and compares the integrated doses to Protective Action Guide (Reference 3) Criteria presented in Table 6.2-2.

- Multiplies the noble gas release rate by the dispersion factor to obtain an air concentration of noble gases. He uses the expected plume duration in the zone(s) of interest as the exposure time and calculates whole body gamma dose by multiplying the appropriate whole body gamma dose conversion factor for that post-shutdown time by the air concentration and then by the exposure time. He calculates doses by zone and compares the integrated doses to Protective Action Guide Criteria presented in Table 6.2-2.

Air concentration levels are verified by field monitoring teams consisting of an HP technician and an assistant deployed in captive vehicles with portable emergency radiological instrumentation including air samplers with silver zeolite cartridges, radiation survey meters, and portable radios on the PSC frequency. These teams are deployed within 30 minutes of activation of the emergency organization, and have the capability to sample radioiodine concentrations as low as 1×10^{-7} µCi/cc under field conditions. Information so developed will assist offsite emergency response authorities to reach appropriate decisions on modification of emergency protective actions initiated as a result of previous estimates of exposure levels (see RERP implementing procedure RERP-FIELD, Field Monitoring Procedure).

Unmonitored releases will be treated as unfiltered releases for the duration of the time that they went unmonitored, and will be assessed by utilization of data provided by the on-line noble gas monitor for circulating activity and reactor pressure instrumentation. These actions are described in detail in RERP implementing procedure RERP-DOSE, Offsite Dose Calculation.

6.3 Corrective Actions

Station procedures contain steps for preventive and/or corrective actions to avoid or mitigate serious consequences of an incident. Instrumentation and control system monitors provide indications/recordings and automatically control systems necessary for the safe and orderly operation of the station. These systems provide the operator with the information and controls needed to start up, operate at power, shut down, and, if necessary, to cope with an abnormal operating condition or emergency, should it occur. Control and display of information from these systems are centralized in the Control Room. The information provided by this instrumentation forms the basis for declaration of emergency classes.

Corrective actions will also involve response by the following onsite organizations:

- Fire Fighting

  Fire Brigades will respond to station fire calls. If outside assistance is required, a call will be placed to the Platteville Volunteer Fire Department (VFD). The Platteville VFD will, upon arrival, be escorted to the firescene by security personnel.

- Damage Control, Repair, and Decontamination

  For minor emergencies, station personnel will handle cleanup, repair, and damage control. For more major site emergencies, the support of company personnel, or specialized outside contractors, may be required to assist in damage control, cleanup, and repair operations. Recovery from a GENERAL EMERGENCY will be handled with the assistance of agencies available for that purpose and the cooperative effort of industrial organizations such as AIF, EPRI, and EEI. The organization for post-emergency recovery is described in Section 9.0.

6.4 Protective Actions

Protective actions will be taken to ensure that personnel, onsite and offsite, are notified and actions initiated for their protection in the event radiation or airborne activity levels exceed predetermined values, or when other situations threaten personnel safety.

Onsite actions to protect station personnel and visitors are the responsibility of the Shift Supervisor (as Emergency Coordinator) until he is relieved. Measures for the protection of the general public are detailed in the State RERP.

6.4.1 Protective Cover, Evacuation, and Personnel Accountability

a. Onsite

Protective actions for onsite personnel will be taken whenever a radiological emergency has occurred, or may occur, which will result in concentrations of airborne activity or radiation levels in excess of normal limits for a specified area or areas, that cannot be readily controlled. In addition, protective actions will be taken for onsite personnel in other emergency situations such as fires,

floods, and tornadoes where personnel safety is threatened. Notification of onsite personnel will be by actuation of plant alarm systems, telephone calls, and Gai-tronics announcements as applicable. Notification will be accomplished as soon as assessment actions permit a determination of the emergency class and corresponding actions. Personnel will be notified of appropriate actions to be taken at their respective personnel accountability stations.

1. Personnel Accountability

FSV Visitors Center personnel will be notified within 15 minutes and advised of appropriate protective actions. Site visitors inside the owner-controlled area will be escorted by station personnel to the Security Building where they will be monitored for contamination and normally depart the site. Their escorts will then report to their predesignated personnel accountability stations. Contract personnel will exit via the security building, where they will be monitored for contamination, and report to the Visitor's Center to await further instruction. Non-essential station personnel (i.e., personnel not specifically assigned to predesignated emergency functions) are required to assemble at pre-assigned personnel accountability stations where supervisors, or their designees will make accountability checks. Accountability status is reported to the Central Alarm Station (Security Desk in Lobby) which in turn reports to the Shift Supervisor. Initial accountability should be completed within 30 minutes. Subsequently, the PCC Director has responsibility for maintaining personnel accountability. Refer to the Administrative Procedures Manual procedure G-5, "Personnel Emergency Response" for specific details of the personnel accountability process.

2. Security and Access Control

The security program at the Fort St. Vrain Nuclear Generating Station is designed to meet the access control requirements of 10 CFR 73.55. Support personnel reporting to the station during an emergency may assemble first at the Personnel Control Center, if the Center is activated. The entry of required personnel will be coordinated through normal security routine, either by the PCC Director or the Shift Supervisor.

Provisions to restrict access to areas of the site outside the fenced protected area have been made. The PCC Director will assign designated security personnel to control traffic access to the owner-controlled area. Access control will be performed with the aid and cooperation of the Weld County Sheriff's Department.

3. Evacuation

The PCC Director will assure survey of the designated PCC to determine habitability, establish a controlled area at the appropriate PCC location (either the Training Center or the Engineering/QA complex, dependening upon prevailing wind direction), and prepare to receive personnel, should plant evacuation be required.

In the event that radiation levels are greater than, or equal to, 2.5 mrem/hr outside the Reactor Building, or there is unidentified airborne contamination greater than, or equal to, 9×10^{-8} µCi/cc above backround outside of the Reactor Building (i.e., in the Turbine Building), or if conditions are such that the TSC Director deems it circumspect, such as during a SITE AREA or GENERAL EMERGENCY, non-essential personnel will be evacuated from the plant.

If a plant evacuation was deemed appropriate, there are two Personnel Control Centers within the Owner Protected Area to evacuate to. These

PCCs are the Training Center and the QA/Engineering Complex. Complete Emergency Kits, including radiological monitoring equipment and field radios are stored at the Training Center and at the QA/Engineering Complex.

The selection of a PCC is largely dependent upon the prevailing wind condition and the accessibility of that location. Personnel will be monitored for contamination, and accountability checks will be made by PCC staff as appropriate. Personnel onsite, but outside of the protected (fenced) area, will be notified of the emergency and directed to buildings in areas unaffected by the event. Should evacuation of the site become necessary, privately owned vehicles will be used. Tenants on PSC property are notified by telephone or personal contact of actions considered necessary to their protection (PCC procedure emergency call list).

In the event that the two onsite Personnel Control Center assembly areas are uninhabitable (i.e., radiation levels are greater than, or equal to 2.5 mrem/hr, or there is unidentified airborne activity greater than, or equal to, 9×10^{-9} µCi/cc above background), non-essential personnel will be directed to evacuate to one of three designated offsite PCC locations. The preferred offsite PCC area is the Johnstown County Shops. The alternate offsite PCCs are the PSC Longment Service Center and the Platteville Firehouse. The PCC Director is responsible for the transport of emergency equipment, including decontamination supplies, necessary to establish the offsite PCC. Personnel in the protected area will exit the security building where they will be monitored for contamination and carded out of the plant.

4. Rescue Operations

The search and rescue function is handled by trained Fire Brigade or Health Physics personnel. When station personnel are unaccounted for in the initial or subsequent emergency accountability, the Shift Supervisor assigns a search and rescue team to locate and, if necessary, rescue personnel, observing the emergency exposure limits outlined in Table 6.5-1.

b. Offsite

The Emergency Coordinator will recommend appropriate initial protective actions to offsite authorities, to include either evacuation or sheltering, as alternatives, based upon consideration of relative benefits of the alternatives. The action which affords the greatest amount of dose avoidance for accidents (where projected or measured offsite doses are expected to exceed Protective Action Guides - Table 6.2-2) will generally be preferred. However other factors such as release duration, mobilization time relative to plume arrival time, or adverse weather may be important considerations affecting the decision.

Protective actions for offsite areas are initiated by state/local emergency response organizations as detailed in the State RERP. The State of Colorado has adopted the USEPA Protective Action Guides (Reference 3) for initiating actions to protect the general public. Plans for activating state/local emergency response agencies and performing various protective actions and services are specified in the State RERP. Estimated sector evacuation times are shown in Appendix C, Figure 10.C-2. These evacuation times were formally published in detail in PSC report "Evaluation Time Study of the 10-Mile Radius Area About the Fort St. Vrain Nuclear Generating Station," as transmitted to the U.S. Nuclear Regulatory Commission April 1, 1981 (P-81110). These estimates have been modified in RERP implementing procedure RERP-PAG, Protective Action Guideline Recommendations, to account for use of the tone alert Early Warning Alert (EWA) System.

Approximate initiation times for these protective actions are shown in Table 6.4-1.

The means of public notification is the use of tone alert NOAA weather radios distributed to residents living within the plume exposure EPZ (5 mile radius). A brief prepared message is broadcast over the radio issuing general instructions regarding protective actions and informing the public to tune to a local Emergency Broadcast System (EBS) radio station for further information. Additional coverage is provided, if required, by personal notification by Weld County Sheriff's Department personnel (with possible augmentation by the Platteville Volunteer Fire Department). Notification times are stated to approximate 15 minutes. Content of messages for the public and the decision to implement notification means is a State of Colorado responsibility (State RERP, Annex C).

PSC emergency procedures provide for prompt notification of state, local, and federal agencies and keeping these agencies updated on the overall status of the emergency. PSC will coordinate onsite actions with local, state, and federal agencies involved in offsite emergency response actions.

Notification of offsite businessmen, property owners and tenants, school administrators, recreation facility operators, and the general public within the emergency planning zone will be accomplished by local tone alert radio or emergency forces, as noted in the State RERP.

6.4.2 Use of Onsite Protective Equipment and Supplies

A variety of protective equipment is available onsite to minimize radiological exposures, contamination problems, and fire fighting hazards. The types of equipment, their criteria for issuance, location, and means of distribution are noted in Table 6.4-2. Radiothyroid protective drugs in sufficient quantity to administer to 100 employees is stockpiled at FSV. Criteria for issuance and location is noted in Table 6.4-2.

6.4.3 Contamination Control Measures

a. Plant Site

Measures will be taken to prevent, or minimize, direct or subsequent ingestion of radioactive materials deposited within the exclusion area. As necessary, affected areas will be isolated. Details of contamination control measures for onsite areas are contained in station procedures. The following is an outline of those procedural controls:

1. Radioactive Contamination of Personnel

- Controls have been established to insure that levels of removable contamination outside radiologically controlled areas will be maintained at less than allowable limits of 10dpm/100cm² alpha activity and 100dpm/100cm² beta-gamma activity.

- The environment of personnel working within radiological control areas are supervised by Health Physics personnel. Radiation Work Permits (RWPs) may be required for personnel in such areas. Specific instructions, precautions, and limitations are listed on RWPs.

- Protective clothing is required for individuals entering contaminated areas. Individuals leaving radiological control areas are monitored for contamination upon departure.

- Quarterly integrated accumulations of radionuclides in the body will not exceed accumulation levels which would result from exposure to the maximum permissible concentrations (MPC) of radionuclides in air or drinking water for occupational exposure as indicated in 10CFR20.103. Food for emergency personnel will be provided from offsite sources.

- Exposure to airborne concentrations higher than the MPC will be prevented or avoided. If exposures are necessary, wearing appropriate, properly fitted respiratory protective equipment will be required, as determined by Health Physics. Periodic air samples will be taken in selected operational and work areas to ensure that MPC levels are not exceeded.

2. Radioactive Contamination of Equipment

- Tools and equipment used in radiological control areas will be checked for contamination before they are taken outside the control area. If any equipment is found to be contaminated and decontamination is not practical, the item will remain controlled.

- Equipment and tools will be unconditionally released for use outside the area only if removable contamination and radiation levels are less than allowable limits previously stated.

- Removal of material from radiological control areas with radiation and contamination levels in excess of specified limits must be approved for release by Health Physics personnel. Any contaminated material approved for release will be packaged, sealed, and labeled with a properly executed radioactive material tag and handled in accordance with approved procedures.

b. Offsite

For areas beyond the site boundary, Colorado Department of Health (CDH) radiation monitoring teams will identify levels and control access. Until CDH teams arrive for dispatch, Public Service Company EPZ teams may be dispatched from the PCC to perform offsite monitoring. For areas where public access normally occurs, criteria for offsite areas will be applied. Criteria and measures for

contamination control in offsite areas are detailed in the State RERP.

6.5 Aid to Affected Personnel

6.5.1 Emergency Personnel Exposure Criteria

Exposure records are maintained for station personnel at each emergency center. This information will be utilized in determining emergency team assignments. Criteria used for limiting doses to emergency workers are based on recommendations of the USEPA (Reference 3) and are shown in Table 6.5-1. Emergency workers will carry self-reading dosimeters in addition to film badges. Emergency dosimetry services will be provided through contract with R.S. Landauer Corporation.

Emergency dosimetry service response is provided on a 24-hour basis. Every effort will be made to minimize emergency worker doses through the use of protective equipment and supplies. The PCC Director is responsible for emergency team assignments and may authorize emergency workers to receive doses in excess of 10CFR20 limits. This authorization to exceed occupational exposure limits shall be performed in accordance with existing RERP implementing procedures (see RERP-EXP), and shall be given only after consultation with the senior Health Physics representative at the TSC, and under direction of the TSC Director. The PCC Director will be notified of accidental or emergency exposure in excess of occupational limits. Those individuals will not be assigned to further emergency team operations. Decisions to accept doses in excess of occupational limits in life saving situations will be on a volunteer basis. In no case will doses be permitted to exceed 75 Rem Whole Body (per USEPA recommendation). The PCC Director is also responsible for assuring the distribution of film badges and self-reading dosimetric devices to emergency personnel and assuring the ongoing accountability of each worker's dose. At the TSC, the TSC Director is responsible for the issuance of dosimeters as needed, and ensuring the ongoing accountability of each worker's dose.

6.5.2 Decontamination and First Aid

Provisions have been made to assist personnel who are injured, or who may have received high radiation doses. There are personnel onsite who

are trained in first aid and decontamination procedures. In addition, onsite decontamination areas are equipped with decontamination facilities and other specialized equipment. Personnel found to be contaminated (any detectable activity above background) will undergo decontamination under the control of Health Physics procedures. Where contamination of large or open wounds is involved, personnel will be immediately transported to designated medical facilities offsite where they will receive prompt medical attention in accordance withthe FSV Medical Emergency Plan.

Each emergency team will include members trained in first aid. First aid kits are available at onsite locations in accordance with PSC policy specified in General Instructions, as well as in the onsite first aid facility.

6.5.3 Medical Transportation

Injured/contaminated personnel who require medical attention will be transported to St. Luke's Hospital by the St. Anthony's Hospital Flight for Life, or by Weld County Ambulance Service. A personal vehicle may be utilized if the situation necessitates. Ambulance crews have been trained to handle contamination cases. PSC Health Physics personnel will accompany contaminated patients to the hospital. Communications between FSV and emergency medical vehicles will be channeled through the Weld County Communications Center.

6.5.4 Medical Treatment

Arrangements for treating contaminated patients have been made with St. Luke's Hospital in Denver. In situations where there isn't time to transport a patient to St. Luke's, North Colorado Medical Center, Greeley, may be utilized. In these cases, FSV Health Physics personnel will respond to assist in contamination control at the hospital. Hospital staff at St. Luke's are trained to treat contaminated patients (Section 10, Appendix A). Following decontamination, personnel suspected to have ingested radionuclides will undergo whole body counting at PSC or CDH facilities. Communications between FSV and fixed medical facilities are via commercial telephone and are handled in accordance with the FSV Medical Emergency Plan.

REFERENCES

(1) Slade, D.H., ed., Meteorology and Atomic Energy - 1968, USAEC, July 1968.

(2) USNRC, Regulatory Guide 1.145, Atmospheric Dispersion Models For Potential Accident Consequence Assessments at Nuclear Power Plants, Revision 1, November 1982.

(3) USEPA, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, June, 1980.

(4) USEPA, Appendix D to the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Technical Bases for Dose Projection Methods, January 1979.

FIGURE 6.1-1
NOTIFICATION FANOUT
FORT ST. VRAIN NUCLEAR GENERATING STATION

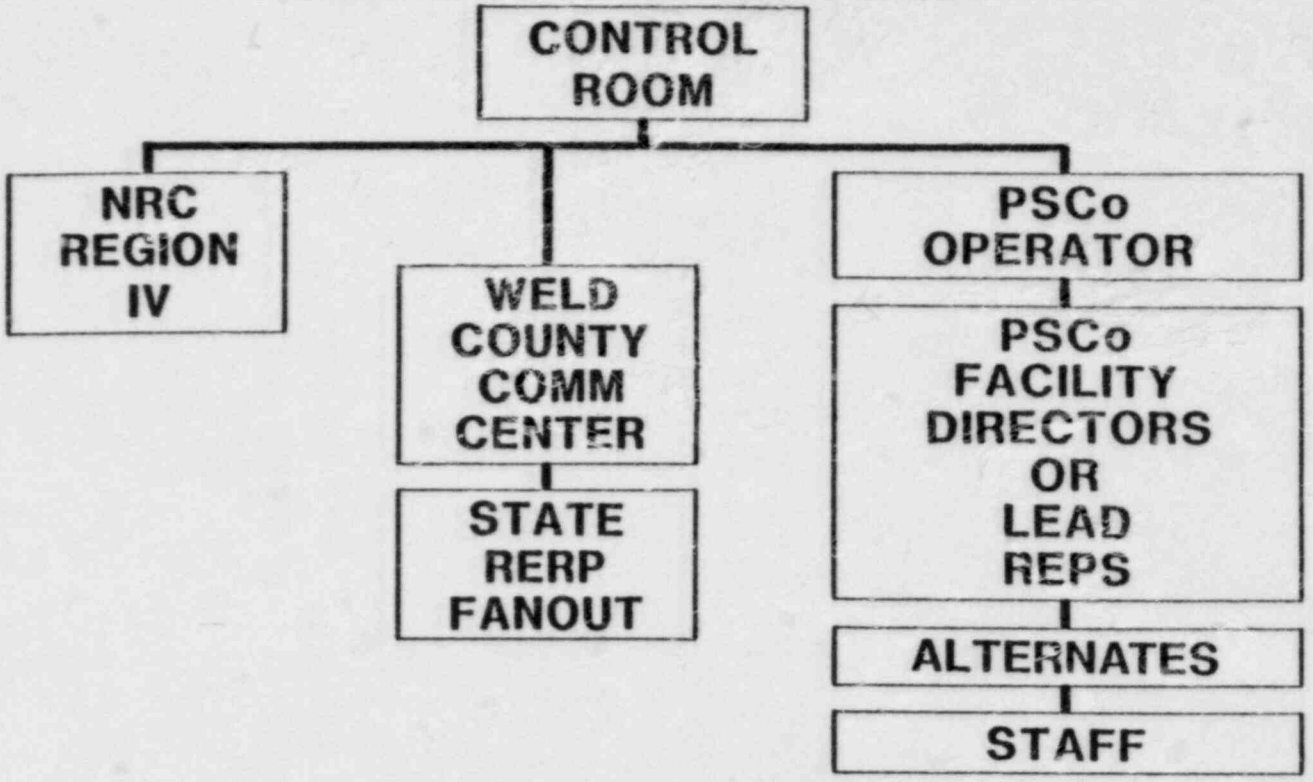


FIGURE 6.1-1

Figure 6.1-2

INITIAL MESSAGE CONTENT

(NOTIFICATION OF UNUSUAL EVENT)

Fort St. Vrain Nuclear Generating Station

A. The Emergency Coordinator and first management contact will complete the following information jointly:

1. Name and identity of caller_____

2. Date of Event_____ Time of Event_____

3. General Category of Event

_____ Unplanned Radiological Release to Reactor Building

_____ Fuel Failure

_____ Fire

_____ Natural Phenomenon (circle one)

Earthquake Flood Tornado Winds

_____ Unusual Hazards (circle one)

Aircraft Explosion Toxic Material

Other (Specify)_____

_____ Spent Fuel Incident

4. Description of Event _____

_____

5. Actions Taken _____

_____

6. Status:

_____ Under control by onsite staff, no offsite assistance anticipated.

_____ Under control by onsite staff. Will keep State and NRC advised.

_____ Offsite assistance may be required. Will advise. (See Item 7.)

_____ Offsite assistance required. (See Item 7.)

7. If offsite assistance is anticipated or required, describe assistance that has been or may be required: _____

_____

_____

_____

_____

8. At the present time, the event does not involve offsite release or the potential for offsite releases that would affect the general health and safety of the public.

B. The Emergency Coordinator will make notifications as follows:

Contact with State EOC (279-8855) and Governor's Office (866-2471) or Mansion (837-8350)

1. READ the following statement verbatim:

"THIS IS A NOTIFICATION OF AN UNUSUAL EVENT AT THE FORT ST. VRAIN NUCLEAR GENERATING STATION. THIS NOTIFICATION DOES NOT REQUIRE ACTIVATION OF EMERGENCY RESPONSE CENTERS. THIS NOTIFICATION REQUIRES VERIFICATION OF RECEIPT BY THE STATE. VERIFY BY CALLING 571-7436 or 785-2223."

2. READ all the information recorded in Step A (Page 1 of this ATTACHMENT).

3. RECORD the following information:

Name of State EOC contact_____Date/Time _____

Name of Governor's Office/Mansion Contact_____

Date/Time _____

Call back verification from State EOC, Date/Time _____

Call back verification from Governor's Office/Mansion

Date/Time _____

_____

Contact with NRC Operations Center (Hot Line or 202-951-0550)

(Alternate means of notification are given in Attachment 1.)

1. READ the following statement verbatim:

"THIS IS NOTIFICATION OF AN UNUSUAL EVENT AT THE FORT ST. VRAIN NUCLEAR GENERATING STATION AT PLATTEVILLE, COLORADO. THIS NOTIFICATION APPEARS TO BE REQUIRED PURSUANT TO 10CFR50.72, PARAGRAPH (a)(3). THIS NOTIFICATION DOES NOT REQUIRE ACTIVATION OF FEDERAL OR STATE EMERGENCY RESPONSE ORGANIZATIONS."

2. READ the NRC Operations Center all of the information recorded in Step A (Page 1 of this Attachement).

3. RECORD the following information:

Name of NRC Contact_____Date/Time _____

FIGURE 6.1-3

NOTIFICATION OF EMERGENCY EVENT

(INITIAL MESSAGE CONTENT)

Fort St. Vrain Nuclear Generating Station

A. The Emergency Coordinator will complete Pages 1 and 2 of this attachment with the assistance of the first management contact.

1. This is ____(Name)____, Shift Supervisor at the Fort St. Vrain Station.

2. At ____(Time)____ we experienced an (ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY) Class incident.

3. a) There is NO, repeat NO, radioactive release taking place, and no special protective actions are recommended at this time.

OR

b) A small release IS taking place, but at this time NO protective actions are recommended and are not anticipated to be.

OR

c) A radioactive release IS, repeat IS, taking place, and we recommend that people in areas _____ remain indoors with windows and doors closed.

OR

d) A radioactive release IS, repeat IS, taking place, and we recommend that evacuation of areas _____ be considered.

4. Further information on incident conditions will be provided in followup messages.

5. Personnel Control Center to be located _____

_____

FIGURE 6.1-4

NOTIFICATION OF EMERGENCY EVENT

Fort St. Vrain Nuclear Generating Station

SUPPLEMENTAL INFORMATION

NOTE: This information is to be supplied to the NRC and the Colorado Department of Health when requested. The radiological data can be determined as specified in RERP-DOSE.

1. Date and Time of Incident _____

2. Class of emergency (ALERT)(SITE AREA EMERGENCY)
(GENERAL EMERGENCY)

3. Type of release (airborne, waterborne, surface) _____

4. Estimated duration of release _____ (Hours)

5. Current release rate:

Noble Gas _____Ci/sec; Iodine _____Ci/sec

6. Estimated curies released:

Noble Gas _____Ci; Iodine _____Ci

7. Wind Velocity ____MPH, from _____degrees.

to _____degrees, Air Temp _____°F

8. Stability Category _____. Form of Precip. _____

9. Dose rate at EAB: WB _____rem/hr; Thyroid _____rem/hr

2 Miles: WB _____rem/hr; Thyroid _____rem/hr

5 Miles: WB _____rem/hr; Thyroid _____rem/hr

10. Projected dose at EAB: WB _____rem; Thyroid _____rem

2 Miles: WB _____rem; Thyroid _____rem

5 Miles: WB _____rem; Thyroid _____rem

12. Areas expected to be impacted by release _____

_____

_____

13. Estimate of any surface radioactive contamination _____

_____

14. On-site response actions under way _____

_____

15. Recommended Protective Action based on the projected dose at the EAB (Read appropriate Protective Actions)

Projected Dose (rem)	Recommended Protective Action
Whole Body <1 Thyroid <5	No planned protective actions. State may issue advisory to seek shelter and await instructions. Monitor radiation levels.
Whole Body 1 to 5 Thyroid 5 to 25	Take shelter and consider selective evacuation. Monitor radiation levels. Establish Controlled Area and limit access.
Whole Body 5 and above Thyroid 25 and above	Conduct mandatory evacuation. Monitor radiation levels and adjust area for mandatory evacuation based on these levels Control Access.

16. Prognosis for worsening of event _____

17. Date and time of report _____

TABLE 6.2-1

ASSESSMENT ACTIONS

Action	Description
1. Surveillance of Control Room Instrumentation	Plant radiation levels, pressures, temperatures, flows and meterological data are monitored. The control room operators can assess plant status by observing sensor readout. Most sensors have visual and audio alarms. Data will be provided to the Emergency Coordinator as necessary for his assessment. Control room operators will take corrective actions as necessary.
2. Personnel Accountability	Accountability of all personnel onsite is made at the respective personnel accountability stations. Security printouts and personnel rosters may assist in this assessment.
3. In Plant Radiological Surveys	Radiation monitoring teams will perform these surveys. The radiation levels on the station's fixed area and ventilation monitoring systems will be obtained from the control room to assist in these evaluations. Contamination surveys of equipment and personnel is done with portable equipment from the emergency kits or at routine personnel monitoring stations.
4. Site Boundary/EPZ Surveys	Handled in same fashion as in-plant surveys by radiation monitoring teams.
5. Offsite Consequence Assessment	Radiological Assessment personnel will be using effluent monitors, meteorological data,and field monitoring results to make assessments of offsite consequences.
6. Environmental Monitoring	For less immediate actions, samples of various environmental media are collected and analyzed by an oustide contract laboratory. Results will be evaluated by company personnel and the contract laboratory.
7. Assessment Reporting	In the case of actual or potential offsite consequences, the state and local authorities are immediately notified in accordance with the State RERP. Predetermined criteria are used to initiate various protective actions for the public by the local authorities as illustrated in Tables 4.1-1 through 4.1-4.

TABLE 6.2-2

Recommended protective actions to reduce whole body and thyroid dose from exposure to a gaseous plume

General Public

Projected Dose (Rem) to the Population	Recommended Actions (a)	Comments
Whole Body less than 1 Thyroid less than 5	No planned protective actions (b). State may issue an advisory to seek shelter and await further instructions. Monitor environmental radiation levels.	Previously recommended protective actions may be reconsidered or terminated.
Whole Body 1 to 5 Thyroid 5 to 25	Seek shelter as a minimum. Consider evacuation. Evacuate unless constraints make it impractical. Monitor environmental radiation levels. Control access.	If constraints exist, special consideration should be given for evacuation of children and pregnant women.
Whole body 5 and above Thyroid 25 and above	Conduct mandatory evacuation. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these levels. Control access.	Seeking shelter would be an alternative if evacuation were not immediately possible.

(a) These actions are recommended limits for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration (refer to RERP implementing procedure RERP-PAG, "Protective Action Guideline Recommendations").

(b) At the time of the incident, officials may implement low-impact protective actions in keeping with the principle of maintaining radiation exposures as low as reasonably achievable.

TABLE 6.2-2 (Continued)

Recommended protective actions to reduce whole body and thyroid dose from exposure to a gaseous plume

Emergency Workers

Projected Dose (Rem) to Emergency Team Workers	Recommended Actions (a)	Comments
Whole body 25 Thyroid 125	Control exposure of emergency teams members to these levels except for lifesaving missions. (Appropriate controls for emergency workers, include time limitations, respirators, and stable iodine.)	Although respirators and stable iodine should be used where effective to control dose to emergency team workers, thyroid dose may not be a limiting factor for lifesaving missions.
Whole Body 75	Control exposure of emergency team members performing lifesaving missions to this level. (Control of time of exposure will be most effective.)	

(a) These actions are recommended limits for planning purposes and any exposures in excess of occupational (10CFR20) limits must be handled in accordance with RERP implementing procedure RERP-EXP, "Emergency Exposure Guidelines." Protective action decisions at the time of the incident must take existing conditions into consideration.

TABLE 6.4-1

Initiation Times for Protective Actions for the General Public

Approximate Initiation Time	Exposure Pathway	Action to be Initiated
0 - 4 Hours	Inhalation of gases or particulates	Evacuation, shelter, access control, respiratory protection, prophylaxis (thyroid protection).
	Direct radiation	Evacuation, shelter, access control.
4 - 48 Hours	Milk	Take cows off pasture, prevent cows from drinking surface water, quarantine contaminated milk, utilize stored feeds.
	Harvested fruits and vegetables	Wash all produce, or impound produce.
	Drinking water	Cut off contaminated supplies, substitute from other sources.
	Unharvested produce	Delay harvest until approved.
2 - 14 Days	Harvested produce	Substitute uncontaminated produce.
	Milk	Discard or divert to stored products, such as cheese.
	Drinking water	Filter, demineralize, test.

TABLE 6.4-2

Use of Protective Equipment and Supplies

Equipment	Criteria for Issuance	Location	Means of Distribution
1) Full Face Canister Respirator	As needed by onsite Emergency Teams in areas of high airborne radioactivity	a) Selected Emergency Monitoring Kits b) Respiratory Issue Lockers-Turbine Deck.	a) Issued at Personnel Control Center b) Picked up at nearest station as directed by Health Physics Personnel.
2) Self-Contained Breathing Apparatus	a) Inhalation hazard during fire fighting b) Airborne radioactivity in excess of administratively set levels c) Toxic gas hazard	a) Control Room b) Various Areas in Station	a) Used as needed by operators. b) Issued as needed by Health Physics Personnel.
3) Protective Clothing (Coveralls, Hoods, Boots, Gloves)	As needed in areas of known contamination	a) Various Areas of the station. b) Emergency Kits	a) Issued as needed by Health Physics Personnel. b) Issued at Personnel Control Center.
4) Air-Fed Respirator	Airborne radioactivity in excess of administratively set levels.	a) Control Room b) Respiratory Issue Lockers-Turbine Deck.	a) Used as required by operators. b) Issued by Health Physics Personnel.
5) THYRO-BLOCK (Potassium Iodide) tablets. (130 mg)	Airborne radioiodine concentrations elevated to the extent that an individual properly fitted with respiratory protection may be expected to receive a thyroid inhalation dose in excess of 10 rem (Refer to RERP Implementing procedure RERP-THYROID, "Thyroid Blocking Agent Administration").	a) Respiratory Issue Lockers-Turbine Deck b) Emergency kits at Training Center and QA/Engineering complex facilities (PCCs).	Issued only by Health Physics Personnel under direction of the Radiation Protection Manager with consent of the PSC Medical Department.

TABLE 6.5-1

Exposure Criteria for Emergency Workers*

Situation	Whole Body	Thyroid**
1. Emergency duties not related to protecting equipment, personnel, or the public.***	5 Rem	25 Rem
2. Prevent extensive equipment damage, further escape of effluents, or control fires.	25 Rem (planned) 12 Rem (unplanned)	125 Rem
3. Lifesaving missions, e.g., search and rescue of injured people, prevent conditions that would injure numbers of people.	75 Rem	Unlimited****

* Administered in accordance with RERP implementing procedure RERP-EXP, "Emergency Exposure Guidelines".

** Respiratory protection will be provided as necessary.

*** Includes performing accident assessment, providing first aid, performing personnel decontamination, providing ambulance service, and providing medical treatment services.

**** Although respirators and potassium iodide blocks should be used where effective to control dose to emergency team workers, thyroid dose may not be a limiting factor for a lifesaving mission.

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 7

ISSUANCE AUTHORIZED BY	8-17-84	
PORC REVIEW	PORC 582 AUG 14 1984	EFFECTIVE DATE 8-21-84

7.0 Emergency Facilities and Equipment

This section describes: emergency control centers; onsite and offsite communication systems links; assessment equipment and facilities; protective facilities; first aid and medical facilities; and damage control equipment and supplies.

7.1 Emergency Control Centers

7.1.1 Technical Support Center (TSC)

Site emergency command activities will be centered in the Technical Support Center (TSC) located immediately adjacent to the Reactor Building and within short walking distance to the Control Room. The TSC is equipped with intercoms, telephones, NRC hotline, dedicated Health Physics Network (HPN) telephone, telecopier, and radios for communications with the CR, Personnel Control Center (PCC), and Forward Command Post (FCP).

The TSC is equipped with a CDC-1700 terminal for visualization of plant parameters and offsite dose calculations, essential drawings, specifications, and procedures. Radiation monitoring equipment, protective clothing, communications equipment, portable lighting, protective breathing apparatus, and first-aid equipment are located in Emergency Kits. The TSC meets habitability requirements similar to those imposed upon the CR.

7.1.2 Forward Command Post (FCP)

The Forward Command Post is the focal point for the coordination of onsite and offsite emergency response activities. Management and technical personnel assigned to the FCP are responsible for protective action recommendations and liaison with offsite authorities and response facilities. The FCP serves as the point from which the Corporate Emergency Director (CED), Vice President of

Production, exercises overall control of the FSV Emergency Response Organization.

The FCP has work space allocated for PSC emergency personnel, state and local personnel, and the NRC. The FCP is adequately equipped with dedicated phone lines, PSC PBX phone lines, commercial phone lines, radio, and telecopy facilities to provide efficient communications with the TSC, ECP, State EOC, NRC, and the Weld County Communication Center. Onsite-offsite communcations are channelled through the TSC and FCP.

The FCP is located at the PSC garage facility in Ft. Lupton, well out of the plume exposure EPZ. Generally, the FCP will be activated and manned for an ALERT or more severe incident classification. (There are cases where, at the ALERT classification, activation of the FCP is not necessary. This is at the discretion of the Corporate Emergency Director, based upon his assessment of the situation.)

There are plans to equip the the FCP with a CDC-1700 terminal to provide rapid access to plant parameters and to provide for offsite dose calculations.

Briefings with the media are to take place at the Ft. Lupton Methodist Church, located in close proximity to the FCP.

7.1.3 Personnel Control Center (PCC)

The primary and secondary locations for the Personnel Control Center (PCC) are the Training Center and the QA/Engineering Office Complex, respectively. Emergency radiological monitoring equipment, first-aid and decontamination equipment, protective clothing, communications equipment, camera, portable lighting and protective breathing apparatus are stored in emergency kits at both onsite locations. There are three designated offsite areas which may be utilized as the PCC if it becomes necessary to evacuate the onsite location(s). The preferred alternate offsite location is the Johnstown County Shops. The other alternate offsite PCC locations are the Longmont PSC Service Center and the Platteville Volunteer Fire Department. Routes to these locations are shown in RERP implementing procedure RERP-PCC, Personnel Control Center Procedure.

7.1.4 Control Room (CR)

Emergency assessment and control is initially directed from the CR by the Shift Supervisor prior to activation of the TSC. The CR, located adjacent to the Reactor Building, is designed to be habitable during Design Basis Accidents. The CR contains full plant instrumentation, technical drawings, protective breathing apparatus, radio, telephone, and intercom systems. Emergency radiological monitoring equipment and protective clothing are located nearby.

7.2 Communications Systems

The primary station-offsite link is between the TSC and the FCP. Communications between the station and the FCP consist of commercial telephone service backed by two-way radios. From the FCP, messages are relayed to designated agencies via Weld County, Colorado Division of Disaster and Emergency Services (DODES), and Colorado National Guard radio communication systems. Two-way radios will be used to maintain communications between the TSC and Emergency Monitoring Teams. Primary telephone and radio communication links between the TSC and other emergency centers are shown on Figure 7.2-1. For a comprehensive discussion of overall emergency response communications, refer to Annex F of the State RERP. PSC, DODES, and Weld County Communcations facilities are manned on a 24-hour basis. These are the principle entities involved in the notification fanout.

7.3 Assessment Facilities

Emergency measures described in Section 6 depend upon the availability of the monitoring instruments and laboratory facilities necessary for assessment of problems. This section describes onsite and offsite facilities and monitoring equipment used in intial and continuing assessment.

7.3.1 Onsite Systems and Equipment

a. Geophysical data are grouped into meteorological and seismic categories.

1. Meteorological Monitors

Information is obtained from installed instrumentation on the primary 60 meter meteorological tower with readout in the CR. The following information is obtained: wind direction, windspeed,

standard deviation of wind direction (sigma theta), precipitation, dewpoint, temperature, and temperature differential with height. Backup meteorological data is readily accessible on a round-the-clock basis from the 10 meter (National Oceanic and Atmospheric Administration (NOAA) meteorological tower located onsite North of the plant in the same general area as the primary 60 meter meteorological tower.

2. Seismic Instruments

Information is obtained from passive and active instruments giving absolute peak acceleration in three orthogonal directions. The system determines whether operating basis or safe shutdown maximum accelerations are exceeded in any of three directions.

b. Area and process radiation monitoring systems are divided into seven basic groups.

1. Area Monitors

There are 21 area monitors, 17 in the reactor building and 4 in the turbine building. Each area monitor uses a Geiger-Mueller tube as a detector and has a self-contained check source. The area monitors share two common annunciators, one which may be cleared before the problem is resolved (readout in Control Room), and another in conjunction with local annunciators which may not be cleared until the problem is resolved. In addition, there is an area monitor located in the TSC with remote readout and local alarm.

2. Equipment Monitors

These monitors determine radiation levels in specific effluent streams. Redundant monitors are provided separate power sources.

3. Liquid Monitors

These devices are specifically designed to monitor liquid effluents. They utilize gamma scintillation detectors consisting of an NaI(Tl) crystal optically coupled to a photomultiplier tube.

4. Gas Monitors

These monitors consist of a plastic Beta scintillator which is coupled to a photomultiplier tube to monitor effluents in the gaseous phase.

5. Particulate and Iodine Monitors

These monitors continuously draw a portion of the airborne effluent through a filter assembly. Any buildup of radioactivity on the filter is measured with a gamma scintillation detector. The filter is backed by an activated charcoal cartridge for adsorption of iodine and may be removed to be counted and isotopically analyzed on a multichannel analyzer.

6. Emergency Stack Monitor (PING)

This device is a single unit containing particulate, iodine, and noble gas monitors to measure Reactor Building ventilation exhaust effluent during a loss of power to the normal operating stack monitors.

7. Reactor Building Ventilation Exhaust Stack Monitor

This system monitors exhaust air from the reactor building for Beta particulates and Iodine-131 contaminants.

c. System Monitors

These monitors detect and/or control problems within plant systems. These may be pressure detectors, heat detectors, flow elements, heat rise detectors, or similar devices designed to monitor plant parameters. Many of these detectors are capable of initiating control actions to prevent or mitigate damage or release of radioactive material.

d. Fire Protection Systems

There is an extensive Fire Protection System in operation at Fort St. Vrain. The Pyralarm Fire Detection System is designed to detect fires in the Three Room Control Complex (Control Room, Auxiliary Electric Room, and 480V Room), G-Wall Cable Area, J-Wall Cable Area, and the Reactor Building. These detectors are smoke detectors. In addition, there are Fixed Heat Detectors and Rate of Heat Rise Detectors serving other parts of the station. Fire extinguishing is by use of Halon System (Three Room Control Complex), or sprinkler/deluge systems with either automatic or manual initiation. Specific information regarding Fire Detection/Suppression at FSV is contained in the System Abstracts (System 45), System Operating Procedures (SOPs), and in the Administrative Procedures (P-8).

e. Radiation Analysis

Radiochemical laboratory equipment, radiation monitoring stations, and fixed air sampling stations provide capability for detailed, isotopic analysis.

f. Portable Survey Instruments

These instruments provide flexibility and backup capability for radiation measurements in areas not served by installed monitors or where installed monitors may be inoperative.

Specific equipment and their locations for Fort St. Vrain onsite radiological assessment is summarized in Table 7.3-1.

7.3.2 Offsite Systems and Equipment

The environmental radiological monitoring program for the Fort St. Vrain environs is provided under contract by Colorado State University (CSU). It consists of a comprehensive sampling system to monitor radioactivity in the ecosystems and atmosphere near the station. Biota samples are routinely collected and analyzed, as are air, water, soil, precipitation, vegetation, and milk samples. The agreement with CSU includes provision for environmental monitoring in the event of an emergency. In the event of an emergency, CSU can respond within four (4) hours. CSU also has facilities for radiochemistry and gamma spectrometry which would be accessible if required. Weather observations and forecasting may also be obtained through the National Weather Service (NWS) radio or from the Stapleton Airport National Weather Service Station. Offsite facilities are summarized in Table 7.3-2.

7.4 Protective Facilities and Equipment

Control Room shielding and ventilation are designed to allow personnel habitability during Design Basis Accident conditions. The TSC is located to the east of the Reactor Building in close proximity to the CR and is provided shielding and HVAC similar to the CR. Portable radiation monitoring instrumentation, respiratory equipment, protective clothing, and portable lighting are available near the CR. Communications equipment is in the CR.

7.5 First Aid and Medical Facilities

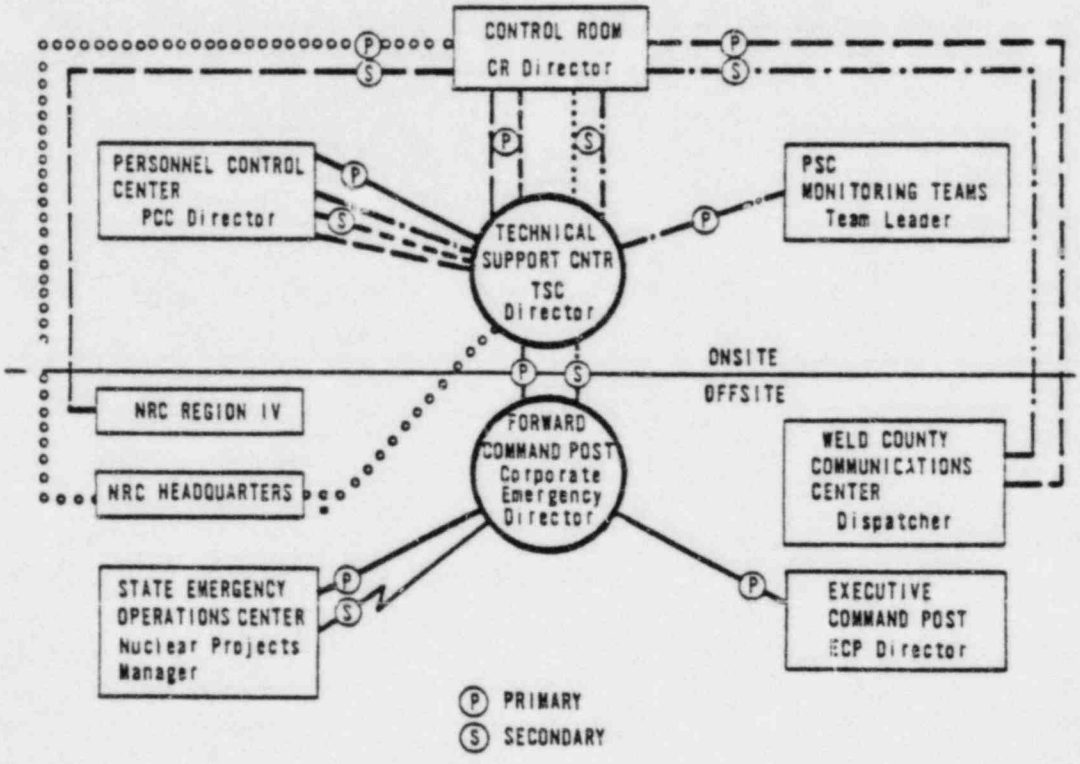
Necessary treatment supplies are located at the First-Aid Station on level five of the Turbine Building immediately adjacent to the West Building entrance. In the event of an emergency, an alternate first-aid area is provided in the PCC. First-aid treatment of injured individuals will be administered by trained personnel. Advanced medical care, if required, will be obtained by transporting the individuals to St. Luke's Hospital and/or North Colorado Medical Center. (Section 10, Appendix A contains agreements with offsite medical facilities).

7.6 Damage Control Equipment and Supplies

Fire hose stations, extinguishers, and hydrants are strategically located throughout the station for use in the event of fire. Self-contained breathing apparatus (SCBA) is located strategically throughout the station to be used as necessary for fire fighting, entry into airborne radioactivity areas, or entry into toxic gas areas. A chlorine container repair kit is available to seal the cover on a chlorine cylinder in the event of a valve leakage. Selected equipment spare parts are stored in the warehouse for equipment repair.

FIGURE 7.2-1

PRIMARY AND SECONDARY COMMUNICATION LINKS
ONSITE - OFFSITE EMERGENCY OPERATIONS
Fort St. Vrain Nuclear Generating Station



TELEPHONE (OPEN LINE)
TELEPHONE
PSC INTERCOM SYSTEM
PSC GAI-TRONICS SYSTEM
PSC RADIO
HOT LINE

BACKUP STATE RADIO SYSTEM
STATE LOCAL GOVERNMENT
STATE PATROL
CIVIL DEFENSE NETWORK
NATIONAL GUARD

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Instrument System	Description and Location	Functional Applicability
1. Geophysical Monitors		
Meteorological	Wind Speed Indicators located North of plant on 60m tower North of the plant.	Measures Wind Speed @ 58m above ground level and 10 m above ground level.
	Wind Speed Indicator located North of plant on 60m tower-Same Instrument as previous listing	Measures Wind Direction @ 58m and 10m above ground level
	Delta Temperature Sensors located on 60m tower north of plant	Measures temperature differential between 10m and 58m elevation
	Rain Guage on 60m tower	Measure precipitation
Ten Meter Tower	Windspeed, Wind direction temperature, Solar Radiation, etc. located North of plant.	Provide backup Meteorological parameters (Operated by NOAA)-available via data logger, modem dial-up (see RERP implementing procedures), or via remote readouts at tower.
Strong Motion Accelographs	2 Detectors Below PCRV 1 Detector on Top of PCRV 1 Detector at N.W. Corner of Visitor Center	Record gound Accelerations in three mutually or orthogonal directions with respect to time. Ground motion activates the SMA's and trips an annunciator in the Control Room.

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Seismoscopes	2 detectors below PCRV 1 detector on top of PCRV	Smoked glass supported on a Pendulum. As relative motion occurs, a stylus scribes a record on the glass.

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
2. Radiation Monitors			
Liquid Monitors			
RT6212 & RT6213	Radioactive liquid effluent monitors. Reactor bldg.- Elev. 4771'	10^{-5} µCi/ml (also, if cooling tower blowdown drops to < 1100 gpm), closes HV-6212 & HV-62249, trips transfer pump P-6202 & 6202S, and trips reactor building sump pumps to prevent 1 X 10^{-7} µCi/ml MPC value at site perimeter from being exceeded. (ELCO 8.1.2)	750 cpm > BKG 750 cpm > BKG
RT21251	Low pressure separator drain line monitor. Reactor bldg.- Elev. 4740'	Bearing water removal pumps trip, water diverted to liquid waste sump. (Operator must go to recycle mode).	10,000 cpm
RT2263 RT2264*	Reheat steam condensate monitor. Turbine bldg.- Elev. 4811'	No control action	600 cpm 570 cpm
RT46211 RT46212	Gas waste compressor cooling water monitor. Reactor bldg. - Elev. 4740'	No control action	600 cpm 600 cpm

*NOTE: RT-2264 is normally lined up to monitor loop 2 steam generator penetration interspace for primary coolant inleakage. Detection of activity in Steam Jet Air Ejector Discharge (RT31193) without correspondingly high indication on RT-2264 would suggest the need to switch RT-2264 to Reheat Steam Condensate, as directed by Emergency Procedure EP H-3.

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
Gas Monitors (Plastic Beta Scintillators)			
RT7324-1 RT7324-2	Reactor building ventilation exhaust monitors. The monitors are located on the Turbine Deck Elev. 4829'	Close block valve FV-6351, divert exhaust from filters to gas waste vacuum tank, shutdown turbine building and service building ventilation and begin recirculation of control room ventilators. Also, closes reactor supp. inlet dampers. (ELCO 8.8.1)	35,000 cpm 1,300 cpm
RT7312	Building Radioactivity Monitor. Five point monitor-samples: 1) PCRV Bottom Head 2) A & I Room 3)Health Physics Access 4) Control Room 5) Turbine Deck Monitor is located on the Turbine Deck Elev. 4829'.	The primary action is to terminate flow to panel I-9325 by closing valves: HV-6342 HV-6341 HV-9316 HV-93256 HV-2325 HV-2326 HV-2357-1 HV-2357-2 Close all AI room sample valves. Normally samples a point for 7 minutes. All take suction from an exhaust vent duct.	1,000 cpm
RT31193	Air Ejector Exhaust Monitor. Located on the mezzanine level of the Turbine Building, east of the main condenser, Elev. 4811'.	No control action. (ELCO 8.8.1)	500 cpm

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
RT9301	Primary Coolant Monitor-Online Beta scintillator to monitor the primary coolant. Located in the AI room, Elev. 4829'.	No automatic action.	4.6 X 10^6 cpm
RT9302	Kr-85 Monitor. Shielded monitor located on the Turbine Deck - Elev. 4829'.	No automatic action. Operator will swap purification trains.	500 cpm
RT6314-2	Gas Waste Exhaust Monitor. Operated in series with the iodine and particulate monitors. Located on Elev. 4781' on the east wall outside the gas waste cubicles.	High alarm diverts the flow to the gas waste vacuum tank. (ELCO 8.8.1)	1.7 X 10^6 cpm
Particulate and Iodine Monitors (NaI gamma scintillation detectors)			
RT6314-1	Monitor the gas waste effluent stream up stream of the gas monitor RT6314-2. Located inside the gas waste blower cubicle on Elev. 4781'.	Has the same control action as RT6314-2. (ELCO 8.8.1)	7.0 X 10^6 cpm

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Control Action	Setpoint
RT73437-1	Reactor Plant Ventilation Exhaust Iodine-131 Monitor Loc: Sampler/Detector: El. 4916 Turbine Side Readout El. 4829 Control Room	ELCO 8.8.1 -Close valve FV6351, divert flow to gas waste vacuum tank. Shutdown turbine building ventilation and place the control room ventilation on recirculation.	10,000 cpm
	This iodine monitor consists of two single channel analyzers, one window being set for the photopeak energy of interest (i.e. ^{131}I), and one being set for an adjacent energy region. The adjacent region window provides a background subtraction capability, thus allowing the monitor to discriminate ^{131}I from noble gas radioisotopes. A 2 inch by 2 inch NaI(TL) crystal is utilized as the detector for this monitor.		
RT73437-2	Reactor Plant Ventilation Exhaust Beta Particulate Monitor Loc: Samples/Detector: El. 4916 Turbine Side Readout El. 4829 Control Room	Same automatic action as RT73437-1.	20,000 cpm
	This particulate monitor consists of an alpha detector and a plastic beta scintillation detectc viewing a fixed filter for particulate radioactivity. The alpha channel provides a live measurement of radon concentration which is subtracted from the beta measurement.		

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location	Alarm Setpoint
Emergency Stack Monitors (PING - Particulates, Iodine, Noble Gases)		
Provided to Monitor Reactor Building Ventilation exhaust effluent during loss of power to the normal operating stack monitor.		
RT 4801	Reactor Plant Ventilation Exhaust Beta Particulate Monitor Loc: El. 4885, turbine side	10,000 cpm
RT 4802	Reactor Plant Ventilation Exhaust Iodine Monitor Loc: El. 4885, turbine side	19,000 cpm
RT 4803	Reactor Plant Ventilation Exhaust Noble Gas Monitor Loc: El. 4881, turbine side	23,000 cpm
Reactor Building Ventilation Exhaust Stack Monitor		
RT 7325-1	Reactor Plant Ventilation Exhaust Iodine and Particulate Monitor Loc: Samples/Detector: El. 4921 Turbine Side Readout El. 4829 Control Room	1,600 cpm
RT 7325-2	Reactor Plant Ventilation Exhaust G-M Detector Loc: Sampler/Detector: El. 4921 Turbine Side Readout El. 4829 Control Room	10 mr/hr

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Description and Location		Alarm Setpoint
TSC Ventilation Monitors			
RIT 7937	TSC Ventilation Inlet	(P)	30,000 cpm
	Particulate, Iodine, Noble Gas	(I)	3,000 cpm
	Loc:	(G)	400 cpm
	Sampler/Detector: El. 4791 TSC Building		
	Readout El. 4791 TSC Building		
RIT 7936	TSC Ambient Atmosphere	(P)	30,000 cpm
	Particulate, Iodine, Noble Gas	(I)	3,000 cpm
	LOC:	(G)	400 cpm
	Sampler/Detector: El. 4811 TSC		
	Readout EL. 4811 TSC		

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Location	Elevation	Alarm Setpoint mrem/hr
Reactor Building Area Radiation Monitors			
RT93250-1	Refueling Machine Control Room	4881	2.5
RT93252-1	Northeast Refueling Floor	4881	2.5
RT93250-2	East Walkway Outside HSF	4854	2.5
RT93252-2	South Stairwell	4864	2.5
RT93250-3	Hot Service Facility Platform	4856	10.0
RT93251-3	Hot Service Blower Section	4868	100
RT93250-4	Outside HSF Door	4839	2.5
RT93252-4	Instrument Room-Analytical Instrument Board	4829	2.5
RT93251-5	Gas Waste Filters	4781	2.5
RT93251-6	Truck Bay	4791	2.5
RT93252-6	Near South Stairwell	4791	2.5
RT93251-7	Core Support Filter	4781	2.5
RT93252-7	East Walkway	4781	2.5
RT93250-8	North East Walkway	4771	2.5
RT93251-8	Decontamination Laundry	4771	2.5
RT93251-9	Buffer Helium Dryer Loop I	4740	2.5
RT93250-14	Refueling Floor/ East Wall	4881	2500

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Location	Elevation	Alarm Setpoint mrem/hr	Control Action
Turbine Building Area Radiation Monitors				
RT93250-13	Near Condensate Demineralizers	4791	2.5	
RT93251-1	Reactor Plant Exhaust Filter Room	4864	1000	
RT93251-4	General Office Area	4816	1.0	
RT93250-5	Control Room	4829	1.0	
Technical Support Center Area Radiation Monitor				
RIA-7951	Technical Support Center	4811	2.5	
Equipment Radiation Monitors				
RT93250-12	Steam/Water Dump Tank Monitor	4740	2.5	Alarm blocks opening HV-22156 vent valve to atmosphere
RT93251-12	Steam/Water Dump Tank	4740	2.5	Alarm blocks opening HV-22156 vent valve to atmosphere
RT93250-10	Reheat Steam Header Monitor Loop 1	4811	1 (alarm) 3 (trip)	
RT93251-10	Reheat Steam Header Monitor Loop 1	4811	3	

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Channel and Radiation Transmitter Number	Location	Elevation	Alarm Setpoint mrem/hr	Control Action
RT93252-10	Reheat Steam Header Monitor Loop 1	4811	1 (alarm) 3 (trip)	
RT93250-11	Reheat Steam Header Monitor Loop 2	4811	1 (alarm) 3 (trip)	
RT93251-11	Reheat Steam Header Monitor Loop 2	4811	1 (alarm) 3 (trip)	
RT93252-11	Reheat Steam Header Monitor Loop 2	4811	1 (alarm) 3 (trip)	
RT932[illegible]2	PCRV Relief Valve Piping Monitor	4885	2.5	

3. System Monitors

Process Monitors affecting the Assessment of Radiological Accidents are shown in the EAL column of Tables 4.1-1 - 4.1-4.

4. Fire Detection

Smoke Detectors	Detect Products of Combustion
Rate of Heat Rise Detector	Detects Quick Rise of Temperature
Fixed Heat Detector	Detects a Set Temperature

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Instrument System	Description and Location	Functional Applicability
5. Facilities		
	Whole Body Counter	Detect, identify, and quantify internal deposition of radioactivity
	Radiochemistry Laboratory	Equipped for Radiological Analysis
	Radiation TLD Monitoring Stations Outside Security Fence, inside owner controlled	Measure radiation dose rates (operated by contract with Colorado State University) area.
	4 Fixed Air Sampling Stations-Just Outside Security Fence	Sample particulates and radioiodines (operated by contract with Colorado State University)
	Emergency Lab	Ge-Li Detector Multi-Channel Analyzer
6. Portable Survey Instruments		
	Airborne Particulate Monitors	Detect Airborne Contamination
	Beta-Gamma Air Monitor	Detect Airborne Radioactivity
	Tritium Air Monitors	Detect Airborne Tritium
	Alpha Survey Meters	Detect Surface Contamination
	Neutron Detectors	Determine Neutron Flux rate
	Ion Chambers	Determine Gamma Dose rate

TABLE 7.3-1

ONSITE ASSESSMENT EQUIPMENT AND FACILITIES

Instrument System	Description and Location	Functional Applicability
	Beta-Gamma Geiger-Mueller Survey Meters	Surface and Area Radiation Levels
	SAM-II Portable Multi-Channel Analyzers	Verification of airborne I-131 levels in the field
	Scintillation Counters	Determine Gamma Dose Rate
	Pancake Geiger-Mueller Monitors	Determine Surface Contamination Levels
	Proportional Counter	Determine Alpha-Beta-Gamma Contamination
	Hi and Lo Vol Air Samplers	Detect Airborne Iodine and Particulate Contamination

TABLE 7.3-2

OFFSITE ASSESSMENT EQUIPMENT AND FACILITIES

Individual Detector	Functional Applicability
1. Geophysical Monitoring	
Meteorological	
National Weather Service Denver Stapleton Airport	Weather Forecasting
2. Radiological Monitors	
Environmental Monitoring Radiation monitoring stations (12 TLD locations between one and ten miles from reactor: 12 locations between ten and fourteen miles from reactor)	Measure radiation dose rate (operated by contract with Colorado State University)
Fixed Air Sampling Stations	Measure particulates and radioiodines (operated by contract with Colorado State University)
Colorado State University	
Ge-Li Detector	Gamma Spectrometry for Isotopic identification and Analysis
NaI(Tl) Detector	Gamma Spectrometry for Isotopic identification and Analysis
Radiochemistry Laboratory	Chemical and radiological Analysis

TABLE 7.3-2

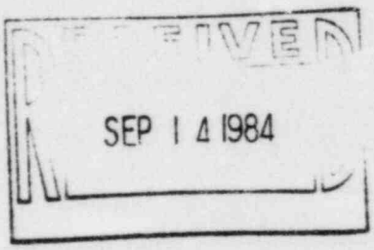
OFFSITE ASSESSMENT EQUIPMENT AND FACILITIES

Individual Detector	Functional Applicability
Colorado State Department of Public Health	
Whole Body Counter	Identification and quantification of inhaled or ingested radioisotopes. Serves as backup to FSV System.

of Colorado

16805 WCR 19 1/2, Platteville, Colorado 80651

September 7, 1984
Fort St. Vrain
Unit No. 1
P-84348



Mr. Eric H. Johnson
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Dear Mr. Johnson:

We are transmitting herein revisions to several emergency preparedness related documents. The changes affect tne following document binders:

Radiological Emergency Response Plan - Plant

The following procedures are being transmitted for filing in the RERP - Plant Procedures.

Section 4, Issue 5
Section 5, Issue 6
Section 6, Issue 7
Section 7, Issue 6

If there is confusion as to which issue is most recent whenever multiple copies are received in a short period of time, the highest issue number is always the most recent issue of a given procedure.

If difficulties or questions arise in filing these procedures, please feel free to contact Ms. Shailyn Johnson at (303) 785-2224, extension 275 for assistance.

Very truly yours,

J. W. Gahm
Manager, Nuclear Production

JWG/cjs

H005
ORIGINAL
TO RIII