



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

BOOK 1

8/6/84

RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

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PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

CR ALERT
Issue 22
Page 1 of 12

TITLE: CONTROL ROOM ALERT, SITE EMERGENCY, GENERAL EMERGENCY
PROCEDURE

ISSUANCE
AUTHORIZED
BY

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ISSUANCE AUTHORIZED BY *Don Wavensburg*
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* ANYTIME A WORKSHEET, DATASHEET, OR CHECKLIST HAS BEEN WRITTEN ON, COMPLETE THE REPORTING SHEET ATTACHED IN THE TABBED WORKSHEET SECTION AND FORWARD IT TO THE NUCLEAR DOCUMENTS SPECIALIST, FORT ST. VRAIN. DO NOT WRITE ON ANY WORKSHEETS, DATASHEETS, CHECKLISTS, OR REPORTING SHEETS IN THE PROCEDURE ITSELF. ALL WORKSHEETS/DATASHEETS/CHECKLISTS ARE TO BE TAKEN FROM THE TABBED SECTION FOLLOWING EACH PROCEDURE.



1.0 Criteria for Implementation

This procedure is to be utilized by Control Room personnel in the event of an occurrence which is classified in Tables 1 through 6 of this procedure to be a Non-Emergency Event or an FSV Radiological Emergency Response Plan (RERP) event. Guidance to assist in the accident classification process can be found in Emergency Procedure EP CLASS. Initial accident classification is the responsibility of the Shift Supervisor, in the role of Emergency Coordinator.

2.0 Procedure

2.1 General Responses

- 2.1.1 Under any emergency condition, the Shift Supervisor and onsite personnel will immediately initiate those actions required to limit the consequences of the event and return the plant to a safe and stable condition.
- 2.1.2 Implementation of the FSV Radiological Emergency Response Plan (RERP) is required whenever any of the Initiating Events of Tables 3 through 6 of this procedure occurs. Additional guidance on accident classification is contained in Emergency Procedure EP Class, as well as in each individual Emergency Procedure. Initial accident classification is the responsibility of the Shift Supervisor.
- 2.1.3 Notification of offsite authorities will be initiated within 15 minutes after the declaration of an emergency.
- 2.1.4 Checklists 1 and 2 are for use by the Emergency Coordinator and/or the CR Director. These checklists present a brief summary of actions, and are to be used for guidance purposes to assist in verifying execution of required responses.
- 2.1.5 If the RERP is to be implemented for on ALERT or higher classification, PSC personnel required to man the response centers (Figure 1) are notified by telephone, if the event occurs during non-working hours. It is the responsibility of the individual response center Alternate Directors (or the first individual contacted by the Director) to ensure that these notifications are made (see RERP-HOME). Refer to RERP-PHONE LISTS for instructions and personnel names and telephone numbers.



2.2 On-Shift Control Room Personnel - Procedure

2.2.1 Implement Emergency Procedure actions required to limit the consequences of the event and return the plant to a safe and stable condition.

2.2.2 If a radiological release is involved, make a preliminary assessment of the release utilizing implementing procedure RERP-DOSE to perform offsite dose calculations. Worksheets, Datasheets, and Checklists for dose calculations are contained in RERP-DOSE, as summarized below:

Worksheet 1 Monitored Release - Manual;
Worksheet 2 Monitored Release - TI-59;
Worksheet 3 Unmonitored Release - Manual;
Worksheet 4 Unmonitored Release - TI-59;
Datasheet 1 Monitored Datalogger;
Datasheet 2 Unmonitored Datalogger; and
Checklist 1 Monitored Datalogger.

It is the Shift Supervisor's responsibility to ensure that the offsite consequence assessments are performed as required. Radiological Assessment will become the responsibility of the Technical Support Center after full facility activation.

2.2.3 As soon as possible, inform the Emergency Coordinator of the results of the preliminary radiological assessment.

2.2.4 Maintain the plant in a safe and stable condition.

2.2.5 Implement corrective actions as directed by the Emergency Coordinator or CR Director.

2.3 Technical Advisor - Procedure

2.3.1 Report to the Control Room immediately when the Plant Emergency Alarm sounds, or when directed by the Shift Supervisor (Emergency Coordinator).

2.3.2 Datasheet 1, "Preliminary Assessment of Plant Conditions," is provided to assist in making initial assessment of plant status.

2.3.3 Provide technical support to Control Room staff, as required.



2.4 Shift Supervisor (Emergency Coordinator) - Initial Responses to all Events

2.4.1 Assume the position of the Emergency Coordinator until relieved by the Control Room Director (Primary: Superintendent of Operations; Alternate: Shift Supervisor, Training), or the TSC Director.

2.4.2 As Emergency Coordinator, direct onsite emergency responses and initiate any required corrective actions to mitigate the consequences of the event.

2.4.3 Checklist 1 is provided as guidance to verify execution of required responses. Checklist 2, a continuation of Checklist 1, is provided for use in the event of an ALERT or higher incident.

2.4.4 If a radiological release or potential radiological release is involved, preliminary radiological assessment may be delegated to a Reactor Operator. (This calculation should be performed at an average rate of approximately once every 30 minutes until relieved of this responsibility by the TSC or until the offsite release is terminated.)

2.4.5 For additional assistance in assessing the magnitude of the release, attempt to contact the Radiation Protection Manager (see Attachment 1, Phone Numbers for Notification.)

2.4.6 Initiate radiological protective actions for station personnel.

2.4.7 Classify the event as a Non-Emergency Event, Unusual Event, or an ALERT or more severe emergency event, utilizing event status and preliminary radiological assessment, if applicable. Additional guidance for classification is provided in Emergency Procedure EP CLASS.

Table 7, Initiating Event Cross-Reference, and Table 8, Emergency Condition Cross-Reference, are also provided for use in classifying the event category and summarizing emergency response actions.



2.4.7.1 Non-Emergency Events

This group of operating events comprises a series of occurrences for which, in the wake of Three Mile Island 2, there was a need to receive notification and data early-or in the situation's course of events. The reporting requirements for this group of events have been revised to include only reports of those events which are related to the operations of the NRC and which affect the safety of the operating power plant. The category has been changed from "Significant Events" to "Non-Emergency Events" and split into two categories -- those events which should be reported as soon as possible but in all cases within one hour, and those which should be reported as soon as possible but in all cases within four hours. Table 1 summarizes those events and representative occurrences which would require a four-hour report and Table 2 summarizes those that would require a one-hour report.

Refer to section 2.5, Non-Emergency Event Procedure, for actions required for this event classification.

It should be noted that if an occurrence listed herein also falls under a higher level category, the actions required for the more severe category shall take precedence.



2.4.7.2 NOTIFICATION OF UNUSUAL EVENT

This classification is the least severe Emergency Class and 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.

The plant is placed in a position of readiness for a possible cessation of routine activities and/or an augmentation of on-shift resources, however, the FSV Emergency Organization is not activated for the UNUSUAL EVENT.

Notifications to State and Federal officials should be initiated within 15 minutes after declaration of the UNUSUAL EVENT.

Table 3 outlines initiating events and Emergency Action Levels for this class of incident. Required responses for this classification are presented in section 2.6, NOTIFICATION OF UNUSUAL EVENT.



2.4.7.3 ALERT, SITE AREA EMERGENCY or GENERAL EMERGENCY

Declaration of an ALERT or higher Emergency Class will require implementation of the RERP and activation of emergency response centers. Notification of State and Federal authorities should be initiated within 15 minutes after declaration of the emergency.

If the event is an escalation of a previous emergency classification, followup notification to the NRC should be made immediately if an open line has not already been established.

Actions to take for these events are described in section 2.7, the procedure for ALERT or higher events. If the event is an escalation from a lower category, proceed directly to step 2.7.3.

Tables 4, 5, and 6 outline initiating events and Emergency Action Levels for the three classes of incidents:

- Table 4 - ALERT;
- Table 5 - SITE AREA EMERGENCY; and,
- Table 6 - GENERAL EMERGENCY.



2.5 Non-Emergency Event Procedure

- 2.5.1 In the event of an occurrence believed to be defined by Table 1 or 2, the Shift Supervisor or his authorized delegate may contact one member of plant management listed in order of preference in Attachment 1, although the responsibility of initial event classification is that of the Shift Supervisor, and may not be delegated.
- 2.5.2 The Shift Supervisor shall inform the management contact of the event classification, or may request management advice regarding the classification.
- 2.5.3 The Shift Supervisor and the management contact shall jointly fill out the "Non-Emergency Event Notification" Form (Attachment 2) to ensure that both have the same information.
- 2.5.4 The management contact shall then contact other management personnel listed, as appropriate.
- 2.5.5 The Shift Supervisor shall notify the NRC Operations center of the event as soon as possible, and in all cases, within one hour or four hours as applicable to the Non-Emergency Event category. Notification should be made via the NRC "hot line," if possible. Alternative methods of notification are given in Attachment 1, should the "hot line" be unavailable.
- 2.5.6 Maintain an open, continuous communication channel with the NRC Operations Center, upon request by the NRC.
- 2.5.7 If an open line is not established, a followup notification should be made to report any of the following, if applicable:
- any further degradation of plant conditions;
 - results of evaluations or assessments of plant conditions;
 - effectiveness of response or protective measures taken; or,
 - information related to plant behavior that is not understood.



2.5.8 No further action is required unless there is an escalation to an RERP emergency classification as shown in Tables 3-6 of this procedure.

In case of an escalation, refer to the appropriate section:

- Section 2.6 - UNUSUAL EVENT;
- Section 2.7 - ALERT or higher event.



2.6 NOTIFICATION OF UNUSUAL EVENT

2.6.1 In the event of an occurrence believed to be defined by Table 3, the Shift Supervisor shall assume the position of Emergency Coordinator until relieved by the Superintendent of Operations (alternate: Shift Supervisor, Training).

2.6.2 Notify the on-duty Technical Advisor. (Refer to Attachment 1, Phone Numbers for Notification.)

2.6.3 Contact one member of plant management listed in order of preference in Attachment 1, Phone Numbers for Notification.

NOTE: In the event that no management person listed can be contacted, it is the Shift Supervisor's responsibility to classify the event and make notifications as required.

2.6.4 Inform the management contact of the classification of the event, or if desired, request management advice regarding the classification.

2.6.5 Jointly complete the "NOTIFICATION OF UNUSUAL EVENT" form with the management contact to ensure that the same information is recorded by both parties.

The management contact will then contact other management personnel as required, and the Resident NRC Inspector. (See Attachment 1.)

2.6.6 Notify the State of Colorado and the NRC Operations Center of the event by following the instructions on the notification form (Attachment 3). Notifications should be initiated within 15 minutes after declaration of the emergency category. Alternate backup methods of contacting the NRC are given in Attachment 1, Phone Numbers for Notification.

The on-duty Technical Advisor should be kept abreast of the event status.

2.6.7 Maintain an open, continuous communication line with the NRC upon request. Report any degradation of plant conditions, results of evaluations, or response actions and results.



2.6.8 No further action is required unless the event escalates to a higher RERP emergency classification as shown in Tables 4-6 of this procedure. Continue to step 2.7.3 if an escalation occurs.



2.7 ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY

- 2.7.1 In the event of an occurrence believed to be defined as an ALERT or higher emergency by Tables 4-6 of this procedure, the Shift Supervisor shall assume the position of Emergency Coordinator, until relieved by the Control Room Director (Primary: Superintendent of Operations; Alternate: Shift Supervisor, Training), or the TSC Director.
- 2.7.2 Notify the on-duty Technical Advisor if not already done. (Refer to Attachment 1, Phone Numbers for Notification.)
- 2.7.3 Contact one member of plant management listed in order of preference in Attachment 1, Phone Numbers for Notification.

NOTE: In the event that no management person can be contacted, it is the Shift Supervisor's responsibility to classify the event and make notifications as required.

- 2.7.4 Inform the management contact of the classification of the event, or if desired, request management advice regarding the classification.
- 2.7.5 Checklist 2 is provided as guidance to verify completion of required responsibilities.
- 2.7.6 Sound the Plant Emergency Alarm, if not already done, and announce the nature of the emergency.

All onsite personnel will report to their Personnel Accountability Stations (refer to Administrative Procedure G-5, Personnel Emergency Response) for initial accountability.

Rapid evaluation of departmental accountability will be accomplished using plant rosters and computer printouts delivered by Security to the accountability stations.

- 2.7.7 In cooperation with the first management contact, complete the "Notification of Emergency Event" Form (Attachment 4).



2.7.8 Initiate notifications to the PSC Company Operator, Weld County Communications Center, and the NRC Operations Center within 15 minutes after declaration of the emergency (these numbers are on the auto-dialer telephone in both the Control Room and Shift Supervisor's office). Alternate methods of contacting the NRC are listed in Attachment 1, Phone Numbers for Notification, and are to be used in the event that the NRC "hot line" cannot be used.

Read the information on the "Notification of Emergency Event" Form (Attachment 2) to the above contacts. The information should also be conveyed to the Technical Advisor.

2.7.9 The PSC Operator will notify Emergency Response Center Directors, who will in turn notify their Alternates. During an off-hour event, Alternates will contact the remainder of the personnel to report to each response center.

2.7.10 Inform Visitor's Center (VC) to instruct visitors at the VC to depart to the Fort Lupton Fire Station and, depending on the wind direction, specify the departure route (see Figure 2).

Wind from North	Route #3
Wind from South	Route #1
Wind from East	Route #1
Wind from West	Route #2

2.7.11 Notify Security of the impending arrival of emergency personnel and provide adequate clearance for Protected Area access, where required. (If access is required to activate TSC, refer to RERP-Phone Lists or RERP-HOME, Attachment 9, for TSC Director's call list for personnel requiring access.)

2.7.12 Establish communications with the TSC after facility activation using extension 292. (See Attachment 1, Phone Numbers for Notification, for alternate numbers if required.)

2.7.13 Utilize the Fire Brigade or a team from the PCC to locate and/or rescue any unaccounted-for personnel as indicated by reports from Security (see RERP-TEAMS).



2.7.14 Upon arrival at the Control Room, the CR Director shall request a briefing regarding incident status and actions currently in progress. After the briefing, he may assume responsibility for Control Room actions and direct the control of plant operations. He shall notify the Shift Supervisor, duty Reactor Operators, and the TSC of his assumption of the role of CR Director.

2.7.15 Request supplemental Operations personnel from the TSC Director, as required, to control the emergency. (The TSC Director will relay the request to the PCC Director and thus maintain re-entry control).

2.7.16 Initiate corrective actions recommended by the TSC Director to minimize the consequences of the emergency.

2.7.17 Recovery

The CR Director is responsible for recommending a termination or de-escalation of the emergency status, from a plant operational viewpoint, to the TSC Director. This recommendation shall be based upon the CR Director's determination that:

- Radiation levels are stable or decreasing with time;
- Releases of radioactive materials to the environment have ceased, or are controlled within Technical Specification Limits;
- Fires, flooding, or similar hazards no longer pose a threat to plant environment or personnel; and
- Measures have been successfully instituted to repair or compensate for malfunctioning plant equipment.



3.0 Responsibilities

3.1 Emergency Coordinator

The Emergency Coordinator is the on-duty Shift Supervisor. The title of Emergency Coordinator is retained by the duty Shift Supervisor until he is relieved by either the Control Room Director or the Technical Support Center Director, upon activation of the FSV Emergency Organization (see Figure 1). The Emergency Coordinator is responsible for:

- Initial accident classification;
- Recommending protective actions;
- Initiating emergency actions to mitigate the accident;
- Notifying offsite authorities (NOTE: Notifications are required to be initiated within 15 minutes after declaration of an emergency);
- Diagnosing accident conditions;
- Estimating radiological exposures; and
- Establishing communications with the TSC should the FSV Emergency Organization be activated.

Responsibility for the decision for offsite notification and protective action recommendation may not be delegated.

3.2 Control Room Director

The Control Room (CR) Director is responsible for control of plant operations, assessing plant operational aspects, and for implementing any recommended corrective actions. In addition, the CR Director may request any additional operations personnel necessary through the TSC Director.

3.3 Technical Advisor

The Technical Advisor is responsible to provide technical analysis and advice as requested, and to provide recommendations of corrective actions necessary to restore the plant to a safe and stable condition.



3.4 Control Room Personnel

Plant control and plant operations responsibilities are handled by personnel already on-shift and assigned those responsibilities.

4.0 References

4.1 FSV Radiological Emergency Response Plan

4.2 State Radiological Emergency Response Plan

5.0 Referenced or Supporting Procedures

5.1 RERP-TSC, Technical Support Center Procedure

| 5.2 EP CLASS, Event and Emergency Classification Overview

5.3 RERP-DOSE, Offsite Dose Calculation Methodology

5.4 RERP-PAG, Protective Action Guideline Recommendations

5.5 RERP-PCC, Personnel Control Center Procedure

5.6 RERP-HOME, Home Packet for Off-Shift Notifications

5.7 Station Security Plan and Procedures

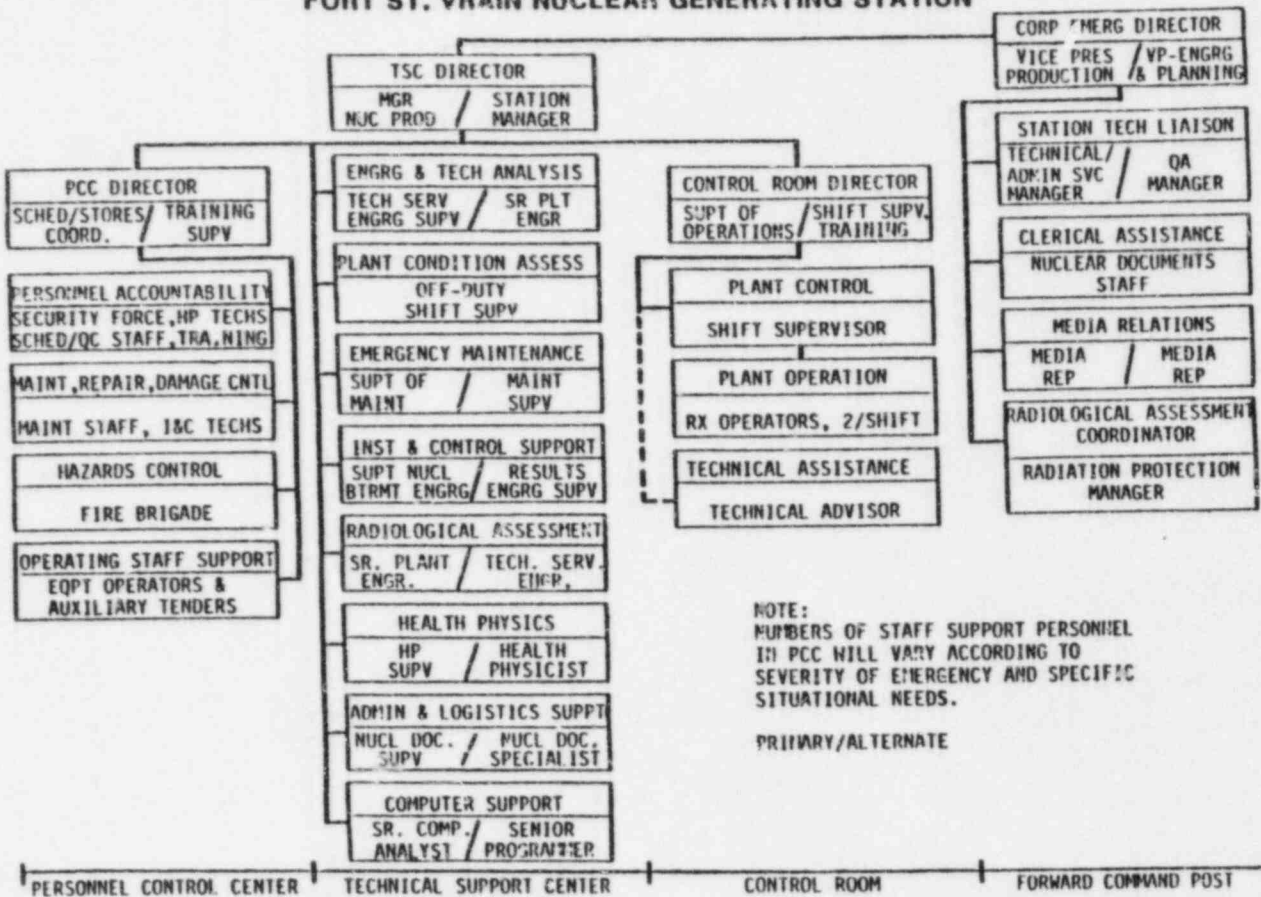
5.8 RERP-PHONE LISTS

5.9 RERP-VC, Visitor's Center Procedure

5.10 Administrative Procedure G-5, Personnel Emergency Response

5.11 RERP-TEAMS, Emergency Team Formation and Direction

**EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY)
FORT ST. VRAIN NUCLEAR GENERATING STATION**



RESPONSE CENTER MANNING REQUIREMENTS

FIGURE 1





FIGURE 2
VISITOR'S CENTER EVACUATION ROUTES

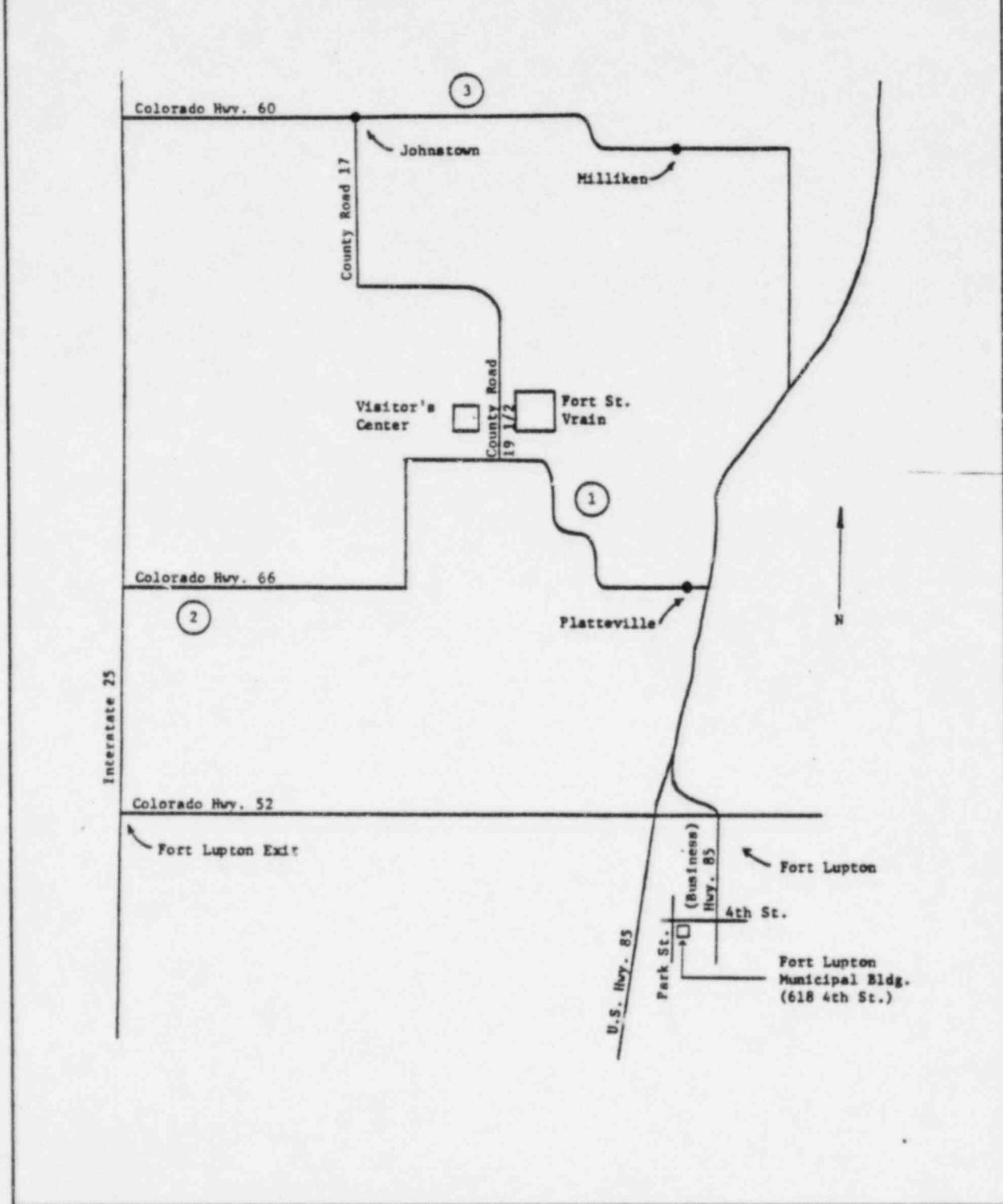




TABLE 1

NON-EMERGENCY EVENTS: FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
1. Any event, found while the reactor is shut-down, that, had it been found while the reactor was in operation, would have resulted in the plant, including its principal safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety.	1. Determination as result of surveillance testing of Plant Protective Systems (PPS) that failure of PPS modules would have prevented a required reactor scram from occurring.
2. Any event or condition that results in manual or automatic actuation of an Engineered Safety Feature, including the Reactor Protection System.	2. Reactor scrams, loop shutdowns, and automatic starting and loading of diesel generators only.

EXCEPTIONS:

- a) Manual scram initiated at 2% during a normal shutdown.
- b) Only one of three channels tripped manually or automatically, but no final protective action takes place, nor is required.
- c) Actuation of the aforementioned systems which result from, and are a part of, the planned sequence during surveillance testing or reactor operation.



TABLE 1

NON-EMERGENCY EVENTS: FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
3. Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to:	3. a) During refueling operations, a $.01\Delta p$ shutdown margin is not maintained due to incorrect rod removal sequence.
a) shut down the reactor and maintain it in a safe shutdown condition;	b) Incorrect valve lineup which results in shut off of secondary system decay heat removal sequence.
b) remove residual heat;	c) Liquid waste monitor setpoints raised for liquid waste release completed. Reactor Building sump pumps taken out of pull-to-lock. Setpoints not reset.
c) control the release of radioactive material; or	d) Loss of HEPA filtration.
d) mitigate the consequences of an accident.	

TABLE 1NON-EMERGENCY EVENTS FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
4. a) Any airborne radioactive release that exceeds 2 times the applicable concentrations of the limits specified in Appendix B, Table II of 10CFR20 in unrestricted areas when averaged over a time period of one hour.	4. As determined by analysis and evaluation.
b) Any liquid effluent release that exceeds 2 times the limiting combined MPC (see Note 1 of Appendix B of 10CFR20) at the point of entry into the receiving water (i.e., unrestricted area) for all radionuclides except tritium and dissolved noble gases, when averaged over a time period of one hour.	
NOTE: Immediate notifications made under this paragraph also satisfy the requirements of paragraphs (a)(2) and (b)(2) of 10CFR20.403.	
5. Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment.	5. As occurring.



TABLE 1

NON-EMERGENCY EVENTS: FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
6. Any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made.	6. a) Onsite fatality for which a news release will be made. b) Inadvertent release of radioactive material not in excess of 10CFR20 limits for an unrestricted area, but requiring report to the State. c) Oil or chemical spill which could reach the South Platte River or St. Vrain Creek and which is therefore reportable to the EPA.



TABLE 2

NON-EMERGENCY EVENTS: ONE-HOUR REPORT

<u>Event</u>	<u>Typical Initiating Event</u>
1. a) The initiation of any plant shutdown required by Technical Specifications.	1. a) As occurring.
b) Any deviation from Technical Specifications authorized pursuant to 10 CFR 50.54(x).	b) Any deviation from a Technical Specification, when the action is immediately needed to protect the public health and safety, and no action consistent with Technical Specifications which can provide adequate or equivalent protection is immediately apparent. (The action should be approved, as a minimum, by a senior licensed operator.)



TABLE 2

NON-EMERGENCY EVENTS: ONE-HOUR REPORT

<u>Event</u>	<u>Typical Initiating Event</u>
2. Any event or condition during operation that results in the condition of the plant, including its principle safety barriers being seriously degraded; or results in the plant being:	
a) In an unanalyzed condition that significantly compromises plant safety;	2. a) As determined.
b) In a condition that is outside the design basis of the plant; or	b) 1. Reactor pressure in excess of design limits with failure to trip plant. 2. Winds experienced in excess of FSAR design levels.
c) In a condition not covered by the plant's operating and emergency procedures.	c) As determined.
3. Any natural phenomenon or other external condition that poses an actual threat to the safety of the plant or significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant.	3. a) Toxic gas release in immediate vicinity of plant. b) Extremely high winds or severe storm preventing plant personnel from completing requisite assignments.



TABLE 2

NON-EMERGENCY EVENTS: ONE-HOUR REPORT

<u>Event</u>	<u>Typical Initiating Event</u>
4. Any event that results in a major loss of emergency assessment capability, offsite response capability, or communications capability.	4. a) Loss of significant portion of Control Room indication. b) Loss of all offsite communication systems.
5. Any event that poses an actual threat to the safety of the plant, or significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant, including fires, toxic gas releases, or radioactive releases.	5. a) Fire posing undue personnel hazard. b) Severe chlorine release from chlorine cylinders. c) Accidental gaseous radiological release resulting in onsite concentrations in excess of 10 CFR 20 Appendix B, Table I.



TABLE 3

NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
1. Any unplanned radiological release to the Reactor Building or its ventilation system.	1. Alarms on: RT 7312 CAM(s) RT 7324-1 RT 7324-2 RT 7325-1 RT 7325-2 RT 4801 RT 4802 RT 4803 RT 73437-1, 2
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.
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 (RR 93256). b) SR 5.2.11 results.
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.



TABLE 3

NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
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 LCO 4.1.9 for region outlet mismatch, or region ΔT , 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.
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 site explosions that may be subject to public concern because of possible detrimental effect on the plant; or,	7. As visually observed by, or reported to, station personnel.



TABLE 3

NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
7. c) Onsite or near site plant related accidents that could result in the release of toxic material or spills of flammable materials.	
8. Any serious radiological exposure of plant personnel or the transportation to offsite facilities of contaminated personnel who may have been injured. (Probably cannot be determined within two hours- call to be made in a timely fashion.)	8. As occurring.
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



TABLE 3

NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
10. (Cont).	<ul style="list-style-type: none">3) PCRV penetration flow restriction devices - LCO 4.2.7 and LCO 4.2.94) PCRV penetration secondary closures - LCO 4.2.7 and LCO 4.2.95) PCRV Safety Valves - LCO 4.2.8 SL 3.2 LSSS 3.3.2.cb) Fire Protection System - LCO 4.2.6, LCO 4.10.1- LCO 4.10.5
11. Indication or alarms on radiological effluent monitors not functional.	<ul style="list-style-type: none">11. Data Logger Alarm/Alarm Summary indication of non-operational alarm or indication on:<ul style="list-style-type: none">a) RT 7324-1, 2 <u>and</u> RT 4803; orb) RT 73437-1, 2, RT 4802, <u>and</u> RT 7325-1; orc) RT 73437-2 <u>and</u> RT 4801; ord) RT 6212 <u>and</u> RT 6213. <p><u>NOTE:</u> Use ELCO 8.1.1 Technical Specification Limits as basis.</p>



TABLE 4

ALERT

<u>Event</u>	<u>Indication</u>
1. Rapid, severe fuel particle coating failure.	1. Coolant Inventory of a) >2.4 <u>(CI) (Mev)</u> Beta-Gamma 1b b) circulating I-131 activity equivalent $>24\text{Ci}$ c) plate out I-131 $>1 \times 10^4$ Ci d) SR 5.2.6 or SR 5.2.11 results.
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.
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
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.



TABLE 4

ALERT

<u>Event</u>	<u>Indication</u>
5. Loss of offsite power <u>and</u> vital onsite AC power for up to 30 minutes.	5. 230 KV OCB trips <u>and</u> RAT undervoltage/loss of power alarm accompanied by 4 KV bus undervoltage, 480V bus undervoltage, <u>and</u> Diesel Trouble alarms.
6. Loss of all vital DC power for up to 30 minutes.	6. DC bus 1 < 10 volts and DC bus 2 < 10 volts
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 c) Verbal reports

* These times are LOFC from 100% power. Times may be correspondingly longer for lower power levels. (See LCO 4.2.18 for time available to initiate depressurization as a function of reactor power level.)



TABLE 4

ALERT

<u>Event</u>	<u>Indication</u>
11. Radiological effluents exceed 10 times technical specifications instantaneous limits.	11. a) RT 7324-1 indicating $\geq 2.5 \times 10^{-2}$ $\mu\text{Ci/cc}$ b) RT 7324-2 indicating $\geq 2.5 \times 10^{-2}$ $\mu\text{Ci/cc}$ c) RT 7325-1 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ d) RT 7325-2 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ e) RT 73437-1 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ I-131. f) RT 4802 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ I-131. g) RT 4803 indicating $\geq 2.5 \times 10^{-2}$ $\mu\text{Ci/cc}$ Utilize reading from above instruments and calculate dose rate per procedures
12. Ongoing security compromise.	12. a) As observed or reported.
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 (≥ 0.05 g) b) As Reported c) As Reported



TABLE 4

ALERT

<u>Event</u>	<u>Indication</u>
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 to, station personnel.
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 5

SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
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.
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.
3. PCRV relief valve remains open.	3. RT 93252-12 alarm and rapidly decreasing Reactor pressure.
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.
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 - .01Δp at 220°F.
6. Major damage to spent fuel due to severe cask damage resulting in release of radioactivity to plant environs.	6. a) Visual observation. b) Area radiation monitor alarms.

TABLE 5
SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
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.
8. a) Effluent monitors detect levels corresponding to greater than 50 mrem/hr, or greater than 500 mrem/hr whole body for two minutes at the site boundary under <u>adverse meteorology</u> (or levels 5 times the above for thyroid dose rate). b) These dose rates are projected based on other plant parameters or are measured in the environs.	8. Stack monitor alarm with corresponding stack concentration indications on: a) RT 73437-1, RT 4802, and RT 7325-1, 2 $\geq 6.7 \times 10^{-8} \mu\text{Ci/cc}$ I-131; or, b) RT 7324-1, 2, and RT 4803 $> 6.6 \times 10^{-2} \mu\text{Ci/cc}$ mixed noble gasses.
9. Imminent loss of physical control of the plant due to security breach. (Response detailed in Station Security Plan.)	9. Situation evident.



TABLE 5

SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
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.
11. Other hazards being experienced or projected with reactor not shutdown, such as:	11. As observed by or reported to station personnel.
a) aircraft crash affecting vital structures;	
b) severe damage to safe shutdown equipment;	
c) entry of toxic/flammable gas into vital areas.	
12. Reactor building louvers open due to building being overpressurized by primary coolant. (DBA #2)	12. a) Louvers Open Alarm (3 inches water) b) Reactor building radiation alarms.



TABLE 5

SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
13. Evacuation of control room accompanied by inability to locally control shutdown systems within 15 minutes.	13. Remote shutdown instrumentation indications (panel I-49).
14. Other plant conditions warranting activation of FCP/EOCs, monitoring teams, and precautionary public notification.	14. As determined by Shift Supervisor.



TABLE 6
GENERAL EMERGENCY

<u>Event</u>	<u>Indication</u>
1. a) Effluent monitors detect levels corresponding to 1 rem/hr whole body (or 5 rem/hr thyroid) at the exclusion area boundary under <u>actual</u> 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.
b) These dose rates are projected based on other plant parameters or are in the environs.	
2. Loss of physical control of the facility (due to security breach).	2. Situation evident.
3. Other plant conditions exist that make release of large amounts of radioactivity possible.	3. As determined by Shift Supervisor.

TABLE 7
INITIATING EVENT CROSS-REFERENCE

radioactivity event	NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
radioactivity event	<ol style="list-style-type: none"> unplanned release to reactor building or its vents any liquid release > Tech. Spec. limits 	<ol style="list-style-type: none"> high radiation levels (1000 x normal) effluents > 10 x Tech. Spec. limits 	effluent monitors indicate > 50 mrem/hr WB for 1/2 hour (> 250 mrem thyroid) or > 500 mrem/hr WB for 2 min. (2.5 rem thyroid) at site boundary under adverse meteorology or similar dose rate projected	effluent monitors indicate 1 rem/hr WB (> 5 rem/hr thyroid at exclusion area boundary under actual meteorology or similar dose rates projected)
fuel	<ol style="list-style-type: none"> indication of minor damage accidents within Colorado involving fuel/waste shipments 	rapid and severe damage	major fuel damage in shipping cask allowing release to plant environs	
fire	> 10 minutes, possible safety system degradation; possible release of r/a / toxic materials	serious, possible substantial safety system degradation	affects safety systems	
natural phenomena	severe, occurring or projected; risks normal levels	severe, component strains near design levels	severe, component strains > design levels (plant not in cold shutdown)	
unusual hazards	on/near site impacts; explosions/accidents; could effect plant/release toxic/flammable material	facility impacted/explosion damage affecting plant/entry into facility/	vital area impacted/severe damage to shutdown equipment/vital area environs of toxic/flammable gas	flammable gas
security		on going security compromise	security breach causing imminent loss of plant physical control	security breach causing loss of plant physical control

TABLE 7

INITIATING EVENT CROSS-REFERENCE

	NOTIFICATION OF UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
alarms	effluent monitor problems (ELCO 8.1.1)	all alarms lost for 15 minutes and reactor not shutdown or transient experienced while alarms out		
electrical		<ol style="list-style-type: none"> 1. loss of offsite power coupled with loss of vital AC power up to 30 minutes 2. loss of vital DC up to 30 minutes 	inability to restore onsite AC	
S/G		gross failure of RH section coupled with offsite power loss	non-isolatable leak through RH section	
plant	<ol style="list-style-type: none"> 1. loss of engineered safety feature 2. abnormal coolant/core temps. requiring shutdown because of Tech. Specs. 	<ol style="list-style-type: none"> 1. primary coolant pressure decay coupled with stack alarms 2. loss of forced primary coolant circulation 2 to 5 hours 3. control rod insertion problems 4. secondary coolant-residual heat removal system problems 5. evacuation of CR/shutdown from I-49 	<ol style="list-style-type: none"> 1. loss of primary coolant circulation > 5 hours (more time for lower power levels) 2. loss of functions needed for hot shutdown 3. PCRV relief valve doesn't reseal 4. DBA #2 5. CR evacuation, inability to control within 15 min. 	
miscellaneous	serious radiological exposure to personnel/transportation of contaminated person to offsite facilities	any other event warranting manning of response centers	any other event warranting manning of response centers and precautionary public notification	any other plant condition that allows possible release of large amounts of r/a

TABLE 8

EMERGENCY CONDITION CROSS-REFERENCE

	NOTIFICATION UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
events are in progress or have occurred that	→ have potential for degradation of plant level of safety	have potential for substantial degradation of plant level of safety exists	involve actual or likely failure(s) of plant protective equipment	involve actual or imminent substantial core degradation
radioactive releases	→ none requiring off site monitoring	small fractions of EPA PAGs	< EPA PAGs except near site boundary	may exceed EPA PAGs
notification	→ State/local/federal	State/local/federal	State/local/federal	State/local/federal
emergency response centers	→ not manned	manned	manned	manned
radiation monitoring teams	→ not dispatched	could be dispatched	dispatched	dispatched
protective actions	→ none	none	considered	initiated
onsite evacuation	→ no	no	could occur	could occur
status updates to offsite authorities	→ none	if applicable	provided	provided
State monitoring teams	→ not dispatched	not dispatched	dispatched	dispatched

TABLE 9
PROTECTIVE ACTION GUIDES

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

<u>Projected Dose (Rem) to the Population</u>	<u>General Public</u>	
	<u>Recommended Actions (a)</u>	<u>Comments</u>
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.

PHONE NUMBERS FOR NOTIFICATIONSPlant Management Contacts

	<u>Page Phone</u>	<u>Plant Ext.</u>	<u>Home Phone</u>
W. J. Franek, Supt. of Operations	890-0558	218	9-532-3489
D. P. Hood, Alternate	N/A	347	78-776-1843
L. M. McBride, Station Manager	890-0698	201	8-303-442-3829
C. H. Fuller, Tech./Admin. Services Manager	890-0810	202	8-303-663-2363
D. W. Warembourg, Manager Nuclear Production	890-0699	200	8-303-833-4092
F. J. Borst, Radiation Protection Manager	890-1775	203	8-303-663-1230
O. R. Lee, Vice Pres., Prod.	N/A	797-4122, 8-571-7305	8-303-659-1180

Resident NRC Inspector

	<u>Office</u>	<u>Page Phone</u>	<u>Plant Ext.</u>	<u>Home Phone</u>
G. L. Plumlee	785-2282	890-2225	490	776-9541

Technical Advisors

	<u>Page Phone</u>	<u>Plant Ext.</u>	<u>Home Phone</u>
J. Sills	890-2223	265	221-5059
J. Eggebroten	890-2220	285	651-1523
A. Reed	890-1942	325	772-5312

Alternate Numbers for NRC Operations Center Notification

NOTE: The preferred method for notification is the "hot line." These numbers, listed in order of preference, should only be used if the "hot line" is not available.

Commercial Telephone System (202)951-0550
(301)427-4056
(301)427-4259
(301)492-8893
(301)492-7000

Health Physics Network *22 (Touch-Tone)
22 (Rotary Dial)

Technical Support Center

Preferred extension: 292
Alternate extensions: 291 or 294



NON-EMERGENCY EVENT NOTIFICATION

Report No. _____ - _____
Year Sequence No.

IMPORTANT:

It is important that the time of all calls and names of people contacted be logged. Any further follow-up calls received or made should be logged as to time and identity of persons involved and the information transmitted or received shall also be logged.

1. Name and Identity of Caller: _____

2. Date of Event: _____ Time of Event: _____

3. This notification appears to be required pursuant to 10CFR 50.72, paragraph ((b)(1), "One-Hour Report"; or (b)(2) "Four-Hour Report")(circle one).

4. Description of Event:

Reactor power prior to event: _____

Loop Shutdown? _____ Scram? _____

Initiating signal(s): _____

Was event result of an LCO Action Statement? _____

Other pertinent information: _____

5. Actions Taken: _____



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6. Status:

Reactor power at time of report: _____

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

_____ Under control by onsite staff. Will keep 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 requested:

8. Does the event involve offsite releases or the potential for offsite release that would affect the general health and safety of the public as the result of Fort St. Vrain conditions?

_____ Yes _____ No

9. If yes, provide a good description: _____

10. Contacts made by Shift Supervisor:

a) Name of NRC contact: _____

b) Time of NRC contact: _____



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Management Contact

a) Name of management contact: _____

b) Time of management contact: _____

11. Contacts made by management:

a) Per attached call sheet log.

12. The Shift Supervisor and Management Contact shall send their copies of the completed forms directly to Technical Services who will:

a) Determine if a Licensee Event Report is required and prepare a facsimile copy if a 30 day report is indicated.

b) Send a copy to the Superintendent, Operations.

c) Send a copy to PORC.



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CALL	TIME	DATE	CONTACT (NAME)	COMMENTS/REMARKS



NOTIFICATION OF UNUSUAL EVENT

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.)



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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).



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3. RECORD the following information:

Name of State EDC contact _____ Date/Time _____

Name of Governor's Office/Mansion Contact _____

Date/Time _____

Call back verification from State EDC, 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 Attachment).

3. RECORD the following information:

Name of NRC Contact _____ Date/Time _____



NOTIFICATION OF EMERGENCY EVENT

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

Required Information

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 _____



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
11. Estimated accumulated dose at EAB:
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)

<u>Projected Dose</u> (rem)	<u>Recommended Protective Action</u>
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 _____

18. Name of person providing report _____

19. Telephone number for call back _____



| 20. Description of any requested off-site assistance _____
| _____
| _____
| _____
| _____
| _____
| _____

B. The Emergency Coordinator will make notifications in sequence as follows:

| PSC Company Operator 8-571-4591
| or 8-571-0111
|

1. INSTRUCT the Operator to initiate the "Fort St. Vrain Radiological Emergency Call List."
2. READ verbatim the information recorded in Part A (Page 1 of this attachment).
3. RECORD the following information:
Time PSC Operator Notified _____
Time Operator Callback Received _____

| Weld County (911 Using Greeley Line)
|

1. READ verbatim the information recorded in Part A (Page 1 of this attachment).
2. RECORD the following information:
Time Weld County Notified _____
Time Weld County Callback Received _____



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NRC OPERATIONS CENTER (HOT LINE OR (202) 951-0550)

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

1. READ Items 1) through 4) from Part A.
2. READ the following sentences verbatim. "THIS EVENT IS BEING REPORTED PURSUANT TO 10-CFR50.72, PARAGRAPH (a)(3). WE ARE PRESENTLY ACTIVATING STATE AND LOCAL EMERGENCY RESPONSE CENTERS."
3. READ the supplemental information (Page 2 of this attachment).
4. RECORD the following information:
NAME of NRC Contact _____
TIME of NRC Contact _____



PRELIMINARY ASSESSMENT OF PLANT CONDITIONS
TECHNICAL ADVISOR

1. Brief description of event _____

2. Date/Time of event _____

3. Date/Time of assessment _____

4. If the data logger is operating, obtain the Demand Function Printout (or print the specified displays):

NOTE: All screens and demand functions are accessible from Display 900.

DF 69-0-0 _____

DF 76-0-0 _____

DF 77-1-0 _____

Post Trip Review _____

Helium Inventory _____

PRIMARY SYSTEM

5. Current Reactor Power _____

6. Rod Runback Occur (Y/N) _____

If yes, record positions 2A _____ 4F _____

7. If shutdown, are all rods fully inserted (Y/N) _____

8. Circulators Operating A B C D MODE:
Steam/Feedwater/Cond./Firewater

9. Purification Train A B To: Storage, PCRV, or Ventilation

10. Is heat removal capability adequate at this time (Y/N) _____



SECONDARY SYSTEM

11. Loops Operating I II
12. Feed to S/G's: Norm. FW____ Emer. FW____ Emer. Cond.____
Firewater____
13. Status of Aux. Boilers _____

Remarks

Time Description



EMERGENCY COORDINATOR'S CHECKLIST

1. Initiate Emergency Procedure actions. _____
2. Technical Advisor notified. (Not necessary for
NON-EMERGENCY events.) _____
3. Assign preliminary assessment of radiological release
taking place. _____
4. Initiate protective actions for station personnel. _____
5. Classify event, using preliminary radiological
assessment, if applicable. _____
6. Contact management and confirm classification. _____
7. If event is classified as an ALERT or more severe
emergency, turn to Checklist 2 for ALERT, SITE
AREA EMERGENCY, or GENERAL EMERGENCY. _____
8. Complete Notifications Form.
NON-EMERGENCY EVENT NOTIFICATION - Attachment 2 _____
NOTIFICATION OF UNUSUAL EVENT - Attachment 3 _____
9. Make Notifications
NON-EMERGENCY EVENT NOTIFICATION
NRC Operations Center _____
NOTIFICATION OF UNUSUAL EVENT
State EOC _____
Governor's Office or Mansion _____
NRC Operations Center _____



EMERGENCY COORDINATOR/CR DIRECTOR CHECKLIST, PART 2:

ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY

1. Sound Plant Emergency Alarm if ALERT or higher and announce nature of the emergency.

2. Select the PCC location based upon consideration of the dominant wind direction:

- 1) Training Center(Primary)
- 2) Engineering/QA Office Complex (Alternate)

NOTE: If both onsite locations are uninhabitable, alternate offsite locations are, in the order of preference, the Johnstown County Shops, Platteville Volunteer Fire Department, and Longmont PSCo Service Center.

3. Complete Notifications form (Attachment 4).

4. Make notifications.

PSC Operator

Weld County Communications Center

NRC Operations Center



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5. Notify Visitor's Center and specify departure route 1, 2, or 3 (see Figure 2):

Wind from North Route #3
Wind from South Route #1
Wind from East Route #1
Wind from West Route #2

6. Notify Security to provide clearance for protected area access, if required.

7. Receive initial personnel accountability reports.

8. Dispatch Fire Brigade and/or Search and Rescue teams as necessary.

9. Establish communications with TSC (dial 292) and notify of PCC location.



Work/Datasheet/Checklist Control List

NOTE: Extra attachments as listed are found in the working copy of this procedure in the Control Room.

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
None	N/A	N/A

Datasheet No.

1	Preliminary Assessment of Plant Conditions	2
---	--	---

Checklist No.

1	Emergency Coordinator/Control Room Director Checklist	2
2	Emergency Coordinator/Control Room Director Checklist, Part 2: ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY	2

Attachment No.

2	Non-Emergency Event Notification	2
3	Notification of Unusual Event	2
4	Notification of Emergency Event	2



FORMS USE REPORTING SHEET

Nuclear Documents Specialist:

This sheet is being transmitted to report use of forms from a controlled copy of the Radiological Emergency Response Plan Implementing Procedures, BOOK NC. _____, located at _____ . The following forms have been utilized from this copy:

Worksheet Numbers

Copies Used

Datasheet Numbers

Copies Used

Checklist Numbers

Copies Used

The procedure affected by this sheet is shown in the header to this page, unless otherwise noted below in the comments to this reporting form. When this form is received, it will be necessary to replace the noted number of forms, as well as this "Forms Use Reporting Sheet" for the affected procedure in the affected book.



FORMS USE REPORTING SHEET (Continued)

COMMENTS

Reported By: _____

Date: _____

Nuclear Documents Specialist _____ *

Date Received _____

Date Replaced _____

* Nuclear Documents Specialist will transmit this form to the originating individual/department upon completion of this form to notify users that the procedure has been updated and that all worksheets, checklists, and datasheets are present in the required number of copies.



TITLE: OFFSITE DOSE CALCULATION METHODOLOGY

ISSUANCE AUTHORIZED BY	<i>Don W. ... by ...</i>	
PORC REVIEW	PORC 580 AUG 2 - 1984	EFFECTIVE DATE 8-6-84

<u>Sections</u>	<u>Description</u>	<u>Page</u>
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1.0	<u>Criteria</u>	3
2.0	<u>Procedure</u>	3
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2.1.1	Monitored Release - Manual.....	4
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Worksheet 4	Unmonitored Release Calculations (TI-59).....	1
Datasheet 1	Data Logger (or IBM) Monitored Release.....	1
Datasheet 2	Data Logger (or IBM) Unmonitored Release.....	1
Datasheet 3	Status Board Update Sheet	1
Checklist 1	Data Logger Monitored Release	1
	Work/Datasheet/Checklist Control List	1
	Forms Use Reporting Sheet*.....	2

* ANYTIME A WORKSHEET, DATASHEET, OR CHECKLIST HAS BEEN WRITTEN ON, COMPLETE THE REPORTING SHEET ATTACHED IN THE TABBED WORKSHEET SECTION AND FORWARD IT TO THE NUCLEAR DOCUMENTS SPECIALIST, FORT ST. VRAIN. DO NOT WRITE ON ANY WORKSHEETS, DATASHEETS, CHECKLISTS, OR REPORTING SHEETS IN THE PROCEDURE ITSELF. ALL WORKSHEETS/DATASHEETS/CHECKLISTS ARE TO BE TAKEN FROM THE TABBED SECTION FOLLOWING EACH PROCEDURE.



General

This procedure provides an overview of the available methodology for offsite dose calculations during an emergency at Fort St. Vrain. The methodology available provides a large degree of flexibility in performing offsite dose calculations, and allows the user to select whatever method he feels the most proficient at using. For both the monitored and unmonitored cases, the options provided are essentially identical in their methodology employed.

This procedure is primarily intended for use by radiological assessment personnel at the Technical Support Center (TSC) and/or Forward Command Post (FCP) during the course of an emergency, and for Control Room personnel for initial dose calculations.

1.0 Criteria

This procedure provides direction to CR, TSC and/or FCP personnel in the performance of offsite dose calculations under emergency conditions. This procedure does not govern calculations for routine release of radiological effluents as provided by station Technical Specifications. This procedure may be implemented in the event of a radiological release to the extent warranting activation of the FSV Radiological Emergency Response Plan (RERP).

2.0 Procedure

Emergency offsite dose calculations may be required for cases where the radiological effluents are being monitored by the exhaust ventilation monitors, or for cases where reactor building louvers have opened and primary coolant is escaping, unmonitored. The first four (4) parts of this procedure are related to calculational options for a monitored release. The last four (4) parts discuss calculational options for an unmonitored release.

For the case of unmonitored release, it is appropriate to utilize unmonitored release assumptions at the outset, and revert to monitored release calculations after the building louvers have closed.

All parts of this procedure are centered around the necessary worksheets and datasheets required for their use. Descriptive text is supplied to provide any general information required for adequate performance of that set of calculations. Worksheets are constructed in such a manner that they do not require a step-by-step reference to this procedure for use.

As all of these calculations, whether computer assisted or not, are extremely time consuming, it is imperative that the individual utilize as much additional assistance from available personnel as they feel necessary. At the TSC, Computer Support



personnel have been adequately trained to provide assistance in both records keeping and data entry if required. Completion of the datasheets and checklists is optional, but should be performed as time permits.

2.1 Monitored Release Calculations

Monitored release offsite dose calculations are performed utilizing the indications of plant ventilation exhaust monitors for noble gases and radioiodines. The primary monitors of interest are RT-7324, 1, and 2, and RT-73437, 1. The RT-7324 monitors are for noble gases, and RT-73437, 1 is for radioiodines. Radioiodine monitors, RT-7325, 1 and 2 may be utilized if required, but could provide overly conservative results in the presence of noble gases.

In the event that the primary monitors are inoperative due to power loss, etc., the emergency stack monitors RT-4802 and 4803, powered by the ACM diesel, may be utilized per HPP-13 to determine the activity concentration of Iodine and Noble gas, respectively.

As a back up in the event that stack noble gas monitors are offscale or inoperative, there is a manual method of determination of stack noble gas concentration. This method is described in detail in HPP-56. Figure 1 of this procedure provides the necessary conversion from a manual portable radiation detector reading to a stack noble gas concentration ($\mu\text{Ci/cc}$). The criterion for determining the need for a manual stack concentration is whenever one, or both, of the stack noble gas monitors (RT-7324, 1, and 2) are offscale, or inoperative, during a radiological emergency. These readings should be obtained as frequently as possible, so as to verify the noble gas release rates.

Offsite dose calculations should be performed at least every thirty minutes during a radiological emergency. These calculations should be utilized in determining the recommended protective actions (see RERP-PAG) and for keeping the Corporate Emergency Director (CED) and Technical Support Center Director apprised of radiological conditions.

Dose conversion factors used in each of the methods described are given in Table 3.



2.1.1 Monitored Release - Manual

This method is provided for situations where use of computer or calculator programs is not possible or to provide a manual verification of dose calculation results.

This calculation is easiest when carried out with the aid of a pocket calculator.

The procedure for this calculation is itemized on Worksheet 1 of this procedure.

2.1.2 Monitored Release - TI-59 Program

The method is, quite simply, the monitored release - manual method performed with the use of a TI-59 program recorded on magnetic cards.

The procedure for this calculation is itemized on Worksheet 2 of this procedure.

2.1.3 Monitored Release - Data Logger Program

For personnel located at the Technical Support Center or in the Control Room, this is the most desirable way of performing offsite dose calculations. This system allows a more precise ongoing tabulation of dose projection results for a series of release calculations, as well as fingertip access to key plant parameters required for these calculations.

For record keeping purposes, it is desirable to print all screens utilized in performance of this calculation. In the Control Room, this can be done with the "PRINT CRT" key. In the TSC, a screen may be transferred to the Tektronix screen and then printed as follows. First, on the Tektronix keyboard press the "SCREEN RESET" button in the upper lefthand corner. Second, on the 2-on-1, press the "COPY CRT" key. This action begins transfer of the screen image to the Tektronix screen. After transfer of the screen is completed (about 20 seconds on average) the screen may be copied to paper by pressing either the white "COPY" button on the Tektronix printer, or by pressing the "COPY" button in the upper right hand corner of the Tektronix keyboard. (If the line printer is connected to the TSC terminal, screen copy is performed by pressing the "PRINT CRT" button on the 2-on-1 console.)



Checklist 1 is available in this procedure to assist in the proper sequence of actions for printing the required screens of this calculation. Datasheet 1 is provided for use in gathering and summarizing the data utilized in performance of this computer assisted calculation (as well as for the IBM program).

This program is accessible by pressing the upper "DEMAND FUNCTION OVERVIEW" button on the 2-on-1 to get the Demand Function menu (or by accessing "DISPLAY" 941). On the menu, locate the cursor in the DF-41-0-0 box, and press "XMIT CURSOR". The instructions for performing the calculations are printed on each screen when brought up, in order. It is advisable that an inexperienced user follow the printed instructions carefully and slowly.

During a long release where the release ending time is not precisely known or estimated, perform two calculations utilizing Program Option #2. First, make a 2 hour dose projection (substitute projected release duration where known) and then make a thirty minute "puff" release projection using Program option #2. The "puff" projection allows tabulation of doses received. The puff projections should be for discrete time intervals. Simply stated, this means that a "puff's" starting time should be the previous "puff's" ending time. These calculations may then be totaled (Step 8) utilizing option 3 and rerunning DF-41-0-0.

2.1.4 Monitored Release - IBM 370 Program

This program is set up to operate from any of the IBM computer terminals available throughout the company. It provides very detailed output and serves as an excellent data base for post-accident dose analysis. Its principal drawback is the job turnaround time on the company computer, and the availability of the ROSCOE programming utility. Additionally, users must have available a ROSCOE sign-on.

The first step of this calculation is to gather data just as was done in 2.1.3 using datasheet 1. Data entry for this program is done by utilizing an interactive ROSPROC developed specifically for this purpose. The user should log onto ROSCOE and then issue the following command:

"EXEC LP.DOSE"



Issuing this command will invoke a data deck structuring program allowing instream data deck structuring and job submission for as many "puffs" and projections as desired. When the user is completed executing puff data, he should route his output to hardcopy by entering "END", while in output runout, and exiting the ROSPROC.

This method is setup so that the long term projection and puff accumulation calculations are done simultaneously. Entry of a projected duration of release is done for each 30 minute update. This value is then added to the time elapsed from start of the update to current.

Values calculated in this manner (first set of output) represent projections from the start of the puff at the current release rate, under current meteorological conditions.

Calculations from this program will result in three pages of output for each set of data entered and a final summary output. The first page summarizes program inputs and the sigma y and sigma z calculations for dispersion. The second page summarizes dose rates and integrated doses for both the projected release and for the 30 minute puff. The third page summarizes dispersion factors, meteorology, release rates, and accumulated doses to that point of the release.

2.2 Unmonitored Release Calculations

These calculation methods are provided for use in the extremely unlikely event that primary coolant leakage is so rapid and extreme that it causes the reactor building louvers to open. In this event, design assumptions from the FSAR indicate that no more than 1/3 of the primary coolant could escape unmonitored. Therefore, these calculations are performed once to estimate the projected dose commitment as a result of such a release. Once the louvers have reseated, all calculations will be able to be performed utilizing the stack monitors as described in Section 2.1.

2.2.1 Unmonitored Release - Manual

Worksheet 3 itemizes the necessary steps for the performance of this calculation.



2.2.2 Unmonitored Release - TI-59 Program

As was the case for the monitored release TI-59 program, this is a magnetic card recorded program that mimics the manual calculation method. Worksheet 4 itemizes the necessary steps for the performance of this calculation.

2.2.3 Unmonitored Release - Data Logger Program

The data logger is the most convenient method for performance of unmonitored release calculations. Datasheet 2 is provided to record program inputs. As was the case for monitored release calculations, be certain to print all screens of input and output that were utilized in performing the calculation.

2.2.4 Unmonitored Release - IBM 370 Program

(Program In Development)

2.3 Protective Action Recommendations

Protective action recommendations are, in large part, based upon the calculations contained herein. Recommendations of offsite protective actions should be based upon the criteria set forth in RERP-PAG.

3.0 Responsibilities

3.1 Control Room Personnel

Perform initial radiological assessemnt as directed by the Emergency Coordinator (Shift Supervisor). Utilize Worksheets 1 or 3 for manual calculations, or Datasheets 1 or 2 and Checklist 1 for data logger use. Report results to Emergency Coordinator. Perform assessment as required (or at least every 30 minutes) until the TSC is activated.

3.2 Radiological Assessment Coordinator

Obtain 30 minute updates of offsite dose calculations from Radiological Assessment personnel at the Technical Support Center. Use this to complete the status board update sheet, datasheet 3. Verify any calculations in question via manual or TI-59 calculations.



| 3.3 Technical Support Center Radiological Assessment

| Perform calculations at an average rate of every 30 minutes during a radiological emergency, and transmit results to both the TSC Director and the Radiological Assessment Coordinator. Save all data sheets, checklists, worksheets and program outputs for transmission to Record Storage at the conclusion of the emergency.

| 3.4 Computer Support Personnel (TSC)

Assist the TSC Radiological Assessment individual on an as-needed basis, when available.

4.0 References

4.1 NRC Regulatory Guide 1.145

4.2 Slade, Meteorology and Atomic Energy, 1968

5.0 Referenced or Supporting Procedures

5.1 HPP-56, Manual Release Rate Determination

5.2 RERP-PAG, Protective Action Guideline Recommendations (To be developed).

5.3 RERP-ORG, FSV Emergency Organization and Responsibilities

| 5.4 HPP-13, Continuous Air Monitors

| 5.5 RERP-TSC, Technical Support Center Procedure

| 5.6 RERP-FCP, Forward Command Post Procedure

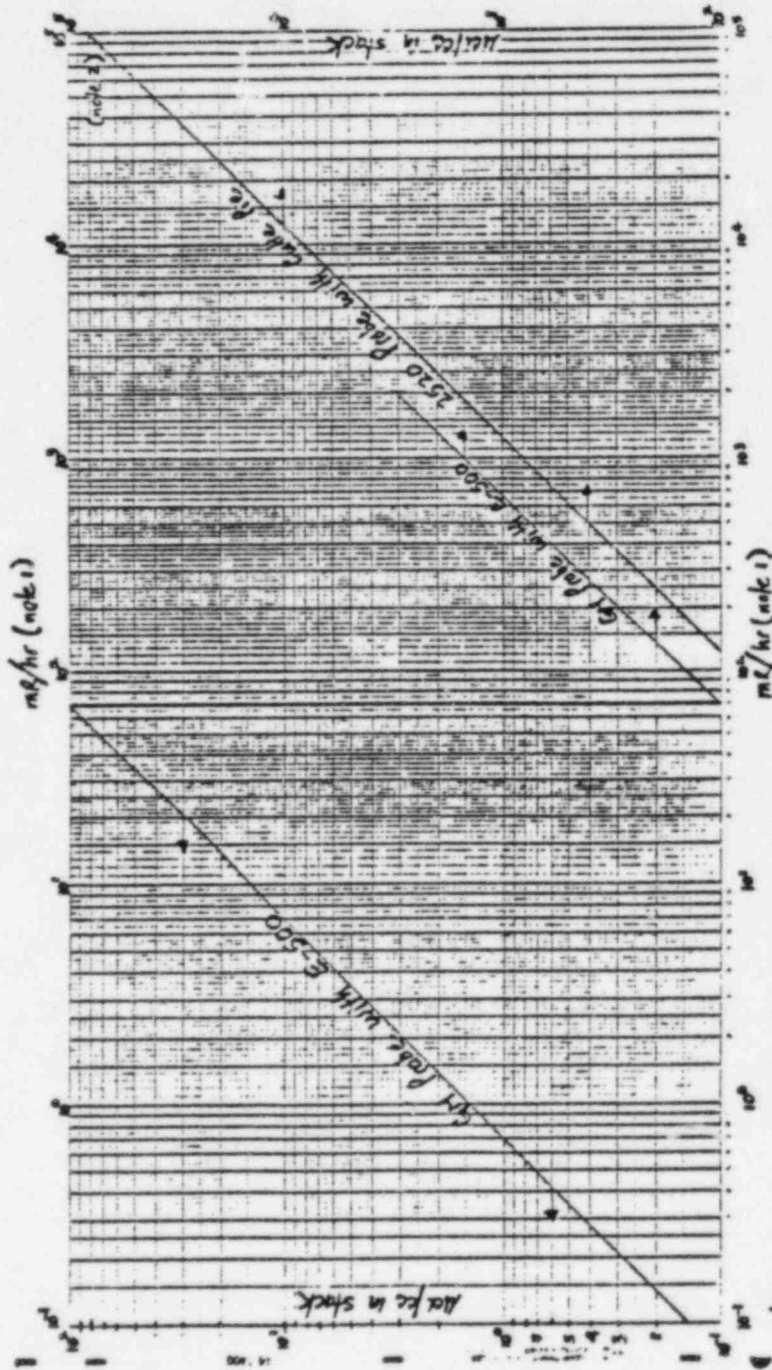
| 5.7 RERP-CR, Control Room Procedure



FIGURE 1

Local Determination of Stack Concentration (RERP)

[70]



notes:
1) As read from instrument listed with probe fully inserted into lead collimator
2) Maximum reading of Catic Pie with 2520 probe is 2.5 ER5 m/hr. This corresponds to approximately 2.0 ER5 mc/hr in stack



FIGURE 2
SITE SECTOR MAP

GEOGRAPHICAL AREA IDENTIFICATION DESIGNATIONS

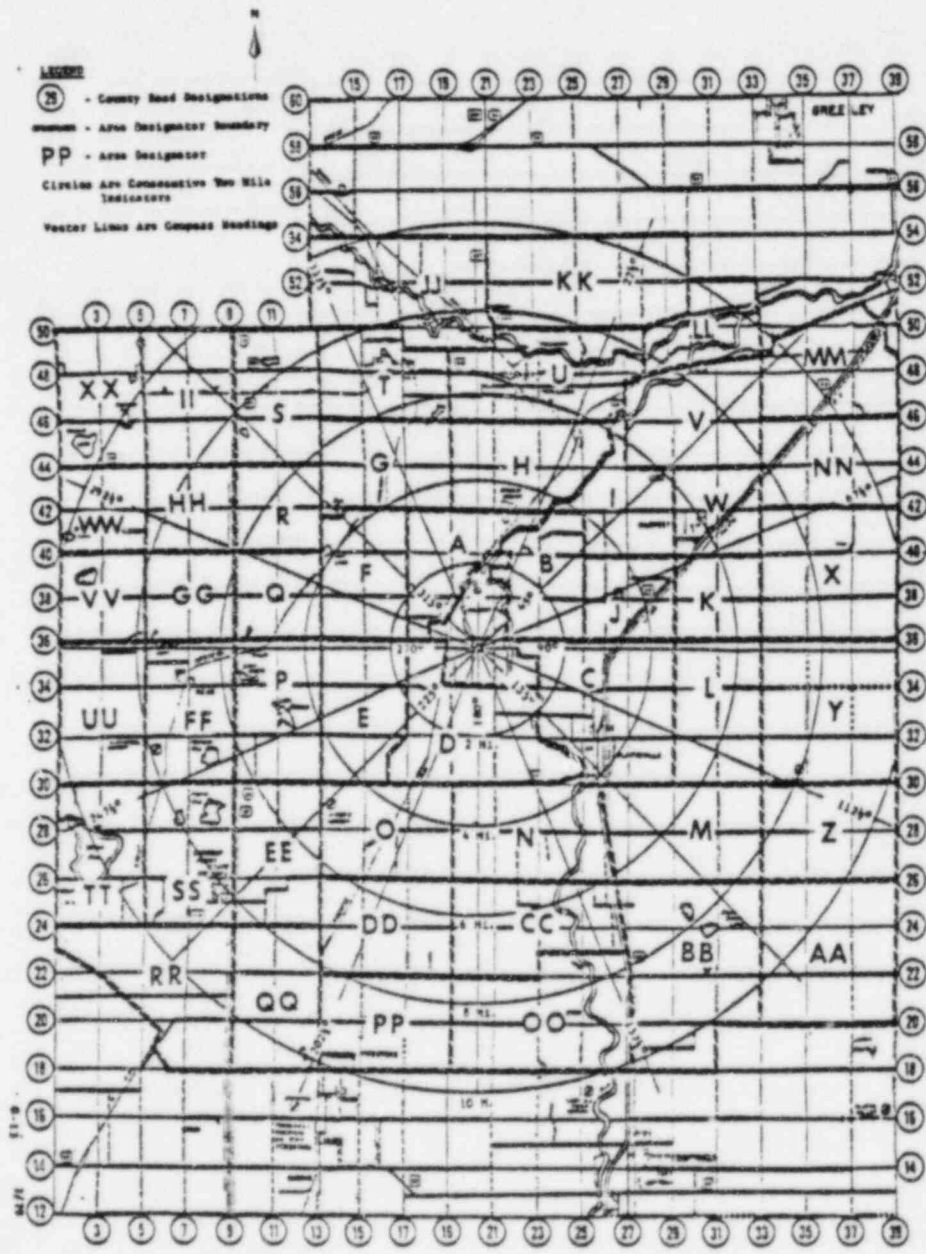




TABLE 1
FORT ST. VRAIN ATMOSPHERIC STABILITY CATEGORIES*

ΔT ($^{\circ}F$) from 60m Tower	Pasquill Categories	Stability Classification	σ_{θ}^{**} (Degrees)
≤ -1.7	A	Extremely Unstable	≥ 22.5
> -1.7 to ≤ -1.5	B	Moderately Unstable	< 22.5 to ≥ 17.5
> -1.5 to ≤ -1.3	C	Slightly Unstable	< 17.5 to ≥ 12.5
> -1.3 to ≤ -0.4	D	Neutral	< 12.5 to ≥ 7.5
> -0.4 to ≤ 1.3	E	Slightly Stable	< 7.5 to ≥ 3.8
> 1.3 to ≤ 3.5	F	Moderately Stable	< 3.8 to ≥ 2.1
> 3.5	G	Extremely Stable	< 2.1

* per Proposed Revision 1 to Regulatory Guide 1.23, September 1980.

** Standard deviation of horizontal wind direction fluctuation (plume meander) over a period of 15 minutes to 1 hour.



TABLE 2

POTENTIALLY AFFECTED SECTORS WITHIN 5 MILE EPZ
(WIND FROM θ DEGREES)
(SEE SITE FIGURE 1 FOR LOCATION OF SECTORS)

Stability Category	$0^\circ \leq \theta < 22\frac{1}{2}^\circ$	Stability Category	$22\frac{1}{2}^\circ \leq \theta < 45^\circ$
A	D, E, N, O, P	A	D, E, N, O, P, EE
B	D, E, N, O	B	D, E, N, O, P, EE
C	D, E, N, O	C	D, E, N, O, P, EE
D	D, N, O	D	D, E, N, O, P, EE
E	D, N, O	E	D, E, O, P, EE
F	D, N, O	F	D, E, O, P, EE
G	D, N, O	G	D, E, O, EE
Stability Category	$45^\circ \leq \theta < 67\frac{1}{2}^\circ$	Stability Category	$67\frac{1}{2}^\circ \leq \theta < 90^\circ$
A	D, E, F, N, O, P, Q, EE	A	A, D, E, F, O, P, Q, R, EE
B	D, E, F, O, P, Q, EE	B	A, D, E, F, O, P, Q, EE
C	D, E, O, P, EE	C	A, D, E, F, O, P, Q, EE
D	D, E, O, P, EE	D	A, D, E, F, P, Q
E	D, E, O, P, EE	E	A, D, E, F, P, Q
F	D, E, O, P, EE	F	A, D, E, F, P, Q
G	D, E, O, P, EE	G	D, E, F, P, Q
Stability Category	$90^\circ \leq \theta < 112\frac{1}{2}^\circ$	Stability Category	$112\frac{1}{2}^\circ \leq \theta < 135^\circ$
A	A, D, E, F, G, P, Q, R	A	A, D, E, F, G, H, P, Q, R
B	A, D, E, F, G, P, Q, R	B	A, D, E, F, G, H, P, Q, R
C	A, D, E, F, G, P, Q, R	C	A, D, E, F, G, P, Q, R
D	A, D, E, F, P, Q, R	D	A, D, F, G, Q, R
E	A, D, E, F, P, Q, R	E	A, D, F, G, Q, R
F	A, D, E, F, P, Q	F	A, F, G, Q, R
G	A, D, E, F, P, Q	G	A, F, G, Q, R
Stability Category	$135^\circ \leq \theta < 157\frac{1}{2}^\circ$	Stability Category	$157\frac{1}{2}^\circ \leq \theta < 180^\circ$
A	A, B, D, F, G, H, Q, R	A	A, B, F, G, H, I, Q, R
B	A, F, G, H, Q, R	B	A, B, F, G, H, R
C	A, F, G, H, Q, R	C	A, B, F, G, H
D	A, F, G, H, Q, R	D	A, B, F, G, H
E	A, F, G, R	E	A, B, F, G, H
F	A, F, G, R	F	A, B, F, G, H
G	A, F, G, R	G	A, F, G, H



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-DOSE
Table 2
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<u>Stability Category</u>	<u>$180^\circ \leq \theta < 202\frac{1}{2}^\circ$</u>
A	A,B,F,G,H,I,J
B	A,B,G,H,I
C	A,B,G,H,I
D	A,B,G,H,I
E	A,B,G,H,I
F	A,B,H
G	A,B,H

<u>Stability Category</u>	<u>$202\frac{1}{2}^\circ \leq \theta < 225^\circ$</u>
A	A,B,C,H,I,J,K
B	A,B,H,I,J,K
C	A,B,H,I,J,K
D	A,B,H,I,J
E	A,B,H,I,J
F	A,B,H,I,J
G	B,H,I,J

<u>Stability Category</u>	<u>$225^\circ \leq \theta < 247\frac{1}{2}^\circ$</u>
A	A,B,C,H,I,J,K,L
B	A,B,C,H,I,J,K,L
C	A,B,C,H,I,J,K
D	B,C,H,I,J,K
E	B,C,I,J,K
F	B,I,J,K
G	B,I,J,K

<u>Stability Category</u>	<u>$247\frac{1}{2}^\circ \leq \theta < 270^\circ$</u>
A	B,C,H,I,J,K,L,M
B	B,C,I,J,K,L,M
C	B,C,I,J,K,L
D	B,C,I,J,K,L
E	B,C,I,J,K,L
F	B,C,I,J,K,L
G	B,C,I,J,K,L

<u>Stability Category</u>	<u>$270^\circ \leq \theta < 292\frac{1}{2}^\circ$</u>
A	B,C,D,I,J,K,L,M,N
B	B,C,D,I,J,K,L,M,N
C	B,C,D,J,K,L,M
D	B,C,D,J,K,L
E	B,C,J,K,L
F	B,C,J,K,L
G	C,J,K,L

<u>Stability Category</u>	<u>$292\frac{1}{2}^\circ \leq \theta < 315^\circ$</u>
A	B,C,D,J,K,L,M,N
B	C,D,J,K,L,M,N
C	C,D,L,M,N
D	C,D,L,M,N
E	C,D,L,M,N
F	C,D,L,M,N
G	C,D,L,M,N

<u>Stability Category</u>	<u>$315^\circ \leq \theta < 337\frac{1}{2}^\circ$</u>
A	C,D,L,M,N,O
B	C,D,L,M,N
C	C,D,M,N
D	C,D,M,N
E	C,D,M,N
F	C,D,M,N
G	C,D,M,N

<u>Stability Category</u>	<u>$337\frac{1}{2}^\circ \leq \theta < 360^\circ$</u>
A	C,D,M,N,O
B	C,D,M,N,O
C	C,D,M,N,O
D	C,D,N,O
E	D,N
F	D,N
G	D,N



TABLE 3

DOSE CONVERSION FACTORS (DCF'S)

<u>Radionuclide</u>	<u>rem/hr</u> <u>DCF(Ci/m³)*</u>
Kr-83m	2.7E-1
Kr-85m	1.3E+2
Kr-85	1.7E+0
Kr-87	6.5E+2
Kr-88	1.7E+3
Kr-89	1.5E+3
Kr-90	1.0E+3
Xe-131m	9.9E+0
Xe-133m	2.7E+1
Xe-133	3.3E+1
Xe-135m	3.5E+2
Xe-135	2.0E+2
Xe-137	1.5E+2
Xe-138	6.8E+2
<hr/>	
Noble gas weighted average total body DCF (based on 879 Mw(t) design inventory)	7.5E+2
<hr/>	
I-131	1.2E+6
I-132	1.7E+4
I-133	2.3E+5
I-134	5.6E+3
I-135	5.7E+4
<hr/>	
Radioiodine weighted average thyroid DCF (based on 879 Mw(t) design inventory)	5.3E+4
<hr/>	

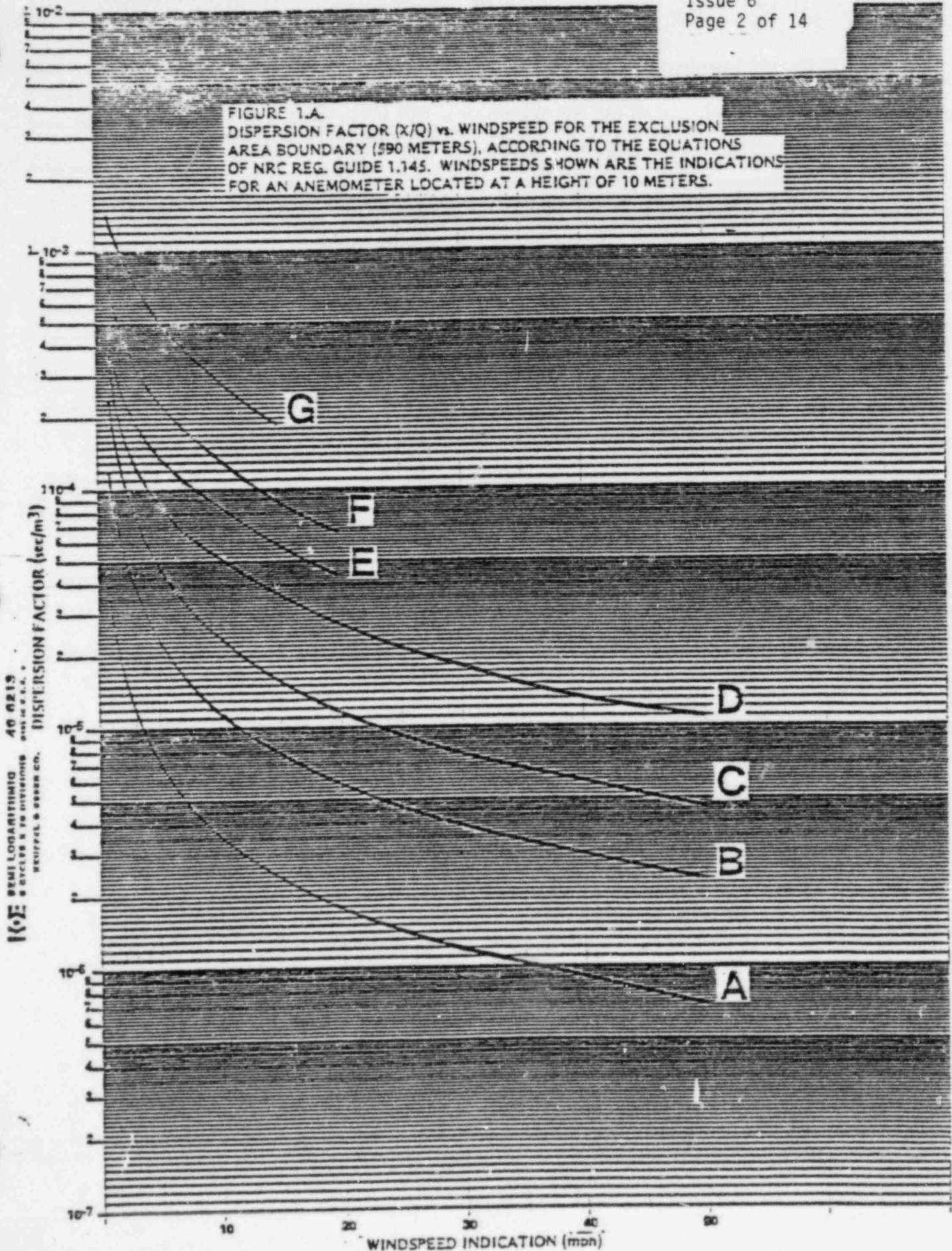
*DCF's for noble gases from "The EXREM III Computer Code for Estimating External Radiation Doses to Populations from Environmental Releases," ORNL-TM-4332, with the exception of DCF's for Kr-89 and Kr-90, which are from "Final Environmental Statement, Light Water Breeder Reactor Program," Volume 3 of 5, "Commercial Application of LWBR Technology," ERDA-1541.

DCF's for radioiodines from "INREM II: A Computer Implementation of Recent Models for Estimating the Dose Equivalent to Organs of Man from an Inhaled or Ingested Radionuclide," ORNL/NUREG/TM-84

TABLE 1A
 X/Q VALUES ($\times 10^{-5}$ sec/m³) AT THE EXCLUSION AREA BOUNDARY (590m)
 FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS
 ACCORDING TO THE EQUATIONS OF NRC REG GUIDE 1.145
 WINDSPEED AT 10 METERS (MPH)

Stability Class	1.0	2.0	3.0	5.0	7.0	9.0	12.0	15.0	20.0	30.0	50.0
A	3.469	1.735	1.156	0.694	0.496	0.386	0.289	0.231	0.174	0.116	0.069
B	11.490	5.746	3.830	2.298	1.642	1.277	0.958	0.766	0.575	0.383	0.230
C	23.250	11.630	7.751	4.650	3.22	2.584	1.938	1.550	1.163	0.775	0.465
D	36.56	18.28	12.19	7.844	6.928	5.988	4.491	3.593	2.695	1.796	1.078
E	48.46	24.23	16.15	10.83	10.83	9.449	7.089	5.670	4.252	2.835	1.701
F	88.42	44.21	29.47	20.35	18.54	14.42	10.81	8.650	6.488	4.325	2.595
G	140.20	70.11	46.74	33.62	40.06	31.16	23.37	18.70	14.02	9.348	5.609

FIGURE 1.A.
DISPERSION FACTOR (X/Q) vs. WINDSPEED FOR THE EXCLUSION
AREA BOUNDARY (590 METERS), ACCORDING TO THE EQUATIONS
OF NRC REG. GUIDE 1.145. WINDSPEEDS SHOWN ARE THE INDICATIONS
FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS.



10-E SEMI-LOGARITHMIC 40 0215
8 CYCLES X 70 DIVISIONS
HEUFFEL & GIBSON CO. MADE IN U.S.A.
DISPERSION FACTOR (sec/m³)

WINDSPEED INDICATION (mph)

TABLE 2A
 X/Q VALUES ($\times 10^{-6}$ sec/m³) AT A DOWNWIND DISTANCE OF 2 MILES
 FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS
 ACCORDING TO THE EQUATIONS OF NRC REG GUIDE 1.145
 WINDSPEED AT 10 METERS (MPH)

Stability Class	1.0	2.0	3.0	5.0	7.0	9.0	12.0	15.0	20.0	30.0	50.0
A	0.124	0.062	0.041	0.025	0.018	0.014	0.010	0.008	0.006	0.004	0.002
B	1.751	0.876	0.584	0.350	0.250	0.195	0.146	0.117	0.088	0.058	0.035
C	12.97	6.483	4.322	2.593	1.852	1.441	1.081	0.865	0.648	0.432	0.259
D	38.13	19.07	12.71	7.859	6.104	5.019	3.972	3.177	2.383	1.589	0.953
E	64.89	32.44	21.63	13.74	11.46	9.821	7.961	6.369	4.776	3.184	1.911
F	130.4	65.18	43.45	28.33	25.27	22.53	17.91	14.33	10.74	7.163	4.298
G	250.1	125.0	83.35	56.60	56.14	51.72	38.79	31.03	23.28	15.52	9.310

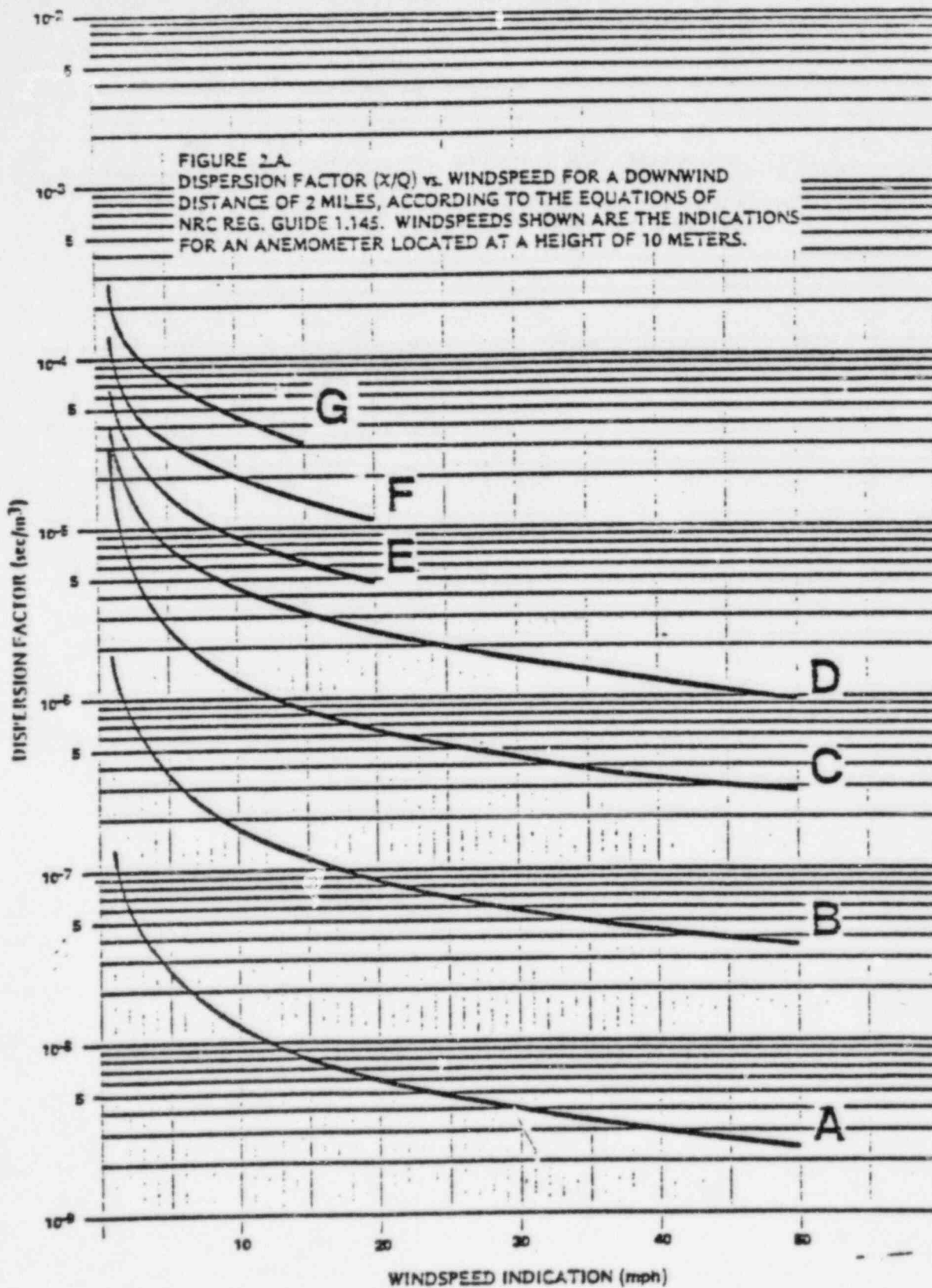


TABLE 3A
X/Q VALUES ($\times 10^{-6}$ sec/m³) AT A DOWNWIND DISTANCE OF 4 MILES
FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS
ACCORDING TO THE EQUATIONS OF NRC REG GUIDE 1.145

WINDSPEED AT 10 METERS (MPH)

Stability Class	1.0	2.0	3.0	5.0	7.0	9.0	12.0	15.0	20.0	30.0	50.0
A	0.069	0.034	0.023	0.014	0.010	0.008	0.006	0.005	0.003	0.002	0.001
B	0.155	0.078	0.052	0.031	0.022	0.017	0.013	0.010	0.078	0.005	0.003
C	3.963	1.982	1.321	0.793	0.566	0.440	0.330	0.264	0.198	0.132	0.079
D	14.87	7.434	4.956	3.028	2.271	1.823	1.411	1.132	0.849	0.566	0.340
E	29.17	14.59	9.725	6.053	4.757	3.918	3.095	2.476	1.857	1.238	0.743
F	65.46	32.73	21.82	13.85	11.40	9.626	7.585	6.068	4.551	3.034	1.820
G	132.81	66.42	44.28	29.04	25.85	22.67	19.37	13.90	10.42	6.948	4.169

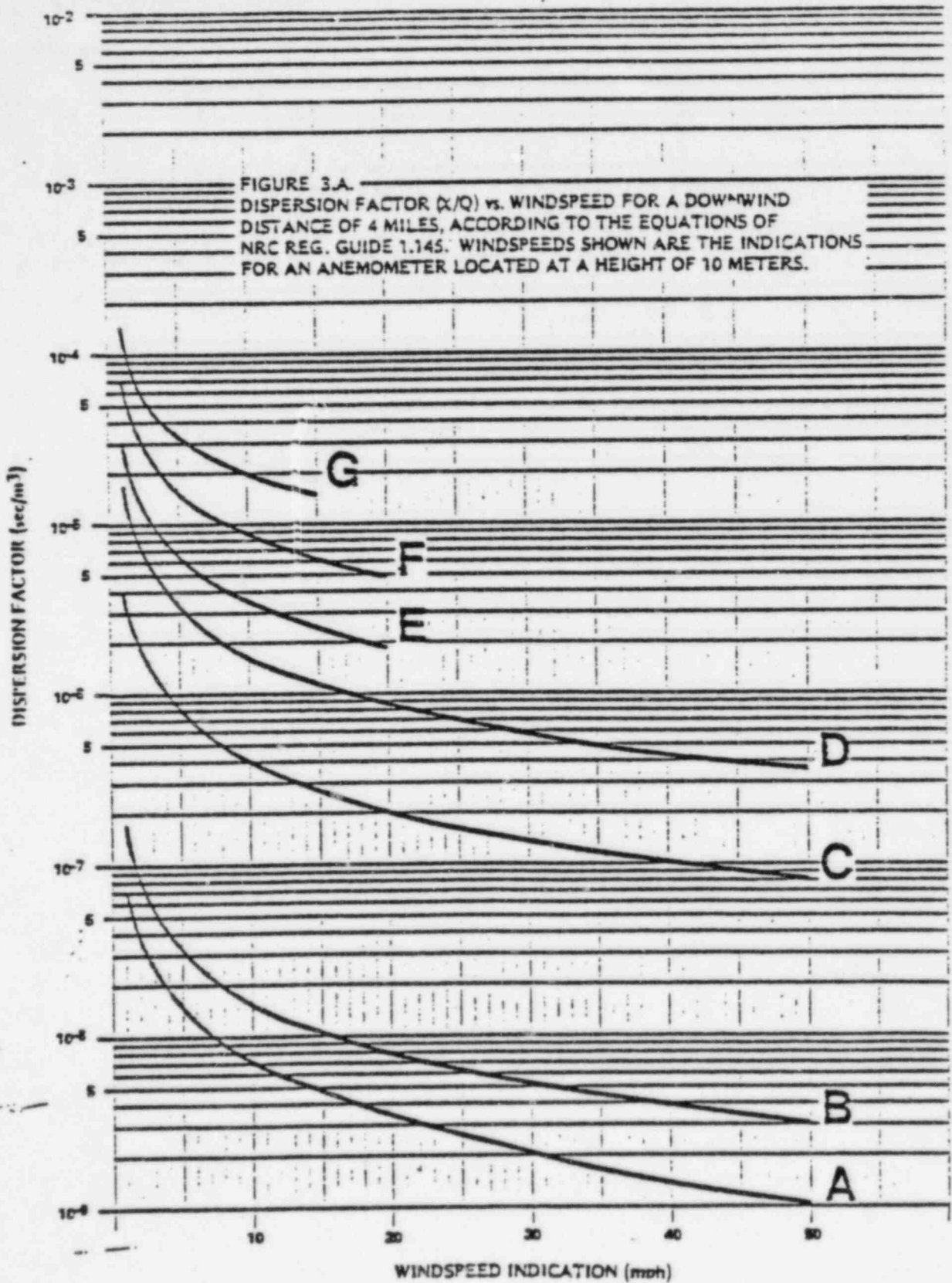


TABLE 4A
X/Q VALUES ($\times 10^{-6}$ sec/m³) AT A DOWNWIND DISTANCE OF 5 MILES
FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS
ACCORDING TO THE EQUATIONS OF NRC REG GUIDE 1.145

WINDSPEED AT 10 METERS (MPH)

Stability Class	1.0	2.0	3.0	5.0	7.0	9.0	12.0	15.0	20.0	30.0	50.0
A	0.057	0.028	0.019	0.011	0.008	0.006	0.005	0.004	0.003	0.002	0.001
B	0.072	0.036	0.024	0.014	0.010	0.008	0.006	0.005	0.004	0.002	0.001
C	2.704	1.352	0.902	0.541	0.386	0.301	0.225	0.180	0.135	0.090	0.054
D	10.96	5.478	3.652	2.224	1.655	1.322	1.017	0.816	0.612	0.408	0.245
E	22.43	11.21	7.476	4.630	3.586	2.927	2.294	1.837	1.377	0.918	0.551
F	52.07	26.03	17.36	10.93	8.819	7.347	5.759	4.608	3.456	2.304	1.382
G	107.7	53.86	35.91	23.30	20.14	17.34	13.34	10.67	8.005	5.336	3.202

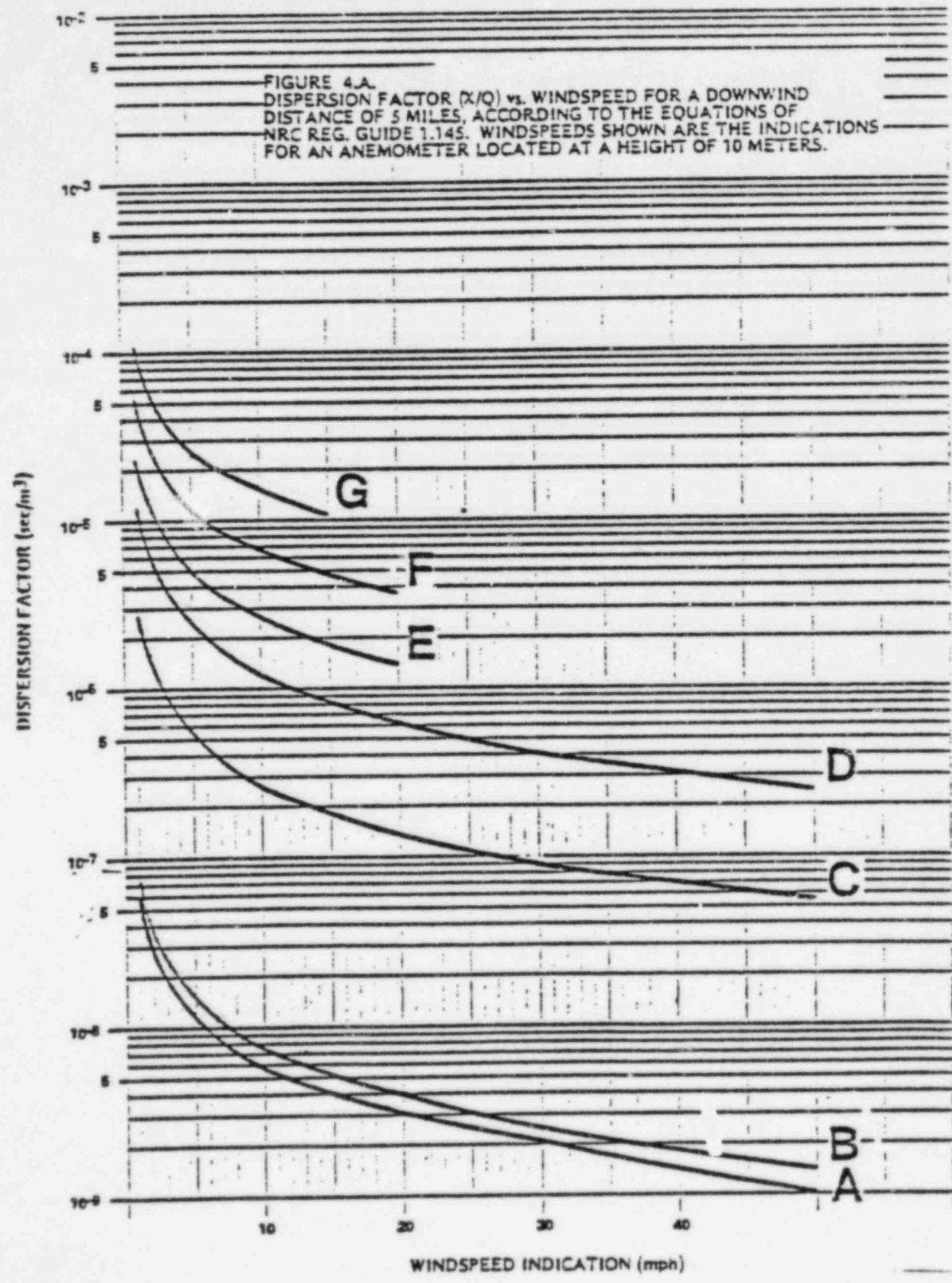


TABLE 5A
X/Q VALUES ($\times 10^{-7}$ sec/m³) AT A DOWNWIND DISTANCE OF 6 MILES
FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS
ACCORDING TO THE EQUATIONS OF NRC REG GUIDE 1.145
WINDSPEED AT 10 METERS (MPH)

Stability Class	1.0	2.0	3.0	5.0	7.0	9.0	12.0	15.0	20.0	30.0	50.0
A	0.485	0.243	0.162	0.097	0.069	0.054	0.040	0.032	0.024	0.016	0.010
B	0.616	0.308	0.206	0.123	0.088	0.068	0.051	0.041	0.031	0.021	0.012
C	19.72	9.859	6.573	3.944	2.817	2.191	1.643	1.315	0.986	0.657	0.394
D	85.61	42.81	28.54	17.35	12.84	10.21	7.830	6.284	4.713	3.142	1.885
E	179.6	89.81	59.87	36.93	28.31	22.96	17.88	14.33	10.75	7.166	4.299
F	431.9	215.9	144.0	90.18	71.66	59.15	46.17	36.93	27.70	18.47	11.08
G	909.7	454.9	303.2	195.3	165.2	140.4	108.1	86.45	64.84	43.23	25.94

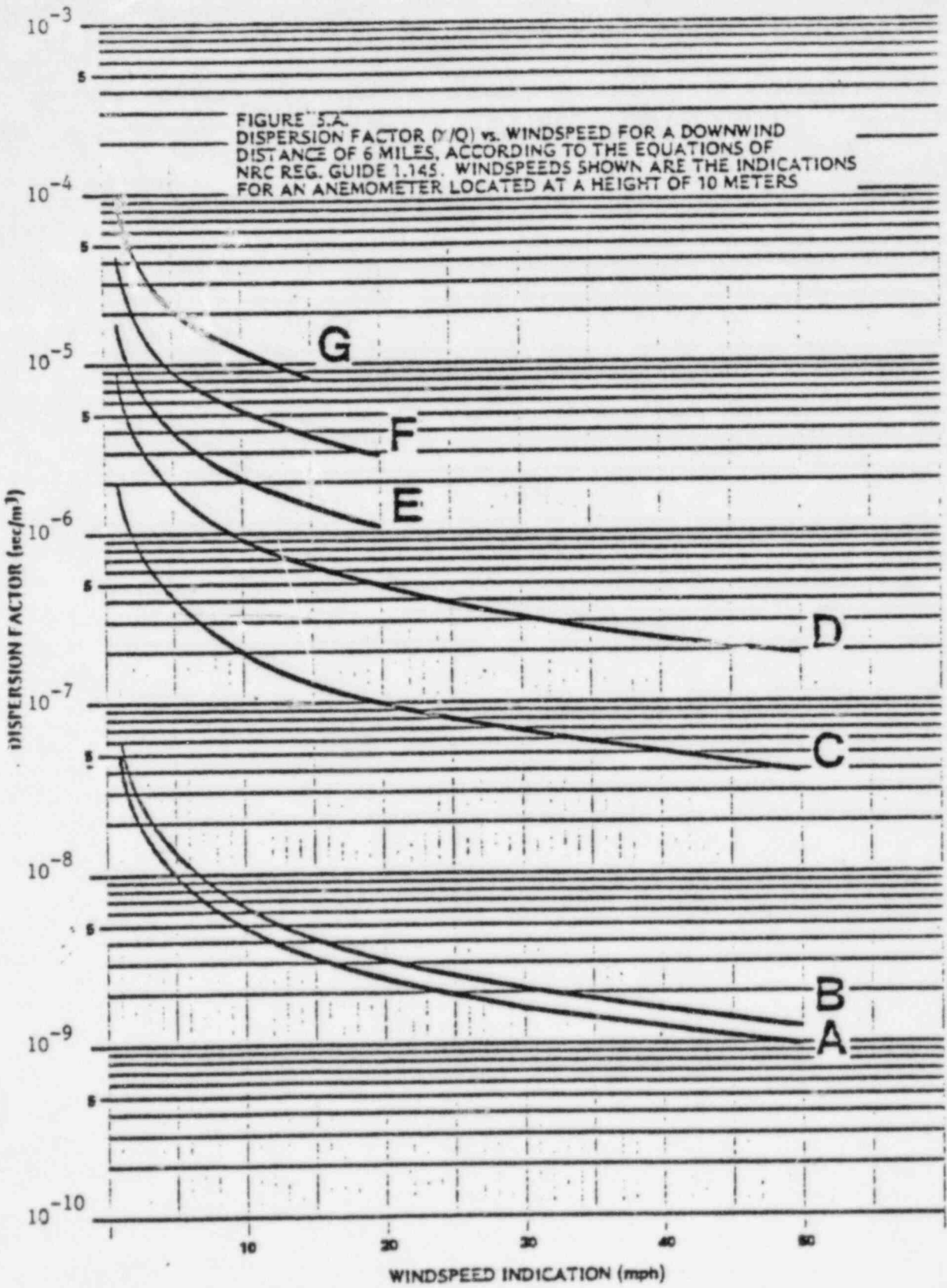


TABLE 6A
X/Q VALUES ($\times 10^{-7}$ sec/m³) AT A DOWNWIND DISTANCE OF 8 MILES
FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS
ACCORDING TO THE EQUATIONS OF NRC REG GUIDE 1.145

WINDSPEED AT 10 METERS (MPH)

Stability Class	1.0	2.0	3.0	5.0	7.0	9.0	12.0	15.0	20.0	30.0	50.0
A	0.379	0.190	0.126	0.076	0.054	0.042	0.032	0.025	0.019	0.013	0.008
B	0.484	0.242	0.161	0.097	0.069	0.054	0.040	0.032	0.024	0.016	0.010
C	12.66	6.329	4.219	2.531	1.808	1.406	1.055	0.844	0.633	0.422	0.253
D	57.94	28.97	19.31	11.71	8.599	6.808	5.195	4.169	3.126	2.084	1.251
E	126.3	63.15	42.10	25.84	19.54	15.71	12.14	9.735	7.301	4.867	2.920
F	322.7	161.4	107.6	66.87	52.07	42.47	32.93	26.35	19.76	13.17	7.904
G	698.4	349.2	232.8	148.2	121.7	101.6	78.19	62.55	46.91	31.28	18.77

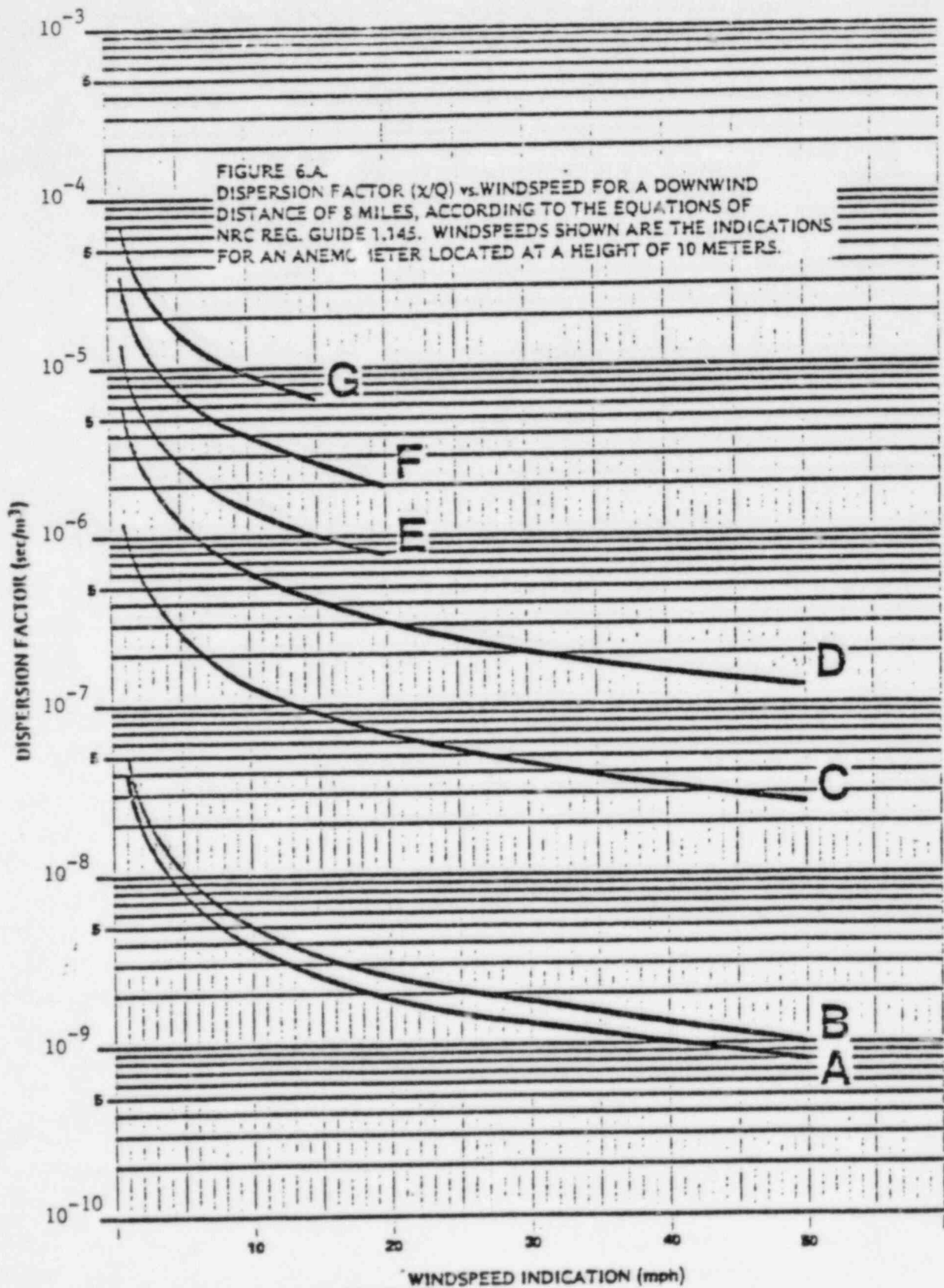
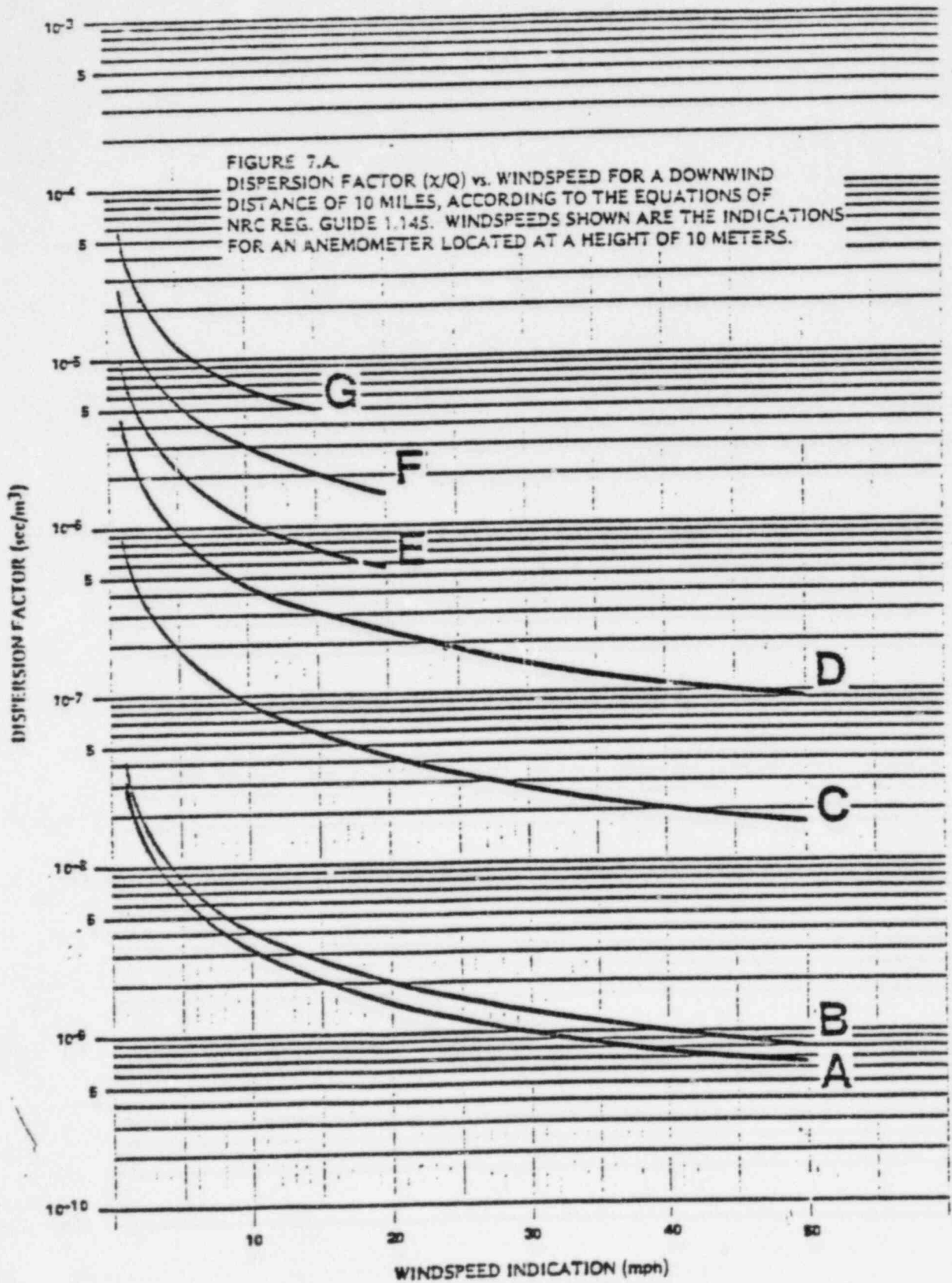


TABLE 7A
 X/Q VALUES ($\times 10^{-7}$ sec/m³) AT A DOWNWIND DISTANCE OF 10 MILES
 FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS
 ACCORDING TO THE EQUATIONS OF NRC REG GUIDE 1.145
 WINDSPEED AT 10 METERS (MPH)

Stability Class	1.0	2.0	3.0	5.0	7.0	9.0	12.0	15.0	20.0	30.0	50.0
A	0.313	0.156	0.104	0.063	0.045	0.035	0.026	0.021	0.016	0.010	0.006
B	0.402	0.201	0.134	0.080	0.057	0.045	0.033	0.027	0.020	0.013	0.008
C	8.833	4.416	2.944	1.767	1.262	0.981	0.736	0.589	0.442	0.294	0.177
D	43.02	21.51	14.34	8.678	6.345	5.008	3.810	3.057	2.293	1.528	0.917
E	99.81	49.90	33.27	20.35	15.26	12.20	9.304	7.527	5.645	3.763	2.258
F	256.9	128.5	85.64	52.96	40.71	32.95	25.44	20.35	15.25	10.18	6.105
G	568.7	284.3	189.6	119.8	96.40	79.62	61.16	48.93	36.70	24.46	14.68





WORKSHEET 1

ASSESSMENT OF RELEASE-MONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 is used, Worksheet 2 is to be used.

This attachment is used to determine the following:

- a) Estimated noble gas and iodine release and release rate;
- b) The estimated whole body and thyroid gamma dose and dose rate at the EAB;
- c) Classification of the release;
- d) Projected whole body and thyroid gamma dose at the EAB; and
- e) Recommended protective action for the general population.

1. Date/Time of beginning of release. _____

2. Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation. _____

3. Hours between 1. and 2. _____

4. Collect the following data:

a) Maximum CPM, RIS-7324-1:
(RR-93539, red pen) _____ cpm

b) Sensitivity, RIS-7324-1:
(I-14, 403-P7) _____ $\mu\text{Ci/cc/cpm}$

c) Maximum CPM, RIS-7324-2:
(RR-93539, blue pen) _____ cpm

d) Sensitivity, RIS-7324-2:
(I-14, 203-P7) _____ $\mu\text{Ci/cc/cpm}$

e) Maximum CPM/Min, RIS-73437-1: _____ cpm/min

NOTE: Maximum CPM/Min must be calculated as:

$$\left(\frac{\text{Maximum CPM} - \text{Initial or Intermediate CPM}}{\text{Elapsed Time (min)}} \right)$$

from strip chart.



f) Sensitivity, RIS-73437-1: _____ $\mu\text{Ci/cc/cpm/min}$

g) Site Area Emergency Limit (as posted):

1) 6.6E-2 $\mu\text{Ci/cc}$ noble gas

2) 6.7E-5 $\mu\text{Ci/cc}^{131}\text{I}$

h) Ten Times Technical Specification Limits (as posted):

1) 2.5E-2 $\mu\text{Ci/cc}$ noble gas

2) 7.0E-8 $\mu\text{Ci/cc}^{131}\text{I}$

i) Exhaust Stack Flow (cfm):
(I-15, FI-7320) _____ cfm

j) Exhaust Stack Flow (cc/sec):
(Step 4i x 4.72E + 2) _____ cc/sec

k) Average Wind Speed
at 10 meters: _____ mph

l) Wind Direction
at 10 meters: From _____ Degrees

NOTE: North = 0° increasing
degrees - c.w.

m) Differential Temperature:
(60m Tower) _____ °F

n) $\sigma\theta$ = From Data Logger, or square root of
(maximum fluctuation in wind direction over
period of 15 minutes to one hour).
(OPTIONAL CALCULATION) _____

5. Determine Stability Category using Table 1 and
Step 4m) or 4n). _____

Stability Category _____

6. Determine potential sectors affected within 5
mile EPZ using Table 2 and Site Sector Map
(Figure 2). _____

Sectors _____



Noble Gas Concentration

7. Calculate the exhaust stack noble gas concentration.

a) RIS-7324-1 concentration = (step 4a) x (step 4b)

$$= (\quad) \times (\quad)$$

$$= \underline{\hspace{2cm}} \mu\text{Ci/cc}$$

b) RIS-7324-2 concentration = (step 4c) x (step 4d)

$$= (\quad) \times (\quad)$$

$$= \underline{\hspace{2cm}} \mu\text{Ci/cc}$$

c) If either RIS-7324-1 or RIS-7324-2 is off-scale high, record the stack concentration as obtained by local, portable instrument (refer to HPP-56 or Figure 1 for instructions).

If readouts are not available for RIS-7324-1 or RIS-7324-2 due to power loss, etc., record the stack concentration as obtained from RT-4803, located on level 11 of the Turbine Building adjacent to the reactor plant exhaust stack (refer to HPP-13 for instructions).

Local Indicated Concentration = $\underline{\hspace{2cm}}$ $\mu\text{Ci/cc}$

d) Enter the highest of 7a), 7b), or 7c) $\underline{\hspace{2cm}}$ $\mu\text{Ci/cc}$

Noble Gas Release Rate

8. Calculate the Source Term, Q (i.e., Noble Gas Release Rate).

$$Q = (\text{step 7d}) \times (\text{step 4j}) \times (1 \text{ E } -6 \text{ Ci}/\mu\text{Ci})$$

$$= (\quad) \times (\quad) \times (1 \text{ E } -6)$$

$$= \underline{\hspace{2cm}} \text{Ci/sec}$$



Classification of Event

- 9. Determine the EAB dilution factor from Attachment 1, Table 1A, using the Stability Category (Step 5) and wind speed (Step 4k).

Dilution Factor = _____ sec/m³

General Emergency Determination

- 10. Determine whole body dose rate at the EAB.

Dose Rate = (step 8) x (7.5 E+2 $\frac{\text{Rem/hour}}{\text{ci/m}^3}$) x (step 9)

= () x (7.5 E+2) x ()

= _____ Rem/hour

If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency condition. Then go directly to Step 13 of this attachment.

Site Area Emergency Determination

- 11. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6 E-2 $\mu\text{Ci/cc}$, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 13 of this attachment.

Radiological Alert Determination

- 12. Criteria for Radiological Alert: If Step 7d) is greater than or equal to 2.5 E-2 $\mu\text{Ci/cc}$ (ten times the Technical Specification limit), the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 13.



Curies of Noble Gas Released

13. Calculate the curies of noble gas released to present time.

$$\begin{aligned}\text{Curies released} &= (\text{step 8}) \times (\text{step 3}) \times (3.6 \text{ E } +3 \text{ s/hr}) \\ &= (\quad) \times (\quad) \times (3.6 \text{ E } +3) \\ &= \underline{\hspace{2cm}} \text{ Curies}\end{aligned}$$

Accumulated Whole Body Gamma Dose at EAB

14. Calculate the dose received at the EAB.

$$\begin{aligned}\text{Dose} &= (\text{step 10}) \times (\text{step 3}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{ Rem}\end{aligned}$$

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

Projections

15. If the release is continuing, consult with the Shift Supervisor and estimate the total number of hours the release will continue (i.e., from beginning to end). A projected release duration of two hours may be reasonable if no better estimate is available. If the release has terminated, enter value from step 3.

Preliminary estimate of release hours hours.



16. Project the total whole body gamma dose at the EAB.

Projected dose at EAB = (step 10) x (step 15)

= () x ()

= _____ Rem

131 I Concentration

17. Calculate the exhaust stack 131I concentration.

a) RIS-73437-1 concentration = (step 4e) x (step 4f)

= () x ()

= _____ uCi/cc

b) If RIS-73437-1 is off-scale high or if a readout is not available due to power loss, etc., record the stack concentration as obtained from RT-4802, located on level 11 of the Turbine Building adjacent to the reactor plant exhaust stack (Refer to HPP-13 for instructions).

Local Indicated Concentration = _____ uCi/cc

131I and Total Radioiodine Release Rate

18. Calculate the source term Q (131I release rate).

Q = (step 18) x (step 4j) x (1 E-6 Ci/uCi)

= () x () x (1 E-6)

= _____ Ci/sec



19. Calculate Q_T for total radioiodine release.

$$\begin{aligned}
Q_T &= (\text{step 18}) \times (1.05 \text{ E} + 2)^* \\
&= (\quad) \times (1.05 \text{ E} + 2)^* \\
&= \underline{\hspace{2cm}} \text{ Ci/sec}
\end{aligned}$$

* Ratio of total radioiodines to ^{131}I in design inventory.

Classification of Event

General Emergency Determination

20. Determine the thyroid dose rate at the EAB.

$$\begin{aligned}
\text{Dose Rate} &= (\text{step 19}) \times (5.3 \text{ E}+4 \frac{\text{Rem/hour}}{\text{Ci/m}^3}) \times (\text{step 9}) \\
&= (\quad) \times (5.3 \text{ E}+4) \times (\quad) \\
&= \underline{\hspace{2cm}} \text{ Rem/hour}
\end{aligned}$$

If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 23 of this attachment.

Site Area Emergency Determination

21. Criteria for Site Area Emergency: If Step 17 is greater than or equal to $6.7 \text{ E}-5 \mu\text{Ci/cc}$, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Area Emergency Condition. Then go directly to Step 23 of this attachment.

Radiological Alert Determination

22. Criteria for Radiological Alert: If Step 17 is greater than or equal to $7.0 \text{ E}-8 \mu\text{Ci/cc}$ (ten times the Technical Specification limit), the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 23.



|-----|
Curies of Radioiodine Released

| 23. Calculate the curies of radioiodine released to present time.

| Curies Released = (step 19) x (step 3) x (3.6 E+3 sec/hr)
= () x () x (3.6 E+3)
= _____ curies

|-----|
Accumulated Thyroid Dose at EAB

| 24. Calculate the dose received at the EAB.

| Dose = (step 20) x (step 3)
= () x ()
= _____ Rem

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

|-----|
Projections

| 25. If the release is continuing, consult with the Shift Supervisor and estimate the total number of hours the release will continue (i.e., from beginning to end). Use two hours if no better estimate is available. If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____ hours.



| 26. Project the total thyroid dose at the EAB.

$$\begin{aligned} \text{Projected Dose at EAB} &= (\text{step 20}) \times (\text{step 25}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{ Rem} \end{aligned}$$

| 27. Determine the recommended protective action for the general population based on the results of steps 16 and 26. (Refer to RERP-PAG.)

| 28. The whole body gamma dose rate at the EAB is _____ Rem/hour
(step 11):

| 29. The classification of the event based on noble gases is (step 10 or step 11 or step 12): _____

| 30. The noble gas release rate is (step 8): _____ Ci/sec

| 31. The accumulated whole body gamma dose at the EAB is (step 14): _____ Rem

| 32. The total number of curies of noble gas release to the present time is (step 13): _____ Curies

| 33. The projected whole body gamma dose at the EAB is (step 16): _____ Rem

| Based on projected release duration of (step 15): _____ hours

| 34. The thyroid dose rate at the EAB is (step 20): _____ Rem/hour



- | 35. The classification of the event based on radio-
| iodines is (step 20 or step 21 or step 22): _____ *
- | 36. The radioiodine release rate is (step 19): _____ Ci/sec
- | 37. The accumulated thyroid dose at the EAB is
| (step 24): _____ Rem
- | 38. The total number of curies of radioiodine
| released to the present time is (step 23): _____ Curies
- | 39. The projected thyroid dose at the EAB is
| (step 26): _____ Rem
- | Based on projected release duration of (step 25): _____ hours

| *If this classification differs from the classification in step
| 29, the higher (i.e., more severe) classification is to be used
| to determine recommended protective actions.



WORKSHEET 2

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-MONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 1.

This attachment is used to determine the following:

- a) Estimated noble gas and radiiodine release and release rate;
- b) Estimated whole body and thyroid gamma dose and dose rate at the EAB;
- c) Classification of the release;
- d) Projected whole body and thyroid gamma dose at the EAB; and
- e) Recommended protective action for the general population.

1. Collect the following data:

- a) Date/Time of beginning of release: _____
- b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____
- c) Hours between 1a) and 1b): _____ hours
(STO 11)
- d) Maximum CPM, RIS-7324-1:
(RR-93539, red pen) _____ cpm
(STO 03)
- e) Sensitivity RIS-7324-1:
(I-14, 403-P7) _____ uCi/cc/cpm
(STO 04)
- f) Maximum CPM, RIS-7324-2:
(RR-93539, blue pen) _____ cpm
(STO 05)
- g) Sensitivity, RIS-7324-2:
(I-14, 203-P7) _____ uCi/cc/cpm
(STO 06)



*h) Maximum mR/hr, Cutie Pie-2520 Probe: _____ mR/hr (STO 01)

*i) Maximum mR/hr, E-500-GM Probe _____ mR/hr (STO 02)

j) Maximum CPM/MIN, RIS-73437-1: _____ cpm/min (STO 07)

NOTE: Maximum CPM/Min must be calculated as:

(Maximum CPM - Initial or Intermediate CPM) / (Elapsed Time (min))

from strip chart.

k) Sensitivity, RIS-73437-1: _____ µCi/cc/cpm/min (STO 08)

l) Site Emergency Limit (as posted): 1) 6.6E-2 µCi/cc noble gas

2) 6.7E-5 µCi/cc 131I

m) Ten Times Technical Specification Limits (as posted): 1) 2.5E-2 µCi/cc noble gas

2) 7.0E-8 µCi/cc 131I

n) Exhaust Stack Flow (cfm): (I-15, FI-7320) _____ cfm (STO 09)

o) Average Wind Speed at 10 meters: _____ mph

p) Wind Direction at 10 meters:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

q) Differential Temperature (60m Tower) _____ °F

* Steps 1h) and 1i) used only if RIS-7324-1 or RIS-7324-2 off-scale high.



r) $\sigma\theta$ = From Data Logger, or square root of
(maximum fluctuation in wind direction
over period of 15 minutes to one hour).
(OPTIONAL CALCULATION)

2. Determine Stability Category using
Table 1 and Steps 1q) or 1r).

Stability Category _____

3. Determine potentially affected sectors
within 5 mile EPZ from Table 2 and using
Steps 1p) and 2. (See Site Sector Map,
Figure 2.)

Sectors _____

4. Determine the EAB dilution factor from
Attachment 1, Table 1A, using the
Stability Category (Step 2) and wind
speed (Step 1o).

Dilution Factor _____

sec/m³
(STO 10)

5. If the release is continuing, consult with the
Shift Supervisor and estimate the total number
of hours the release will continue (i.e., from
beginning to end). Use two hours if no better
estimate is available. If the release has
terminated, enter value from step 1c).

Preliminary estimate of release hours _____ hours. (STO 12)

6. Prepare the TI-59 for data entry.

- a) Place TI-59 in printer/security cradle.
- b) Plug in printer/security cradle.
- c) Turn on printer/security cradle and TI-59.
- d) Depress "TRACE" button on printer.
- e) Obtain the magnetic card labeled "FSV Off-Site
Dose Calculation (RERP) - Monitored Release."



f) Read magnetic card into TI-59.

- 1) Depress |1| , |INV| , |2nd| , |WRITE| keys.
- 2) Insert magnetic card into right side of TI-59. Card should be right side up with the "1" in the upper left-hand corner.
- 3) "1" will be displayed if the card was read properly -continue with Step 7. If a flashing number is displayed, the card was not read properly. Obtain the other magnetic card with the same title and repeat Step 6f).

7. Input the necessary data into the indicated TI-59 storage registers.

- a) Step 1c) = |STO| 11
- b) Step 1d) = |STO| 03
- c) Step 1e) = |STO| 04
- d) Step 1f) = |STO| 05
- e) Step 1g) = |STO| 06
- f) Step 1h) = |STO| 01
- g) Step 1i) = |STO| 02
- h) Step 1j) = |STO| 07
- i) Step 1k) = |STO| 08
- j) Step 1n) = |STO| 09
- k) Step 4) = |STO| 10
- l) Step 5) = |STO| 12



8. Run Dose Assessment Program

- a) Depress |R/S| key.
- b) Wait until a number is displayed. A flashing number indicates improper execution of the program. Depress |CLR| and |RST| keys and repeat Steps 7 and 8.

SUMMARY

9. a) The whole body gamma dose rate at the EAB is (RCL 19): _____ Rem/hour
- b) The classification of the event based on noble gases is: _____
 - 1) If Step 10.a) ≥ 1 Rem/hour, GENERAL EMERGENCY.
 - 2) If RCL 17 $\geq 6.6E-2$ $\mu\text{Ci/cc}$ (Step 1.1)1), SITE AREA EMERGENCY.
 - 3) If RCL 17 $\geq 2.5E-2$ $\mu\text{Ci/cc}$ (Step 1.m)1) and $\leq 6.6E-2$ $\mu\text{Ci/cc}$, RADIOLOGICAL ALERT.
- c) The noble gas release rate is (RCL 18): _____ Ci/sec
- d) The accumulated whole body gamma dose at the EAB is (RCL 21): _____ Rem
- e) The total number of curies of noble gas released to the present time is (RCL 20): _____ Ci
- f) The projected whole body gamma dose at the EAB is (RCL 22): _____ Rem
- g) The thyroid dose rate at the EAB is (RCL 27): _____ Rem/hour



*h) The classification of the event based on radioiodines is: _____

1) If Step 9g) ≥ 5 Rem/hour,
GENERAL EMERGENCY.

2) If RCL 23 $\geq 6.7E-5$ $\mu\text{Ci/cc}$
(Step 1.i)2), _____ 2 Release 1:
SITE AREA EMERGENCY.

3) If RCL 23 $\geq 7.0E-8$ $\mu\text{Ci/cc}$
(Step 1.m)2) and
 $< 6.7E-5$ $\mu\text{Ci/cc}$,
RADIOLOGICAL ALERT.

i) The radioiodine release rate
is (RCL 26): _____ Ci/sec

j) The accumulated thyroid dose at
the EAB is (RCL 29): _____ Rem

k) The total number of curies of
radioiodine released to the
present time is (RCL 28): _____ Ci

l) The projected thyroid dose at
the EAB is (RCL 30): _____ Rem

Based on projected release duration
of (RCL 12): _____ hours

10. Determine the recommended protective action for the general population based on RERP-PAG.

*If this classification differs from the classification in Step 9b), the higher (i.e., more severe) classification is to be used to determine recommended protective actions.



WORKSHEET 3

ASSESSMENT OF RELEASE-UNMONITORED RELEASE

This attachment is to be used only if the TI-59 calculator program is not used. If the TI-59 program is used, Worksheet 4 is to be used.

This attachment is used to determine the following due to an unmonitored release via the Reactor Building Louvers or the PCRV Relief Valves:

- a) Estimated whole body and thyroid gamma dose and dose rate at the EAB;
- b) Classification of the release;
- c) Projected whole body and thyroid gamma dose at the EAB; and
- d) Recommended protective action for the general population.

1. Date/Time of beginning of release _____

2. Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation. _____

3. Hours between 1. and 2. _____ hours

4. Collect the following data:

- a) Maximum CPM, RIS-9301:
(RR-93256, Pt. 10) _____ cpm
- b) Sensitivity RIS-9301: _____ $\mu\text{Ci/cc/cpm}$
- c) Primary coolant ^{131}I equivalent circulating inventory: _____ Ci
- d) Primary coolant ^{131}I equivalent plateout inventory: _____ Ci
- e) Primary Coolant Volume: _____ scc
- f) Site Emergency Limit (as posted): 1) $6.6\text{E-}2$ $\mu\text{Ci/cc}$ noble gas
- 2) $6.7\text{E-}5$ $\mu\text{Ci/cc}^{131}\text{I}$
- g) Ten times Technical Specification Limits (as posted): 1) $2.5\text{E-}2$ $\mu\text{Ci/cc}$ noble gas



2) 7.0E-8 $\mu\text{Ci/cc } ^{131}\text{I}$

h) Average Wind Speed
at 10 meters: _____ mph

i) Wind Direction
at 10 meters: From _____ Degrees

NOTE: North = 0° increasing degrees - c.w.

j) Differential Temperature
(60m Tower) _____ °F

k) $\sigma\theta$ = Data logger or square root of
(maximum fluctuation of wind direction over
a period of 15 minutes to one hour).
(OPTIONAL CALCULATION) _____

5. Determine Stability Category using Table 1,
Step 4j or 4k: _____
Stability Category _____

6. Determine potentially affected sectors
within 5 mile EPZ using Table 2 and Steps 4i
and 5 (see Site Sector Map, Figure 2).
Sectors _____

7. Calculate the release noble gas concentration:
RIS-9301 concentration = (step 4a) x (step 4b)
= () x ()
= _____ $\mu\text{Ci/cc}$

8. Calculate the source term, Q_{ng} (noble gas release rate):

a) Reactor Building Louvers
 $Q_{ng} = (\text{step 7}) \times (5.8 \text{ E } +7)^* \times (1 \text{ E } -6 \text{ Ci}/\mu\text{Ci})$
 $= () \times (5.8 \text{ E } +7)^* \times (1 \text{ E } -6)$
 $= _____ \text{ Ci/sec}$

*Release rate (cc/sec) from louvers (FSAR, Section 14.11.2.6).



b) PCRV Safety Valves

$$\begin{aligned}
Q_{ng} &= (\text{step 7}) \times (1.9 \text{ E } +7)** \times (1 \text{ E } -6) \\
&= (\quad) \times (1.9 \text{ E } +7)** \times (1 \text{ E } -6) \\
&= \underline{\hspace{2cm}} \text{ sec}
\end{aligned}$$

**Release rate (cc/sec) from both PCRV safeties (FSAR, Section 6 .8).

Classification of Event

9. Determine weighted noble gas dose conversion factor from Table 3:

$$\frac{7.5\text{E}+2 \text{ Rem/hour}}{\text{Ci/m}^3}$$

10. Determine the EAB atmospheric dilution factor from Attachment 1, Table 1A, using Steps 5 and 4h:

$$\text{Dilution Factor} \quad \underline{\hspace{2cm}} \text{ sec/m}^3$$

General Emergency Determination

11. Determine the whole body dose rate at the EAB:

a) Reactor Building Louvers

$$\begin{aligned}
\text{Dose Rate} &= (\text{step 8a}) \times (\text{step 9}) \times (\text{step 10}) \\
&= (\quad) \times (\quad) \times (\quad) \\
&= \underline{\hspace{2cm}} \text{ Rem/hour}
\end{aligned}$$

b) PCRV Safety Valves

$$\begin{aligned}
\text{Dose Rate} &= (\text{step 8b}) (\text{step 9}) \times (\text{step 10}) \\
&= (\quad) \times (\quad) \times (\quad) \\
&= \underline{\hspace{2cm}} \text{ Rem/hour}
\end{aligned}$$



- 12. If the resulting dose rate at the EAB is ≥ 1 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 15.

Site Area Emergency Determination

- 13. If Step 8a. or 8b. is greater than or equal to $9.6E-1$ Ci/sec, the classification of event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Area Emergency Condition. Then go directly to Step 15.

Radiological Alert Determination

- 14. If Step 8a. or 8b. is greater than or equal to $3.7 E-1$ Ci/sec (ten times the Technical Specification limit), the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 15.

Curies of Noble Gas Released

- 15. Calculate the curies of noble gas released to present time.

a) Reactor Building Louvers

$$\begin{aligned} \text{Curies Released} &= (\text{step 8a}) \times (\text{step 3}) \times (3.6 \text{ E}+3 \text{ sec/hr}) \\ &= (\quad) \times (\quad) \times (3.6 \text{ E}+3) \\ &= \underline{\hspace{2cm}} \text{Curies} \end{aligned}$$

b) PCRV Safety Valves

$$\begin{aligned} \text{Curies Released} &= (\text{step 8b}) \times (\text{step 3}) \times (3.6 \text{ E} +3) \\ &= (\quad) \times (\quad) \times (3.6 \text{ E} +3) \\ &= \underline{\hspace{2cm}} \text{Curies} \end{aligned}$$



Accumulated Whole Body Gamma Dose at EAB

16. Calculate the dose received at the EAB.

a) Reactor Building Louvers

$$\begin{aligned} \text{Dose} &= (\text{step 11a}) \times (\text{step 3}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{Rem} \end{aligned}$$

b) PCRV Safety Valves

$$\begin{aligned} \text{Dose} &= (\text{step 11b}) \times (\text{step 3}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{Rem} \end{aligned}$$

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.

Projections

17. If the release is continuing, consult with the Shift Supervisor and estimate the total number of hours the release will continue (i.e., from beginning to end). Use two hours if a more reasonable estimate is not available. If the release has terminated, enter value from step 3.

Preliminary estimate of release hours hour(s).

18. Project the total whole body gamma dose at the EAB.

a) Reactor Building Louvers

$$\begin{aligned} \text{Projected Dose at EAB} &= (\text{step 11a}) \times (\text{step 17}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{Rem} \end{aligned}$$



b) PCRV Safety Valves

$$\text{Projected Dose at EAB} = (\text{step 11b}) \times (\text{step 17})$$

$$= (\quad) \times (\quad)$$

$$= \underline{\hspace{2cm}} \text{ Rem}$$

19. Calculate the release ^{131}I equivalent concentration (Reactor Building Louvers or PCRV Safety Valves).

^{131}I Equivalent Concentration =

$$(\text{step 4c}) + (\text{step 4d}) \times (5.7 \text{ E-3})^{***} + (\text{step 4e})$$

$$= (\quad) + (\quad) \times (5.7 \text{ E-3})^{***} + (\quad)$$

$$= \underline{\hspace{2cm}} \text{ Ci/cc}$$

***Amount of plateout ^{131}I equivalent released (FSAR, Section 14.11.2.7.1).

20. Calculate the source term, Q (^{131}I equivalent release rate).

a) Reactor Building Louvers

$$Q = (\text{step 19}) \times (5.8 \text{ E+7 cc/sec})$$

$$= (\quad) \times (5.8 \text{ E+7})$$

$$= \underline{\hspace{2cm}} \text{ Ci/sec}$$

b) PCRV Safety Valves

$$Q = (\text{step 19}) \times (1.9 \text{ E+7 cc/sec})$$

$$= (\quad) \times (1.9 \text{ E+7})$$

$$= \underline{\hspace{2cm}} \text{ Ci/sec}$$

Classification of Event

21. Determine ^{131}I dose conversion factor from Table 3.

$$\frac{1.2\text{E+6}}{\text{Ci/m}^3} \text{ Rem/hour}$$



22. Determine the thyroid dose rate at the EAB.

a) Reactor Building Louvers

$$\begin{aligned} \text{Dose Rate} &= (\text{step 20a}) \times (\text{step 21}) \times (\text{step 10}) \\ &= (\quad) \times (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{ Rem/hour} \end{aligned}$$

b) PCRV Safety Valves

$$\begin{aligned} \text{Dose Rate} &= (\text{step 20b}) \times (\text{step 21}) \times (\text{step 10}) \\ &= (\quad) \times (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{ Rem/hour} \end{aligned}$$

General Emergency Determination

23. If the resulting dose rate at the EAB is ≥ 5 Rem/hour, the classification of the event is GENERAL EMERGENCY. Inform the Shift Supervisor of the General Emergency Condition. Then go directly to Step 25 of this attachment.

Site Area Emergency Determination

24. If Step 20a. or 20b. is greater than or equal to $9.8E-4$ Ci/sec, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Area Emergency Condition. Then go directly to Step 26 of this attachment.

Radiological Alert Determination

25. If Step 19 is greater than or equal to $1.0 E-7$ Ci/sec (ten times the Technical Specification limit), the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 26.



Curies of ^{131}I Equivalent Released

26. Calculate the curies of ^{131}I equivalent released to present time.

a) Reactor Building Louvers

$$\begin{aligned} \text{Curies Released} &= (\text{step 20a}) \times (\text{step 3}) \times (3.6 \text{ E}+3 \text{ sec/hr}) \\ &= (\quad) \times (\quad) \times (3.6 \text{ E}+3) \\ &= \underline{\hspace{2cm}} \text{ Curies} \end{aligned}$$

b) PCRV Safety Valves

$$\begin{aligned} \text{Curies Released} &= (\text{step 20b}) \times (\text{step 3}) \times (3.6 \text{ E}+3) \\ &= (\quad) \times (\quad) \times (3.6 \text{ E}+3) \\ &= \underline{\hspace{2cm}} \text{ Curies} \end{aligned}$$

Accumulated Thyroid Dose at EAB

27. Calculate the dose received at the EAB.

a) Reactor Building Louvers

$$\begin{aligned} \text{Dose} &= \\ &= (\text{step 22a}) \times (\text{step 3}) \\ &= \underline{\hspace{2cm}} \text{ Rem} \end{aligned}$$

b) PCRV Safety Valves

$$\begin{aligned} \text{Dose} &= (\text{step 22b}) \times (\text{step 3}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{ Rem} \end{aligned}$$

NOTE: This calculation assumes the recipient was at the EAB for the entire duration of the release.



Projections

28. If the release is continuing, consult with the Shift Supervisor and estimate the total number of hours the release will continue (i.e., from beginning to end). Use two hours if a more reasonable estimate is not available. If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____ hour(s).

29. Project the total thyroid dose at the EAB.

- a) Reactor Building Louvers

$$\begin{aligned} \text{Projected Dose at EAB} &= (\text{step 22a}) \times (\text{step 28}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{ Rem} \end{aligned}$$

- b) PCRV Safety Valves

$$\begin{aligned} \text{Projected Dose at EAB} &= (\text{step 22b}) \times (\text{step 28}) \\ &= (\quad) \times (\quad) \\ &= \underline{\hspace{2cm}} \text{ Rem} \end{aligned}$$

30. Determine the recommended protective action for the general population based on the results of Steps 18 and 29. Refer to RERP-PAG.

Summary

31. The whole body gamma dose rate at the EAB is (Step 11a or 11b): _____ Rem/hr
32. The classification of the event based on noble gases is (Step 12 or Step 13 or Step 14): _____
33. The noble gas release rate is (Step 8a or 8b): _____ Ci/sec



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34. The accumulated whole body gamma dose at the EAB is (Step 16a or 16b): _____ Rem
35. The total number of curies of noble gas released to the present time is (Step 15a or 15b): _____ Curies
36. The projected whole body gamma dose at the EAB is (Step 18a or 18b): _____ Rem
37. Based on projected release duration of (Step 17): _____ hours
38. The thyroid dose rate at the EAB is (Step 22a or 22b): _____ Rem/hour
39. *The classification of the event based on ¹³¹I equivalent is (Step 23 or Step 24 or Step 25): _____
40. The ¹³¹I equivalent release rate is (Step 20a or 20b): _____ Ci/sec
41. The accumulated thyroid dose at the EAB is (Step 27a or 27b): _____ Rem
42. The total number of curies of ¹³¹I equivalent released to the present time is (Step 26a or 26b): _____ Curies
43. The projected thyroid dose at the EAB is (Step 29a or 29b): _____ Rem
- Based on projected release duration of (Step 28): _____ hours

| *If this classification differs from the classification in Step
| 32, the higher (i.e., more severe) classification is to be used
to determine recommended protective action.



WORKSHEET 4

ASSESSMENT OF RELEASE USING TI-59 CALCULATOR PROGRAM-UNMONITORED RELEASE

This attachment is only to be used if the TI-59 calculator program is used. If the program is not used, use Worksheet 3.

This attachment is used to determine the following due to an unmonitored release via the Reactor Building Louvers or the PCRV Relief Valves:

- a) Estimated whole body and thyroid gamma dose and dose rates at the EAB;
- b) Classification of the release;
- c) Projected whole body and thyroid gamma dose at the EAB; and
- d) Recommended protective action for the general population.

1. Collect the following data:

- a) Date/Time of beginning of release: _____
- b) Date/Time of ending of release. If release is still occurring, enter the Date/Time of the calculation: _____
- c) Hours between 1a) and 1b): _____ hours (STO 07)
- d) Maximum CPM, RIS-9301: _____ cpm (RR-93256, Pt. 10) (STO 01)
- e) Sensitivity RIS-9301: _____ $\mu\text{Ci/cc/cpm}$ (STO 02)
- f) Primary Coolant ^{131}I equivalent circulating inventory: (posted) _____ Ci (STO 03)
- g) Primary Coolant ^{132}I equivalent plateout inventory: (posted) _____ Ci (STO 04)
- h) Primary Coolant Volume: (posted) _____ cc (STO 05)



i) Site Emergency Limit: (posted) 1) 6.6E-2 $\mu\text{Ci/cc}$ noble gas

2) 6.7E-5 $\mu\text{Ci/cc}$ ^{131}I

j) Ten Times Technical Specification Limits (posted):

1) 2.5E-2 $\mu\text{Ci/cc}$ noble gas

2) 7.0E-8 $\mu\text{Ci/cc}$ ^{131}I

k) Average Wind Speed at 10 meters: _____ mph

l) Wind Direction at 10 meters:

NOTE: North = 0° increasing degrees-c.w. From _____ Degrees

m) Differential Temperature (60m Tower) _____ $^\circ\text{F}$

n) $\sigma\theta$ = From Data Logger, or square root of (maximum fluctuation in wind direction over period of 15 minutes to one hour). (OPTIONAL CALCULATION) _____

2. Determine Stability Category using Table 1 and Steps 1.m) and 1.n).

Stability Category _____

3. Determine potentially affected sectors within 5 mile EPZ using Table 2 and Steps 1) and 2 (see Figure 2, Site Sector Map).

Sectors _____

4. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 2) and wind speed (Step 1k).

Dilution Factor _____ sec/m^3
(STO 06)



5. If the release is continuing, consult with the Shift Supervisor and estimate the total number of hours the release will continue (i.e., from beginning to end). Use two hours if a more reasonable estimate is not available. If the release has terminated, enter value from step 1.c).

Preliminary estimate of release hours _____ hours.(STO 08)

6. Prepare the TI-59 for data entry.
- a) Place TI-59 in printer/security cradle.
 - b) Plug in printer/security cradle.
 - c) Turn on printer/security cradle and TI-59.
 - d) Depress "TRACE" button on printer.
 - e) Obtain the magnetic card labeled "FSV Off-Site Dose Calculation (RERP) - Unmonitored Release."
 - f) Read magnetic card into TI-59.
 - 1) Depress |1| , |INV| , |2nd| , |WRITE| keys.
 - 2) Insert magnetic card into right side of TI-59. Card should be right side up with the "1" in the upper left-hand corner.
 - 3) "1" will be displayed if the card was read properly - continue with Step 6f)4). If a flashing number is displayed, the card was not read properly. Obtain the other magnetic card with the same title and repeat Step 6f).
 - 4) Depress |2| , |INV| , |2nd| , |WRITE| keys.
 - 5) Insert card into right side of TI-59. Card should be upside down with the "2" in the lower left-hand corner.
 - 6) "2" will be displayed if the card was read properly - continue with Step 7. If a flashing number is displayed, the card was not read properly. Obtain the other magnetic card with the same title and repeat Step 6f).



7. Input the necessary data into the indicated TI-59 storage registers.

a) Step 1c) = |STO| 07

b) Step 1d) = |STO| 01

c) Step 1e) = |STO| 02

d) Step 1f) = |STO| 03

e) Step 1g) = |STO| 04

f) Step 1h) = |STO| 05

g) Step 4 = |STO| 06

h) Step 5 = |STO| 08

8. Run Dose Assessment Program.

a) Depress |R/S| key.

b) Wait until a number is displayed. A flashing number indicates improper execution of the program. Depress |CLR| and |RST| keys and repeat Steps 7 and 8.



SUMMARY

9. a) The release path is: _____
- 1) Reactor Building Louvers
 - 2) PCRV Reliefs
- b) The whole body gamma dose at the EAB is (RCL 12 for louvers, RCL 13 for reliefs). _____ rem/hour
- c) The classification of the event based on noble gases is: _____
- 1) If Step 10b) ≥ 1 Rem/hour, GENERAL EMERGENCY.
 - 2) If Step 10c) $\geq 9.6E-1$ Ci/sec SITE AREA EMERGENCY.
 - 3) If Step 10c) $\geq 3.7E-1$ Ci/sec and $\leq 9.6E-1$ Ci/sec, RADIOLOGICAL ALERT.
 - 4) If RCL 11 $\geq 9.6E-1$ Ci/sec, SITE AREA EMERGENCY.
 - 5) If RCL 11 $> 3.7E-1$ Ci/sec and $< 9.6E-1$ Ci/sec, RADIOLOGICAL ALERT.
- e) The accumulated whole body gamma dose at the EAB is (RCL 16 for louvers, RCL 17 for reliefs): _____ Rem
- f) The total number of curies of noble gas released to the present time is (RCL 14 for louvers, RCL 15 for reliefs): _____ Ci
- g) The projected whole body gamma dose at the EAB is (RCL 18 for louvers, RCL 19 for reliefs): _____ Rem
- Based on a projected release duration of (RCL 08): _____ hours



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h) The thyroid dose rate at the EAB
is (RCL 24 for louvers, RCL 25
for reliefs): _____ Rem/hour

i) The ¹³¹I equivalent release rate
is (RCL 22 for louvers, RCL 23
for reliefs): _____ Ci/sec

*j) The classification of the event
based on ¹³¹I equivalent is: _____

- 1) If Step 10h) ≥ 5 Rem/hour,
GENERAL EMERGENCY.
- 2) If Step 10i) $\geq 9.8E-4$ Ci/sec
SITE AREA EMERGENCY
- 3) If Step 10i) $\geq 1.0E-7$ Ci/sec
and $< 9.8E-4$ Ci/sec
RADIOLOGICAL ALERT.

k) The accumulated thyroid dose at the EAB
is (RCL 28 for louvers, RCL 29 for
reliefs): _____ Rem

l) The total number of curies of ¹³¹I
equivalent released to the present
time is (RCL 26 for louvers,
RCL 27 for reliefs): _____ Ci

m) The projected thyroid dose at the EAB
is (RCL 30 for louvers, RCL 31
for reliefs): _____ Rem

Based on projected release duration
of (RCL 08): _____ hours

10. Determine the recommended protective action for the general
population. Refer to RERP-PAG.

*If this classification differs from the classification in Step 9c),
the higher (i.e., more severe) classification is to be used to
determine recommended protective actions.

RADIOLOGICAL EMERG RESPONSE PLAN ■ 0944

■ □
 STEP 2: VERIFY AND/OR MANUALLY ENTER THE FOLLOWING STANDARD DATA:
 RADIATION MONITORS SENSITIVITY: (FROM I-14)

RIS-7324-1 () E () UCI/CC/CPM
 RIS-7324-2 () E () UCI/CC/CPM
 RIS-73437-1 () E () UCI/CC/CPM/M
 RIS-9301 () E () UCI/CC/CPM

LIMITS: (VERIFY)

SITE EMERGENCY NOBLE GAS (6.6) E (-2) UCI/CC
 SITE EMERGENCY I-131 (6.7) E (-5) UCI/CC
 10 TIMES TECH SPEC NOBLE GAS (2.5) E (-2) UCI/CC
 10 TIMES TECH SPEC I-131 (7.0) E (-8) UCI/CC

DOSE CONVERSION FACTORS

WEIGHTED NOBLE GAS (7.5) E (+2) REM/HR/CI/M3
 WEIGHTED IODINE FOR MONITORED RELEASE (5.3) E (+4) REM/HR/CI/M3
 I-131 FOR UNMONITORED RELEASE (1.2) E (+6) REM/HR/CI/M3

DISTANCES SELECTED FOR DOSE CALCULATIONS ANY NUMBER FROM 0.1 TO 60.0

1 (.367)	2 (1.0)	3 (2.0)	4 (2.5)	5 (3.0)
6 (5.0)	7 (6.0)	8 (7.0)	9 (8.5)	10 (10.0)
11 (12.0)	12 (15.0)	13 (17.0)	14 (20.0)	15 (25.0)



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MONITORED RELEASE MANUAL ENTRY ■ 0942 PAGE 1

■ □
STEP 3A: MANUALLY ENTER THIS PAGEENTER 1 () TYPE
DATE AND TIMES: (MM/ DD/ YY) (HH: MM)

BEGINNING OF RELEASE ...DATE (/ /) TIME (:)

ENDING OF RELEASEDATE (/ /) TIME (:)

CURRENT DATE AND TIME ..DATE (/ /) TIME (:)

MONITORED RADIATION LEVELS:

RIS-7324-1 (RR-93539 PT # 1) () E () MAXIMUM CPM

RIS-7324-2 (RR-93539 PT # 4) () E () MAXIMUM CPM

RIS-73437-1 (RR-73437 BLUE PEN) ENTER ON SEPARATE PAGE (LATER)

PROBE READING BY HEALTH PHYSICS () E () MR/HR

PROBE TYPE: (ENTER 0 IF NOT USED).....() TYPE

ENTER 1 FOR E-500 WITH GM PROBE

ENTER 2 FOR CUTIE PIE WITH 2520 PROBE

PLANT CONDITIONS:

EXHAUST STACK FLOW () KCFM

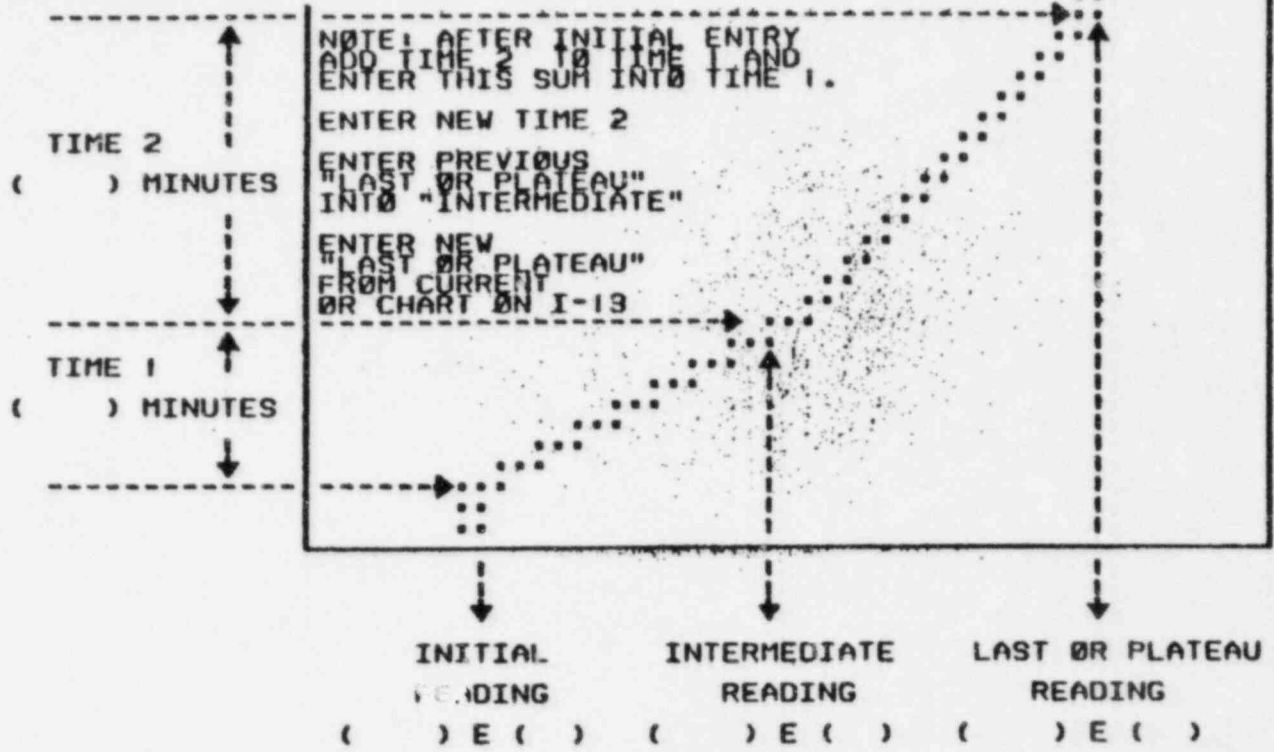
16:27:50 06/26/84

MONITORED RELEASE MANUAL ENTRY ■ 0948

PAGE 2

STEP 3A (CONTINUED)

ENTER THE FIVE READINGS FROM RR-73437 (BLUE PEN)



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RADIOLOGICAL EMERG RESPONSE PLAN ■ 0944

STEP 2: VERIFY AND/OR MANUALLY ENTER THE FOLLOWING STANDARD DATA:
 RADIATION MONITORS SENSITIVITY: (FROM I-14)

RIS-7324-1 () E () UCI/CC/CPM
 RIS-7324-2 () E () UCI/CC/CPM
 RIS-73437-1 () E () UCI/CC/CPM/H
 RIS-9301 () E () UCI/CC/CPM

LIMITS: (VERIFY)

SITE EMERGENCY NOBLE GAS (6.6) E (-2) UCI/CC
 SITE EMERGENCY I-131 (6.7) E (-5) UCI/CC
 10 TIMES TECH SPEC NOBLE GAS (2.6) E (-2) UCI/CC
 10 TIMES TECH SPEC I-131 (7.0) E (-8) UCI/CC

DOSE CONVERSION FACTORS

WEIGHTED NOBLE GAS (7.5) E (+2) REM/HR/CI/M3
 WEIGHTED IODINE FOR MONITORED RELEASE (5.3) E (+4) REM/HR/CI/M3
 I-131 FOR UNMONITORED RELEASE (1.2) E (+6) REM/HR/CI/M3

DISTANCES SELECTED FOR DOSE CALCULATIONS ANY NUMBER FROM 0.1 TO 60.0

1 (.367)	2 (1.0)	3 (2.0)	4 (2.5)	5 (3.0)
6 (5.0)	7 (6.0)	8 (7.0)	9 (8.5)	10 (10.0)
11 (12.0)	12 (15.0)	13 (17.0)	14 (20.0)	15 (25.0)



PUBLIC SERVICE COMPANY OF COLORADO
 FORT ST. VRAIN NUCLEAR GENERATING STATION

RRP-DOSE
 Datasheet 2
 Issue 6
 Page 1 of 3

16:24:13 06/26/84 RADIOLOGICAL EMERG RESPONSE PLAN ■ 0951

N □

STEP 4: ENTER THE METEOROLOGICAL DATA:

WIND SPEED	ELEVATION	SELECTION	15 MIN AVE
ENTER SELECTED ELEVATION () METERS AND AVERAGE () MPH			
XST-93108	60 METER TOWER	10.0 METERS	PRIMARY
XST-93101	10 METER TOWER	10.0 METERS	1ST ALT
XST-93106	60 METER TOWER	58.0 METERS	2ND ALT
NØ INST #	TØP RX BLDG	55.8 METERS	3RD ALT (FROM CHART ØN I-13)

WIND DIRECTION	15 MIN AVE	DEVIATION
ENTER AVERAGE AND DEVIATION FROM AVERAGE () ()		
XT-93109	60 METER TOWER	10.0 METERS PRIMARY
XT-93102	10 METER TOWER	10.0 METERS 1ST ALT
XT-93107	60 METER TOWER	58.0 METERS 2ND ALT
NØ INST #	TØP RX BLDG	55.8 METERS 3RD ALT (FROM CHART ØN I-13)

DIFFERENTIAL TEMPERATURE	UPPER-LØWER	15 MIN AVE
ENTER THE UPPER TØ LØWER () METERS AND AVERAGE () DEG F		
TT-93110-2	60 METER TOWER	48.5 METERS PRIMARY
NØ INST #	TØP RX BLDG	42.7 METERS 1ST ALT (FROM CHART ØN I-13)

NOTE: SELECT THE WIND SPEED AND WIND DIRECTION INSTRUMENTS FROM
THE SAME TOWER AND ELEVATION.



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-DOSE
Datasheet 2
Issue 6
Page 2 of 3

UNMONITORED RELEASE MANUAL ENTRY ■ 0943

■ □
 STEP 3B: MANUALLY ENTER THIS PAGE ENTER 2 () TYPE
 DATE AND TIMES: (MM/ DD/ YY) (HH: MM)

BEGINNING OF RELEASEDATE (/ /) TIME (:)

ENDING OF UNMON RELEASE..DATE (/ /) TIME (:)

CURRENT DATE AND TIME ...DATE (/ /) TIME (:)

MONITORED RADIATION LEVELS:

RIS-9301 (RR-93256 PT # 10) () E () MAXIMUM CPM

PLANT CONDITIONS:

CIRCULATING I-131 INVENTORY (FROM HP) () E () CURIES

PLATEOUT I-131 INVENTORY (FROM HP).... () E () CURIES

AVERAGE REACTOR TEMPERATURE (CIRC INLET) .. () DEG F

REACTOR PRESSURE BEFORE RELEASE () PSIA

REACTOR PRESSURE AFTER RELEASE () PSIA

LOCATION OF UNMONITORED RELEASE () LOCATION

ENTER 1 IF RELEASE IS THRU REACTOR BUILDING LOUVERS

ENTER 2 IF RELEASE IS THRU PCRV SAFETY VALVES

ENTER 3 IF RELEASE IS THRU LOUVERS AND SAFETYS



PUBLIC SERVICE COMPANY OF COLORADO
 FORT ST. VRAIN NUCLEAR GENERATING STATION

RRP-DOSE
 Datasheet 2
 Issue 6
 Page 3 of 3



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-DOSE
Datasheet 3
Issue 6
Page 1 of 1

FORT ST. VRAIN
FORWARD COMMAND POST RELEASE STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec.)

Radiiodine Release Rate _____ (Ci/sec.)

Release Location _____

Current Windspeed _____ (mph)

Current Wind Direction _____

Atmospheric Stability Class _____

Atmospheric Dilution Factor (EAB) _____ (sec/m³)

Projected EAB Whole Body Dose _____ (Rem)

Projected EAB Thyroid Dose _____ (Rem)

Emergency Classification _____

Affected Area _____

Recommended Protective Actions _____

Projected Duration of Release _____

Loca- tion	Proj. Noble Gas Air Conc. (Ci/m ³)	Proj. Iodine Air Conc. (Ci/m ³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measure- ments	
					Time	Dose Rates
EAB						

Verified By: _____

Posted By: _____



Checklist 1 - Data Logger Monitored Release

1. Collect data for calculation, using copies of Datasheet 1 as required for instrument sensitivities, meteorological data, and radiation monitor readings.

2. Access the dose assessment menu via demand function 41 or screen 941.

3. Before performing calculations, initialize the summing screen by going to step 1 on the menu, entering option 4, returning to the menu and submitting DF-41-0-0.

NOTE: Option 2 must be used when performing calculations for record keeping or dose reporting purposes. This automatically resets to option 1 every time DF-41-0-0 is run, and must be set to option 2 for each calculation.

4. Following the screens on the menu, perform a "duration of release" calculation. To accomplish this, enter the release start date and time, the current time, and the projected or estimated end of release time. Use two hours from current as a default value whenever this value isn't known.

5. After entering all data and returning to the menu, submit DF-41-0-0.

6. Print all screens used for input and results. Screens that should be printed are: 944, 942, 948, 951, 945, and 947.



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-DOSE
Checklist 1
Issue 6
Page 2 of 2

7. Perform a "puff" calculation. To do this, change the release start time to the current time, and resubmit DF-41-0-0. Be sure that option = 2.
8. Print screens used for input and results. Screens that should be printed are: 944 and 942.
9. Set option to 3, and resubmit DF-41-0-0 to total the results.
10. Print screen 949, which displays total results.
11. Complete applicable sections of datasheet 3, and transmit information to Radiological Assessment Coordinator at the FCP.
12. Discuss results of assessment with senior Health Physics representative for use in dispatching monitoring teams, etc.
13. Transmit prints of result screens to TSC Director for use in completing fact sheet.



Work/Datasheet/Checklist Control List

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
1	Monitored Release Calculations (Manual)	5
2	Monitored Release Calculations (TI-59)	10
3	Unmonitored Release Calculations (Manual)	2
4	Unmonitored Release Calculations (TI-59)	2

Datasheet No.

1	— Data Logger (or IBM) Monitored Release	20
2	Data Logger (or IBM) Unmonitored Release	2
3	Status Board Update Sheets	20

Checklist No.

1	Data Logger-Monitored Release	20
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Datasheet Numbers

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RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
RERP-ECP	Executive Command Post Procedure	9	10-10-84
RERP-EXP	Emergency Exposure Guidelines	2	08-06-84
RERP-FCP	Forward Command Post Procedure	11	08-06-84
RERP-FIELD	Field Monitoring Procedure	6	08-06-84
RERP-HOME	Home Packet for Off-Shift Notifications	12	08-06-84
RERP-ORG	FSV Emergency Organization and Responsibilities	7	10-10-84
RERP-PAG	Protective Action Guideline Recommendations	3	08-06-84
RERP-PCC	Personnel Control Center Procedure	14	08-06-84
RERP-SEOC	State Emergency Operations Center Procedure	9	10-10-84
RERP-SURVEY	Inplant/Onsite Radiological Monitoring	4	08-06-84
RERP-THYROID	Thyroid Blocking Agent Administration	4	10-10-84



TITLE: EXECUTIVE COMMAND POST PROCEDURE

ISSUANCE
AUTHORIZED
BY

9/25/84
JJBost for JWGAHM

PORC
REVIEW

PORC 589 OCT 3- 1984

EFFECTIVE
DATE

10-10-84

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* ANYTIME A WORKSHEET, DATASHEET, OR CHECKLIST HAS BEEN WRITTEN ON, COMPLETE THE REPORTING SHEET ATTACHED IN THE TABBED WORKSHEET SECTION AND FORWARD IT TO THE NUCLEAR DOCUMENTS SPECIALIST, FORT ST. VRAIN. DO NOT WRITE ON ANY WORKSHEETS, DATASHEETS, CHECKLISTS, OR REPORTING SHEETS IN THE PROCEDURE ITSELF. ALL WORKSHEETS/DATASHEETS/CHECKLISTS ARE TO BE TAKEN FROM THE TABBED SECTION FOLLOWING EACH PROCEDURE.

ESTABLISHING THE EXECUTIVE COMMAND POST1.0 Criteria for Implementation

When the FSV Radiological Emergency Response Plan (RERP) requires augmentation of resources, the Executive Command Post Director shall activate the Executive Command Post (ECP).

2.0 Procedure2.1 Staffing

The ECP Director shall perform personnel accountability to assure that the initial manning functions of the ECP can be met.

If not during normal working hours, those personnel required to man the ECP are notified by telephone (see RERP-HOME or RERP PHONE LISTS). It is the responsibility of the ECP Alternate Director, or the first individual contacted by the ECP Director, to ensure that the notifications are made. Refer to the call list for the ECP for instructions, names, and telephone numbers.

2.2 Communications

The ECP Director shall establish communications with the Forward Command Post (FCP).

2.3 Activation

The Executive Command Post (ECP) shall be established and operational within ninety (90) minutes after an ALERT or higher level accident.

2.3.1 The ECP will be located:

- a) Primary - Room 620, Headquarters Building.
- b) Alternate - PSC Lookout Center in Golden.

2.3.2 The ECP is manned by senior corporate personnel, facilities, equipment, and financial resources in an emergency situation. The ECP supports PSC personnel stationed at onsite and offsite emergency centers.

3.0 Responsibilities

3.1 Executive Command Post Director - Checklist 1

- 3.1.1 The ECP Director will perform personnel accountability to assure that the ECP staffing requirements can be met.
- 3.1.2 Assumes overall responsibility for providing the Corporate Emergency Director (located at the Forward Command Post) with the counsel, expertise, and resources available within the PSC organization.
- 3.1.3 Coordinates emergency assistance, provides reentry and recovery support, station and co-ordinates site modifications review by the Nuclear Facility Safety Committee as appropriate.
- 3.1.4 Supervises the ECP emergency operations Managers, communications, and clerical personnel, and briefs ECP staff.
- 3.1.5 Dispatches headquarters management, administrative and technical support personnel as requested by the Corporate Emergency Director (CED).
- 3.1.6 Terminates the ECP when the emergency condition is terminated.

3.2 Communications Support

- 3.2.1 Establish communications with the Forward Command Post (FCP) (see RERP PHONE LISTS for phone numbers, if required).
- 3.2.2 When instructed to do so, inform the FCP that the ECP is manned and ready and of the location (Room 620 or Lookout Center).
- 3.2.3 Receive status of plant and emergency and assessment of condition and inform ECP Director, who will brief the ECP staff.
- 3.2.4 Request location of Personnel Control Center (PCC).
- 3.2.5 Maintain communications flow between ECP and FCP.

3.3 Clerical Support

Clerical assistant(s) keep an ongoing record (log) of all actions taken.



3.4 Manager of Technical Support

- 3.4.1 Provide CED and onsite emergency operations with technical advice in nuclear, mechanical, civil, and electrical engineering.
- 3.4.2 Provide engineering support, technical experts, and consultants as requested. (See RERP-SUPORG, should the need for non-PSC organization assistance be identified.)

3.5 Manager of Media Relations

- 3.5.1 Coordinates communications between the ECP and FCP.
- 3.5.2 Assists the ECP Director and PSC media relations personnel in preparation of press releases, announcements, and interviews.

3.6 Manager of Resources

- 3.6.1 Coordinates provision of manpower and equipment from within PSC, and from consultants/contractors, to supports on-site emergency operations.
- 3.6.2 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. (See RERP-SUPORG, should the need for non-PSC organization assistance be identified.)

3.7 Manager of Security

- 3.7.1 Coordinates PSC security operations with public law enforcement agencies.
- 3.7.2 Acquires additional security manpower, hardware, and equipment, as requested.

4.0 References

- 4.1 FSV Radiological Emergency Response Plan

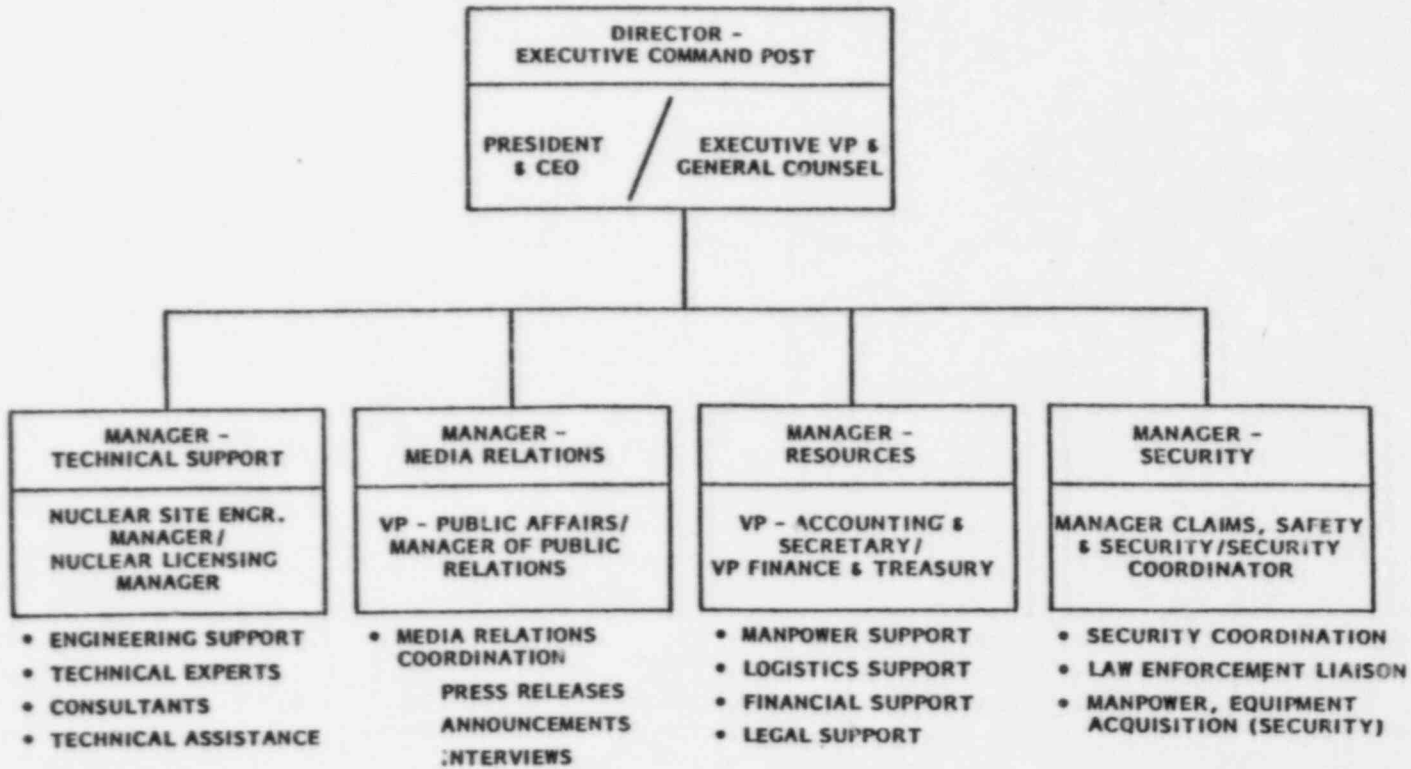


5.0 Referenced or Supporting Procedures

- 5.1 RERP-FCP, Forward Command Post Procedure
- 5.2 RERP-HOME, Home Packet for Off-shift Notifications
- 5.3 RERP-SURVEY, Inplant/Onsite Radiological Surveys
- 5.4 RERP-SUPORG, Use and Coordination of Non-PSC Support Organizations

EXECUTIVE COMMAND POST ORGANIZATION

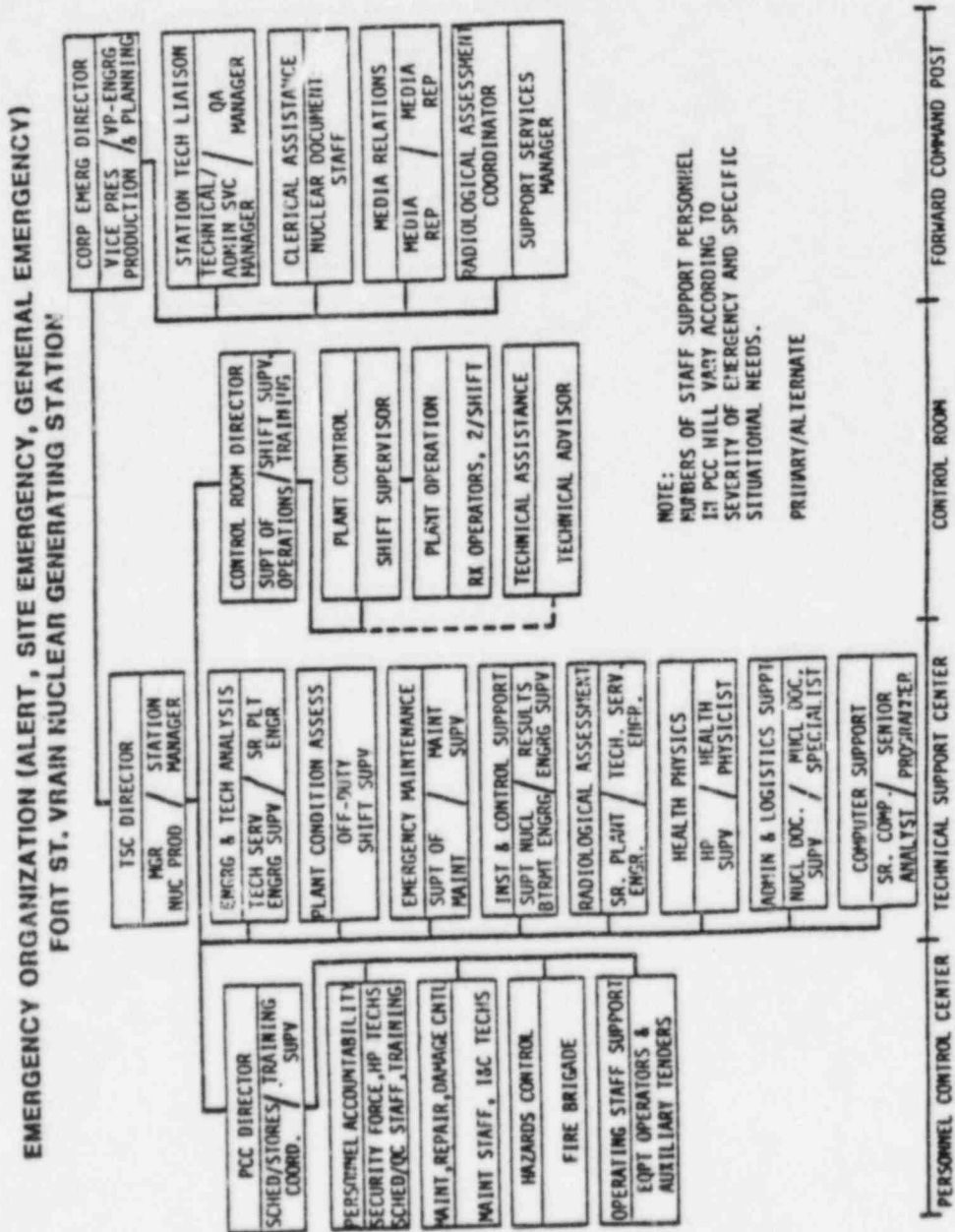
Fort St. Vrain Nuclear Generating Station

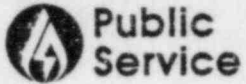


EXECUTIVE COMMAND POST ORGANIZATION

FIGURE 1



**FIGURE 2
EMERGENCY ORGANIZATION**




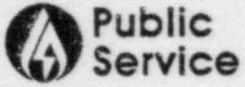
SUPPORT EQUIPMENT/MATERIALS

1. Communications equipment - telephones.
2. Fort St. Vrain Radiological Emergency Response Plan.
3. State Radiological Emergency Response Plan.
4. Local Government Emergency Plan.
5. Maps
 - a) Fort St. Vrain area and environs.
 - b) Regional.
6. Fort St. Vrain Station layout drawings (see RERP-SURVEY).
7. Other support available.
 - a) Reproduction Equipment.
 - b) Commerical television station monitoring equipment.
 - c) Radio-television recording equipment.

ECP DIRECTOR'S CHECKLIST

NOTE: All information is to be recorded by the Clerical Assistant

- | | <u>Time</u> |
|--|-------------|
| 1. Personnel Accountability | |
| a. Manager of Technical Support - Nuclear Site Engineering Manager/Nuclear Licensing Manager | _____ |
| b. Manager of Media Relations - VP Public Affairs/ Manager of Public Relations. | _____ |
| c. Manager of Resources - VP Accounting/VP of Finance & Treasurer. | _____ |
| d. Manager of Security - Manager of Claims, Safety & Security/ Security Coordinator. | _____ |
| e. Clerical assistants - Secretary to VP Accounting. | _____ |
| f. Communications Support Person. | _____ |
| 2. Staffing requirements met. | _____ |
| 3. Communications established with FCP. | _____ |
| 4. FCP informed that ECP is manned and ready and location. | _____ |
| 5. Status of plant and emergency and assessment of condition received from FCP. | _____ |
| 6. Location of PCC requested and received. | _____ |
| 7. Staff briefing conducted. | _____ |



Work/Datasheet/Checklist Control List

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
None	N/A	N/A

<u>Datasheet No.</u>	<u>Title</u>	<u>Number Copies</u>
None	N/A	N/A

<u>Checklist No.</u>	<u>Title</u>	<u>Number Copies</u>
1	ECP Director's Checklist	2



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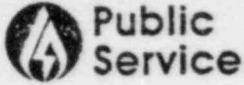
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ECP DIRECTOR'S CHECKLIST

NOTE: All information is to be recorded by the Clerical Assistant

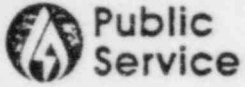
- | | <u>Time</u> |
|--|-------------|
| 1. Personnel Accountability | |
| a. Manager of Technical Support - Nuclear Site Engineering Manager/Nuclear Licensing Manager | _____ |
| b. Manager of Media Relations - VP Public Affairs/ Manager of Public Relations. | _____ |
| c. Manager of Resources - VP Accounting/VP of Finance & Treasurer. | _____ |
| d. Manager of Security - Manager of Claims, Safety & Security/ Security Coordinator. | _____ |
| e. Clerical assistants - Secretary to VP Accounting. | _____ |
| f. Communications Support Person. | _____ |
| 2. Staffing requirements met. | _____ |
| 3. Communications established with FCP. | _____ |
| 4. FCP informed that ECP is manned and ready and location. | _____ |
| 5. Status of plant and emergency and assessment of condition received from FCP. | _____ |
| 6. Location of PCC requested and received. | _____ |
| 7. Staff briefing conducted. | _____ |



ECP DIRECTOR'S CHECKLIST

NOTE: All information is to be recorded by the Clerical Assistant

- | | <u>Time</u> |
|--|-------------|
| 1. Personnel Accountability | |
| a. Manager of Technical Support - Nuclear Site Engineering Manager/Nuclear Licensing Manager | _____ |
| b. Manager of Media Relations - VP Public Affairs/ Manager of Public Relations. | _____ |
| c. Manager of Resources - VP Accounting/VP of Finance & Treasurer. | _____ |
| d. Manager of Security - Manager of Claims, Safety & Security/ Security Coordinator. | _____ |
| e. Clerical assistants - Secretary to VP Accounting. | _____ |
| f. Communications Support Person. | _____ |
| 2. Staffing requirements met. | _____ |
| 3. Communications established with FCP. | _____ |
| 4. FCP informed that ECP is manned and ready and location. | _____ |
| 5. Status of plant and emergency and assessment of condition received from FCP. | _____ |
| 6. Location of PCC requested and received. | _____ |
| 7. Staff briefing conducted. | _____ |



Work/Datasheet/Checklist Control List

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
None	N/A	N/A

<u>Datasheet No.</u>		
None	N/A	N/A

<u>Checklist No.</u>		
1	ECP Director's Checklist	2

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TITLE: EMERGENCY EXPOSURE GUIDELINES

ISSUANCE AUTHORIZED BY *Don Waremberg by Milt McBride*

PORC REVIEW **PORC 580 AUG 2 - 1984** EFFECTIVE DATE **8-6-84**

<u>Section</u>	<u>Description</u>	<u>Page</u>
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1.0	<u>Criteria For Implementation</u>	2
2.0	<u>Procedure</u>	2
3.0	<u>Responsibilities</u>	3
4.0	<u>References</u>	3
5.0	<u>Referenced or Supporting Procedures</u>	4
Table 1	<u>Exposure Criteria for Emergency Workers</u>	1
Datasheet 1	<u>Job Briefing Verification Sheet</u>	1
Work/Datasheet/Checklist	<u>Control List</u>	1
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General

This procedure provides guidance and maximum exposure criteria for use in the event of a severe radiological emergency at Fort St. Vrain where it may be necessary for members of emergency teams to exceed established quarterly or annual radiation exposure limits. The guidance contained herein is given as dose equivalent limits, as it is recognized that certain critical station/lifesaving functions may be required to be carried out under extreme radiological conditions, and that, in the context of an accident situation, these actions may require emergency workers to receive doses in excess of occupational limits. These exposures may be justifiable if it may be determined that benefits to society are being achieved, and that every reasonable effort is being made to maintain emergency workers doses as low as reasonably achievable.

1.0 Criteria for Implementation

This procedure shall be implemented only under the ensuing conditions:

- 1.1 The need to exceed established radiation exposure limits to save a life or minimize the consequences of an incident has been identified.
- 1.2 A radiological survey and/or installed radiation monitor readings (airborne and area) have been utilized to provide a projected whole body dose required to complete the work.

2.0 Procedure

Table 1 of this procedure summarizes the radiological dose equivalent limits for an emergency situation as defined in Section 1 of this procedure.

- 2.1 Personnel accepting emergency assignments where they may receive radiation dose equivalents in excess of occupational limits shall be volunteers of good health (preferably males over 45 years of age).
- 2.2 Emergency personnel volunteering for these missions shall be made broadly familiar with the potential risks associated with the projected radiation exposure.
- 2.3 Any such exposure under the provisions of this procedure are to be limited to once in a lifetime.
- 2.4 Personnel shall not enter any area where dose rates are unknown or unmeasurable.



2.5 Personnel shall be provided high and low range pocket dosimeters suitable for measurement of anticipated exposure levels, in addition to permanently recording film badges and any extremity monitoring devices deemed appropriate by the Senior Health Physics Representative at the Technical Support Center or a delegated Health Physics Technician at the Personnel Control Center.

3.0 Responsibilities

3.1 Personnel Control Center (PCC) Director

The PCC Director is responsible to authorize volunteers selected for high exposure assignments (in excess of occupational dose equivalent limits) to receive such doses and to ascertain that documentation of such authorization is performed on Datasheet 1, provided herein. He shall confer with the most Senior Health Physics Representative at the TSC, or his designee, prior to dispatching any such volunteer personnel from the PCC with regard to proper personnel monitoring devices and protective clothing/devices required for the assignment.

3.2 Senior Health Physics Representative (TSC)

The Senior Health Physics Representative at the TSC will be responsible to assess monitoring data with regards to emergency team assignments and evaluate the projected assignment dose and any requirements for stay time, personnel monitoring, and protective clothing and equipment. In conjunction with these responsibilities, the senior Health Physics representative shall also consider the need for radioprotective drugs (see RERP-THYROID).

3.3 Technical Support Center Director

The TSC Director has overall responsibility for the direction of onsite emergency activities, and, as such, must be responsible for determining the need for elevated-risk assignments where occupational dose limits would be exceeded.



3.4 Personnel Accountability and Exposure Controller (PCC)

When requested by the PCC Director, assure proper documentation of projected dose, staytimes, and protective/dosimetric equipment requirements specified by the senior Health Physics representative at the TSC. Perform job briefing and sign Datasheet 1.

4.0 References

- 4.1 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U.S.E.P.A., June 1980.
- 4.2 10CFR20, Code of Federal Regulations.
- 4.3 NCRP 42, Radiological Factors Affecting Decision-Making in a Nuclear Attack, National Council on Radiation Protection and Measurements, 1974.

5.0 Referenced or Supporting Procedures

- 5.1 RERP-ORG, FSV Emergency Organization and Responsibilities
- 5.2 RERP-THYROID, Thyroid Blocking Agent Administration
- 5.3 RERP-DOSE, Offsite Dose Calculation Methodology
- 5.4 RERP-PCC, Personnel Control Center Procedure

TABLE 1
Exposure Criteria for Emergency Workers

<u>Situation</u>	<u>Whole Body</u>	<u>Thyroid*</u>
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**

* Respiratory protection will be provided as necessary.

** 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 lifesaving mission.

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



DATASHEET 1

JOB BRIEFING VERIFICATION SHEET*

<u>Volunteers Names</u>	<u>Date</u>	<u>Time</u>	<u>Destination</u>	<u>Projected Dose</u>
-------------------------	-------------	-------------	--------------------	-----------------------

* Complete one Job Briefing Sheet for each high exposure emergency team.

Comments



Job Briefing - Summarize Details (Dosimetry, Protective Clothing/Equipment, Stay Time, Etc.)

Name of Health Physics Representative Contacted

Signature _____
Personnel Accountability and Exposure Cont.

Date _____ Time _____



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-EXP
WS/DS/CL
Issue 2
Page 1 of 3

Worksheet No.

Title

Number Copies

None

N/A

N/A

Datasheet No.

1

Job Briefing Verification Sheet

10

Checklist No.

None

N/A

N/A



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Date _____ Time _____



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PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-EXP
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Page 2 of 2

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Signature _____
Personnel Accountability and Exposure Cont.

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<u>Volunteers Names</u>	<u>Date</u>	<u>Time</u>	<u>Destination</u>	<u>Projected Dose</u>
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Datasheet 1
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JOB BRIEFING VERIFICATION SHEET*

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Comments



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-EXP
Datasheet 1
Issue 2
Page 2 of 2

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<u>Volunteers Names</u>	<u>Date</u>	<u>Time</u>	<u>Destination</u>	<u>Projected Dose</u>
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Comments



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Name of Health Physics Representative Contacted

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Personnel Accountability and Exposure Cont.

Date _____ Time _____



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<u>Volunteers Names</u>	<u>Date</u>	<u>Time</u>	<u>Destination</u>	<u>Projected Dose</u>
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Comments



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-EXP
Datasheet 1
Issue 2
Page 2 of 2

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DATASHEET 1

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PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

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Datasheet 1
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 <u>Datasheet No.</u>		
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 <u>Checklist No.</u>		
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TITLE: FORWARD COMMAND POST PROCEDURE

ISSUANCE
AUTHORIZED
BY

*Don Warentz by
Milt McBride*

PORC
REVIEW

PORC 580 AUG 2 - 1984

EFFECTIVE
DATE

8-6-84

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ESTABLISHING THE FORWARD COMMAND POST1.0 Criteria for Implementation

When the FSV Radiological Emergency Response Plan (RERP) requires augmentation of resources, generally for an ALERT or higher emergency classification, the Corporate Emergency Director (CED) shall activate the Forward Command Post (FCP).

2.0 Procedure

- 2.1 The Forward Command Post (FCP) shall be established in the garage of the PSC Fort Lupton Service Center. (See Figure 1)

The FCP functions as the control and coordination center for on-scene state/local/federal emergency response forces, and communicates with the State EOC and with the Weld County EOC (Weld County Communication Center) for effective coordination of county forces. A senior representative of DODES is responsible for control and coordination of FCP emergency response activities.

2.2 Corporate Emergency Director (Checklist 1)

2.2.1 The CED will perform personnel accountability to assure that the FCP staffing requirements can be met. If not during normal working hours, those personnel required to man the FCP are notified by telephone. It is the responsibility of the CED alternate to ensure that the notifications are made. Refer to RERP PHONE LIST or RERP-HOME for the FCP call list for instructions, names, and phone numbers.

2.2.2 Assumes overall command of PSC emergency operations and is the prime contact between Fort St. Vrain and governmental authorities.

2.2.3 The CED shall establish communications and verify that primary and secondary communication links to the Technical Support Center (TSC) are available.



2.3 Station Technical Liason

The Station Technical Liason shall provide technical interpretation, assistance, and guidance, as requested, throughout the course of events. He shall review the incoming plant data and advise the Corporate Emergency Director as to the trend of the accident. Additionally, he shall assist state/local/federal FCP personnel in areas of plant technical data.

2.4 Radiological Assessment Coordinator

The Radiological Assessment Coordinator shall evaluate or perform the offsite dose consequence assessments (see RERP-DOSE), provide technical advice to the Corporate Emergency Director with regard to Protective Action recommendations (see RERP-PAG), and shall assist the Senior Health Physics representative at the TSC with decisions regarding emergency exposure limits for emergency team members (see RERP-EXP), the need for administration of thyroid blocking agent (see RERP-THYROID), and receive/interpret field monitoring data (see RERP-FIELD). He shall also perform core damage evaluations as required (see RERP-CORE).

3.0 Responsibilities

3.1 Corporate Emergency Director

3.1.1 The CED is responsible for direction and coordination of:

- a) PSC onsite and offsite emergency functions.
- b) Interface between PSC and local/state/federal emergency response activities.
- c) Transmission of plant status updates and radiological release data to the ECP and PSC Personnel at the State EOC and media center personnel, and briefing the PSC FCP staff.
- d) Notification of state and local agencies concerning recommended protective actions.
- e) Provision of administrative, technical, and logistical support to station emergency operations via the ECP.
- f) Continuity of emergency organization resources.



3.1.2 The CED provides direction to, and coordination for, the TSC Director and the Nuclear Engineering Manager (assigned to the State EOC). He will coordinate additional headquarters support via the Executive Command Post (ECP).

3.1.3 Terminates the emergency or de-escalates the emergency category according to the status of the event. Deactivates the FCP when the emergency has been brought to a recovery phase. May also deactivate upon de-escalation to an Unusual Event category.

3.1.4 Acts as Recovery Director per Section 9.0 of the RERP.

3.2 Communications Personnel

3.2.1 Establish communications with the TSC. (See Figure 2 for Emergency Kit and phone jack locations).

Primary

Telephone (open line)

Secondary

PSC Radio

Verify secondary system.

3.2.2 Inform the TSC that the FCP is manned and ready.

3.2.3 Receive status of plant and emergency and assessment of condition and inform CED.

3.2.4 Request location of Personnel Control Center (PCC).

3.2.5 Communication is to be established with the Executive Command Post (ECP) and the State Emergency Operations Center (EOC). Inform the CED when accomplished.

a) Appraise them of the situation as directed by the CED.

b) Inform them of the location of the PCC, should it be necessary to dispatch assistance to the plant.



3.2.6 Maintain communications flow between the TSC, ECP, and State EOC.

3.3 The FCP staff keeps an ongoing record (log) of all actions taken. The Radiological Assessment Coordinator will assign one of the clerical staff responsibility for updating the FCP status boards at approximately 30 minute intervals. Data for radiological updates is to be obtained from, and reviewed by, the Radiological Assessment Coordinator prior to posting. Datasheet 1 is provided as a working copy for radiological status board updates. These sheets shall be retained for record keeping purposes. Datasheet 2 will be provided by Technical Liaison personnel to update Plant Status Boards.

3.4 Station Technical Liaison

- a) Provide assistance and substantiated data on emergency status and conditions. Provide staff assistant copies of Datasheet 2 for use in updating Plant Status Board.
- b) Coordinate company emergency response actions with those of state/local/federal agencies.

3.5 Media Relations

Provide assistance to the FCP Public Information Team (PICT) in the preparation of news and related media releases.

3.6 Radiological Assessment Coordinator.

3.6.1 In coordination with the TSC Radiological Assessment individual, perform and/or evaluate a preliminary assessment of the actual and/or potential radiological release. Utilize this information to complete Radiological Status Board Update Sheets (Datasheet 1). Verify any calculations in question via manual or TI-59 calculations.

3.6.2 Based on the above assessment, identify and recommend to the Corporate Emergency Director the classification of the emergency (ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY) and recommended protective actions to reduce exposures to the general population (see RERP-PAG).



- 3.6.3 Monitor radiation levels and meteorological data, and provide the Corporate Emergency Director with estimates of the dose to the general population based on actual releases and meteorology.
- 3.6.4 Obtain a 12 hour weather prediction from Stapleton Airport National Weather Service (refer to Outside Assistance Phone Numbers) and provide the FCP Director with estimates of the projected dose to the general population based upon plant conditions and foreseeable contingencies.
- 3.6.5 Assign a member of the clerical staff responsibility for posting updates to the FCP status board located outside the PSC staff area. Supply and review all radiological data to be posted.
- 3.6.6 Provide guidance to the TSC Senior Health Physics representative on matters regarding administration of thyroid blocking agent to site personnel (see RERP-THYROID).
- 3.6.7 Perform core damage evaluations as required (see RERP-CORE).

4.0 References

- 4.1 FSV Radiological Emergency Response Plan
- 4.2 State Radiological Emergency Response Plan

5.0 Referenced or Supporting Procedures

- 5.1 RERP-ORG, FSV Emergency Organization and Responsibilities
- 5.2 RERP-DOSE, Offsite Dose Calculations
- 5.3 RERP-EXP, Emergency Exposure Guidelines
- 5.4 RERP-FIELD, Field Monitoring Procedure
- 5.5 RERP-HOME, Home Packets for Offshift Notifications
- 5.6 RERP-PAG, Protective Action Guideline Recommendations
- 5.7 RERP-THYROID, Thyroid Blocking Agent Administration
- 5.8 EP-CLASS, Event and Emergency Classification Overview
- 5.9 RERP-SURVEY, Inplant/Onsite Radiological Monitoring
- 5.10 Fort St. Vrain Final Safety Analysis Report



5.11 RERP-SUPORG, Use and Coordination of Non-PSC Support Organizations

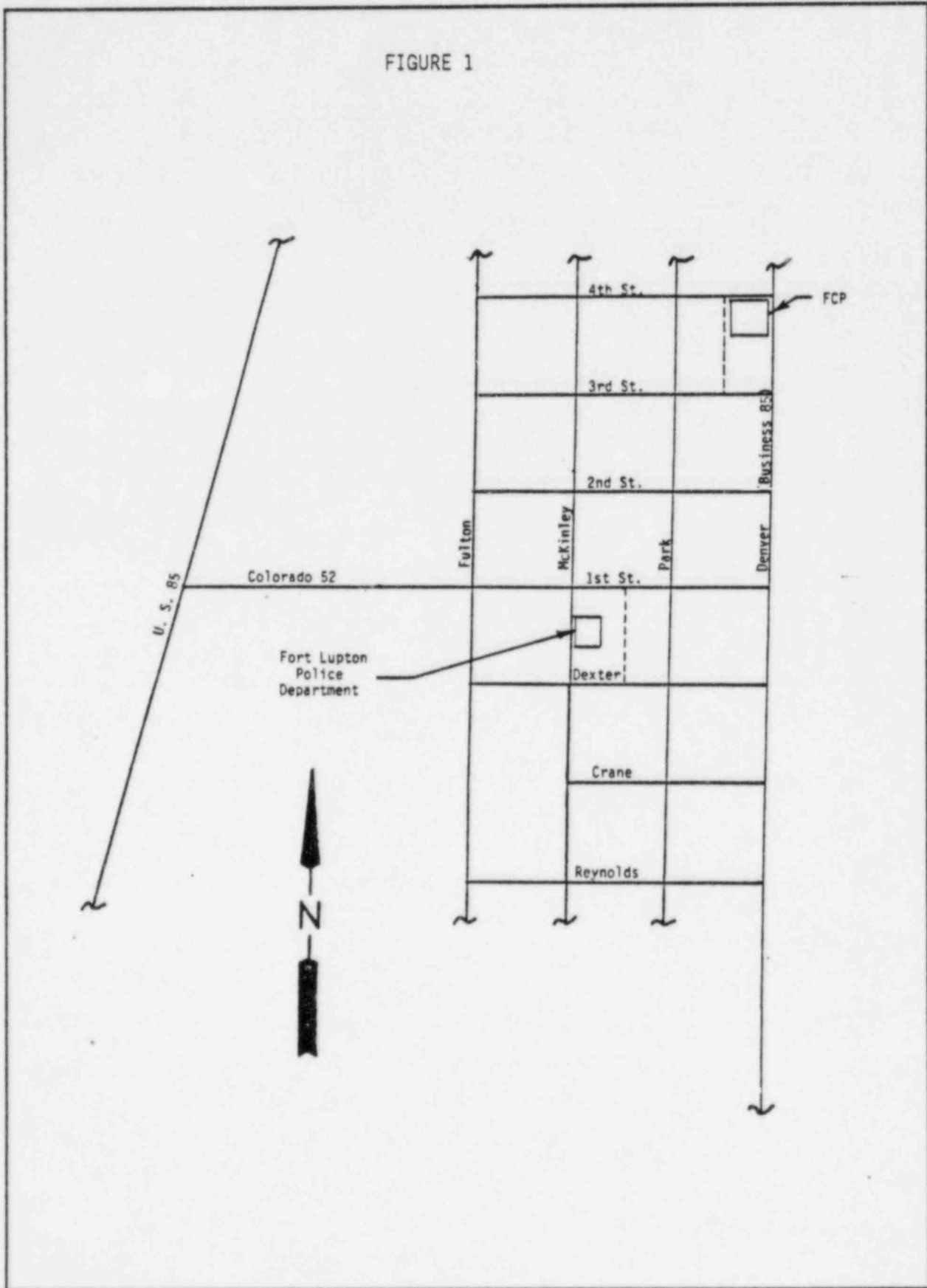
5.12 RERP-CORE, Core Damage Evaluation

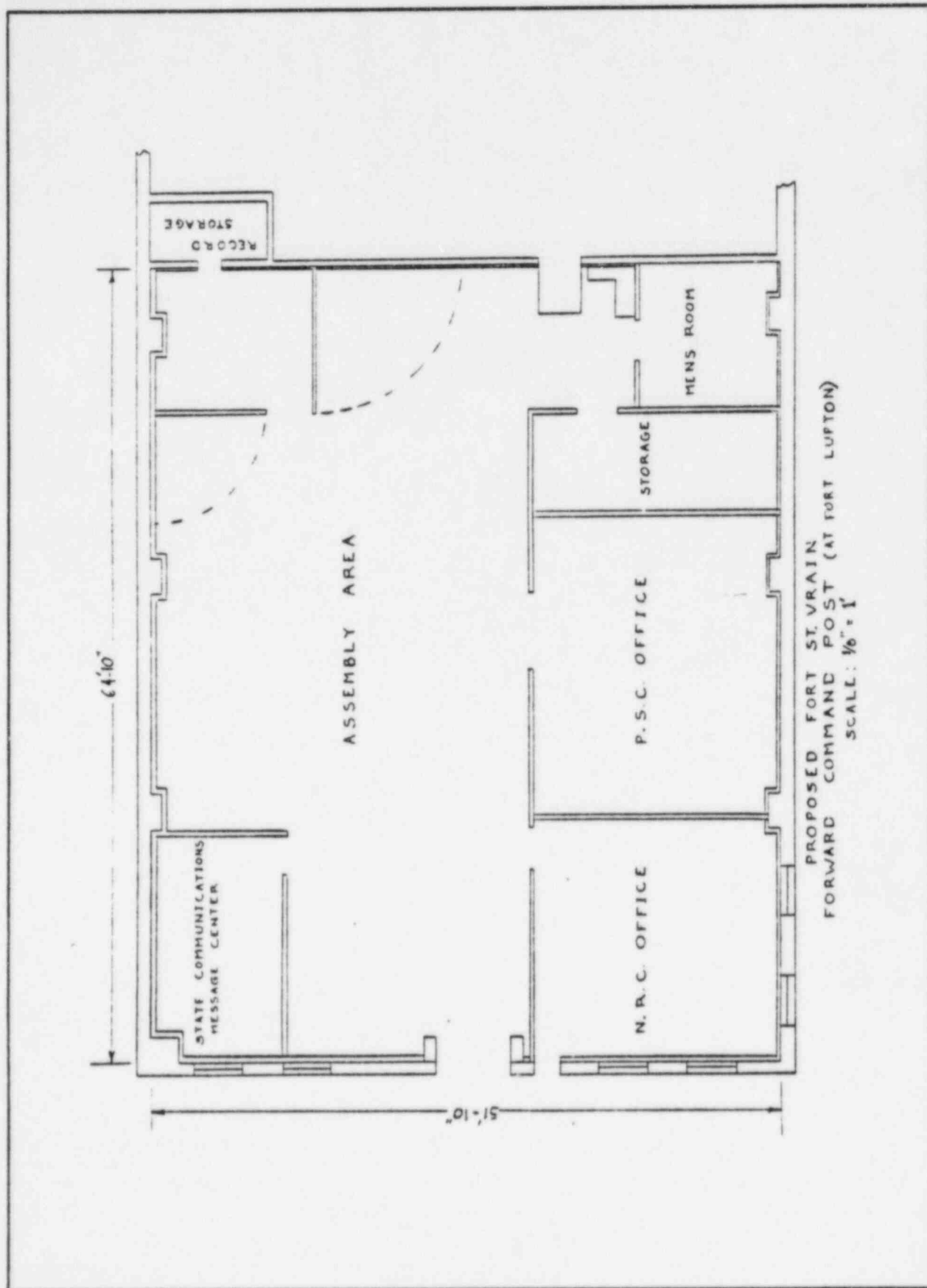


PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Figure 1
Issue 11
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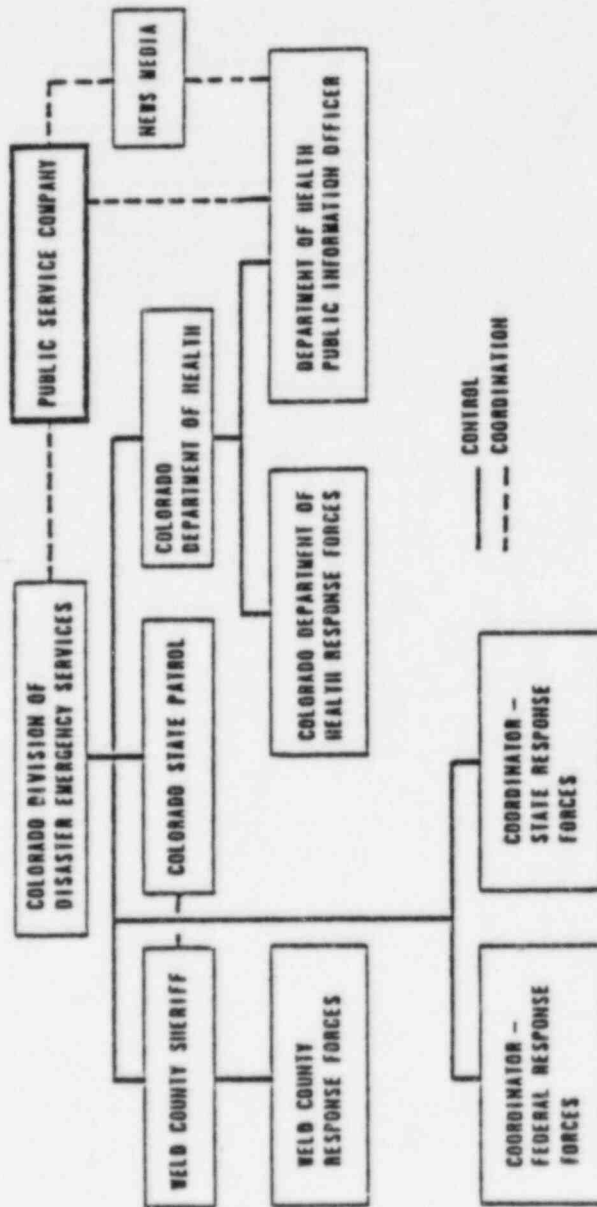
FIGURE 1







FORWARD COMMAND POST ORGANIZATION
Fort St. Vrain Nuclear Generating Station



**EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY)
FORT ST. VRAIN NUCLEAR GENERATING STATION**

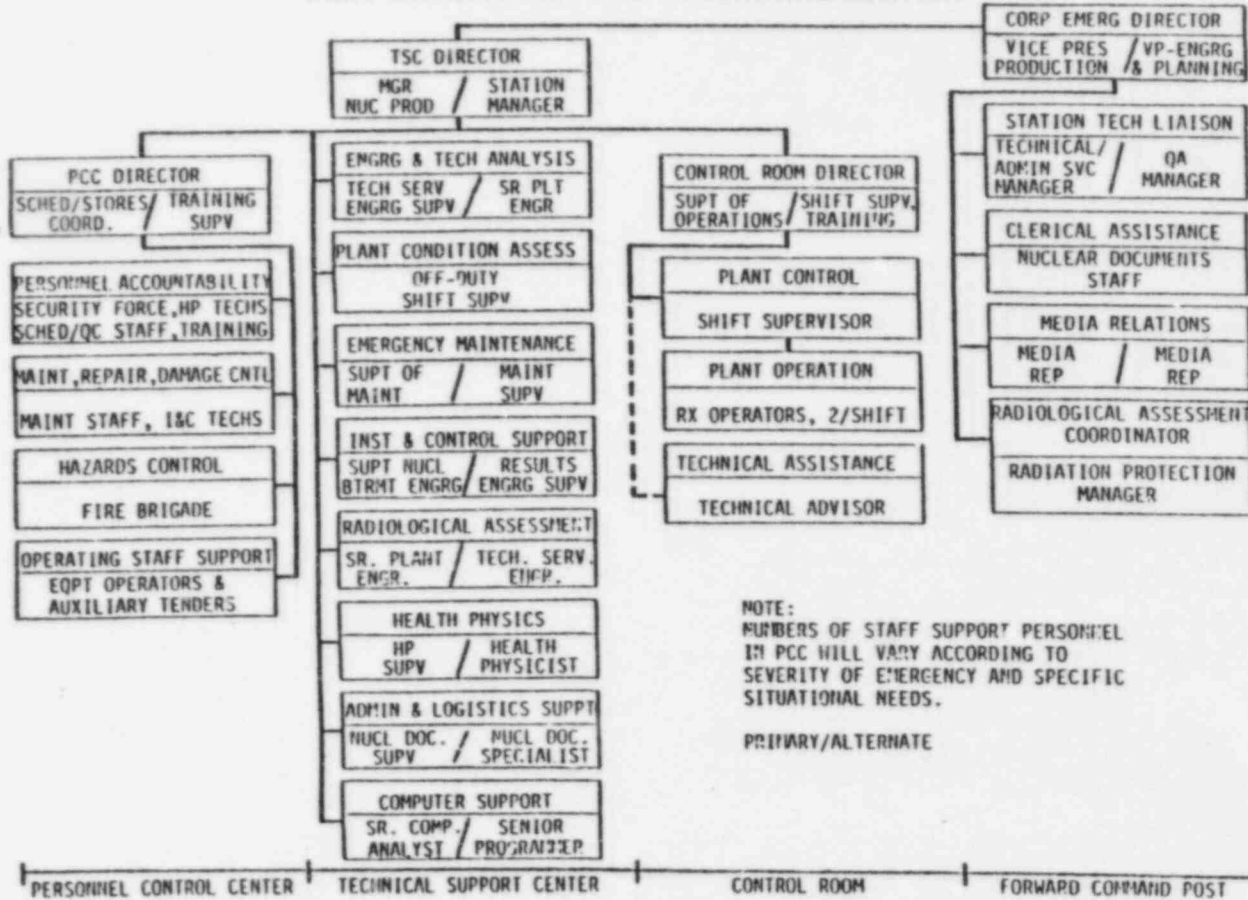




FIGURE 5

SITE SECTOR MAP - GEOGRAPHICAL AREA IDENTIFICATION DESIGNATIONS

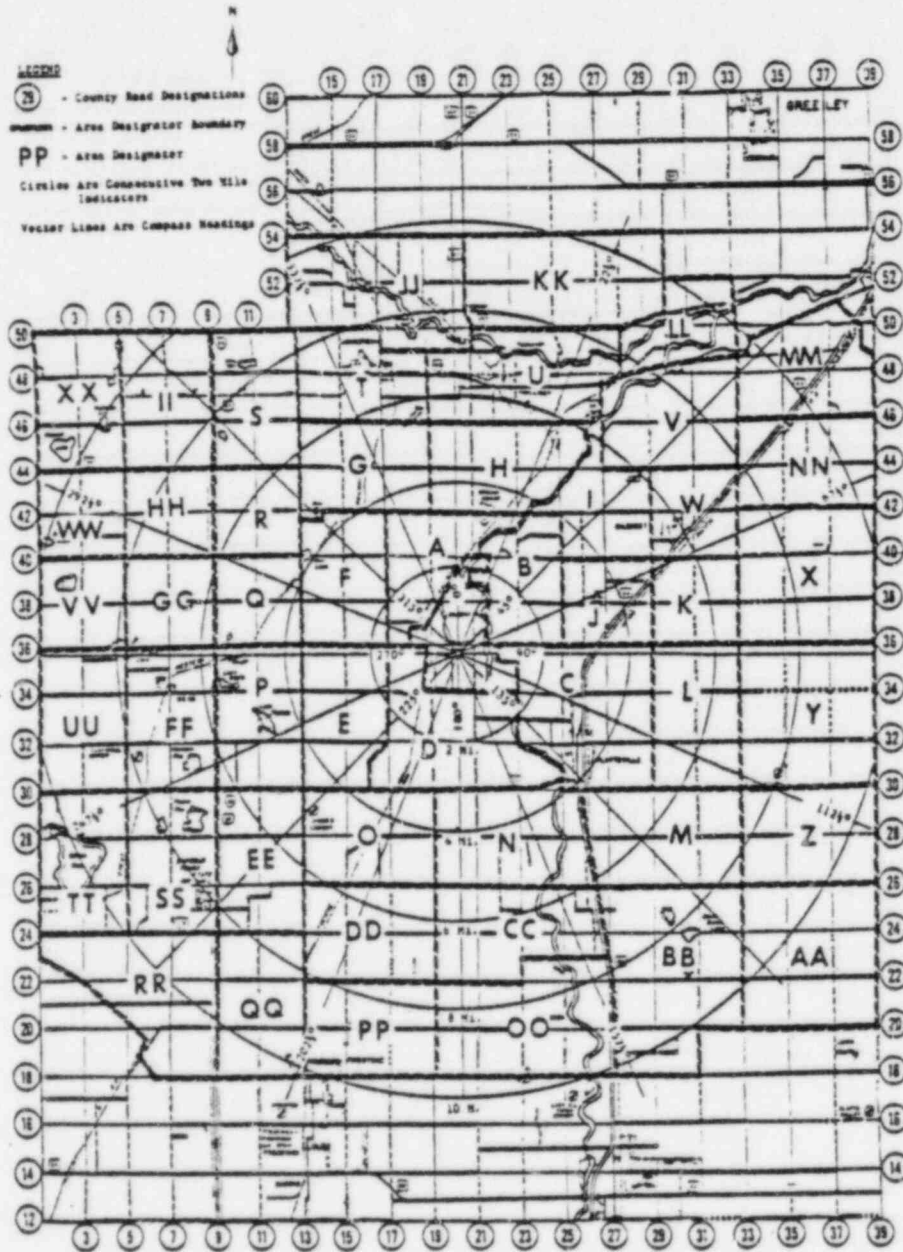
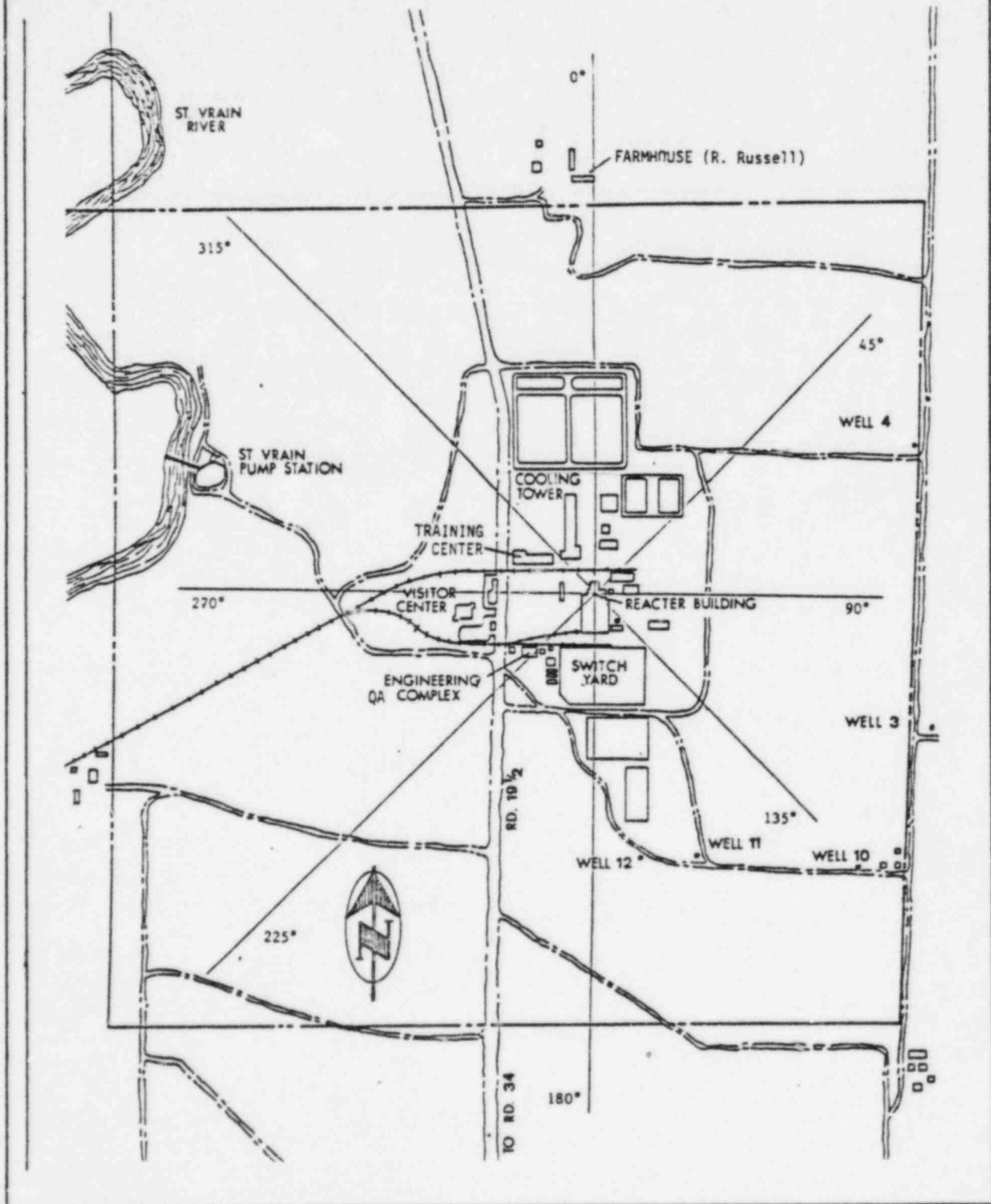




FIGURE 6
AERIAL VIEW MAP OF PLANT





SUPPORT EQUIPMENT/MATERIAL

1. Communication equipment - telephones and radios
2. Fort St. Vrain Radiological Emergency Response Plan (FSV RERP)
3. State FSV Radiological Emergency Response Plan (State RERP)
4. Local government emergency plans - Weld County Plan
5. Evacuation time study
6. Maps (See RERP implementing procedures RERP-DOSE, RERP-SURVEY, and RERP-PCC.)
 - a) Fort St. Vrain area and environ
 - b) Sectors
 - c) Regional
 - d) Health Physics Survey Maps of FSV Buildings
7. Public Information Plan
8. RERP Implementing Procedures
9. Office supplies
 - a) Writing tablets
 - b) Pens, pencils, and erasers
 - c) Chalk
 - d) Calculator
 - e) Graph Paper
10. P & Is
11. FSAR
12. E Drawings (Electrical)
13. I and C Drawings (Instrumentation and Control)
14. Technical Specifications
15. Administrative Procedures Manual



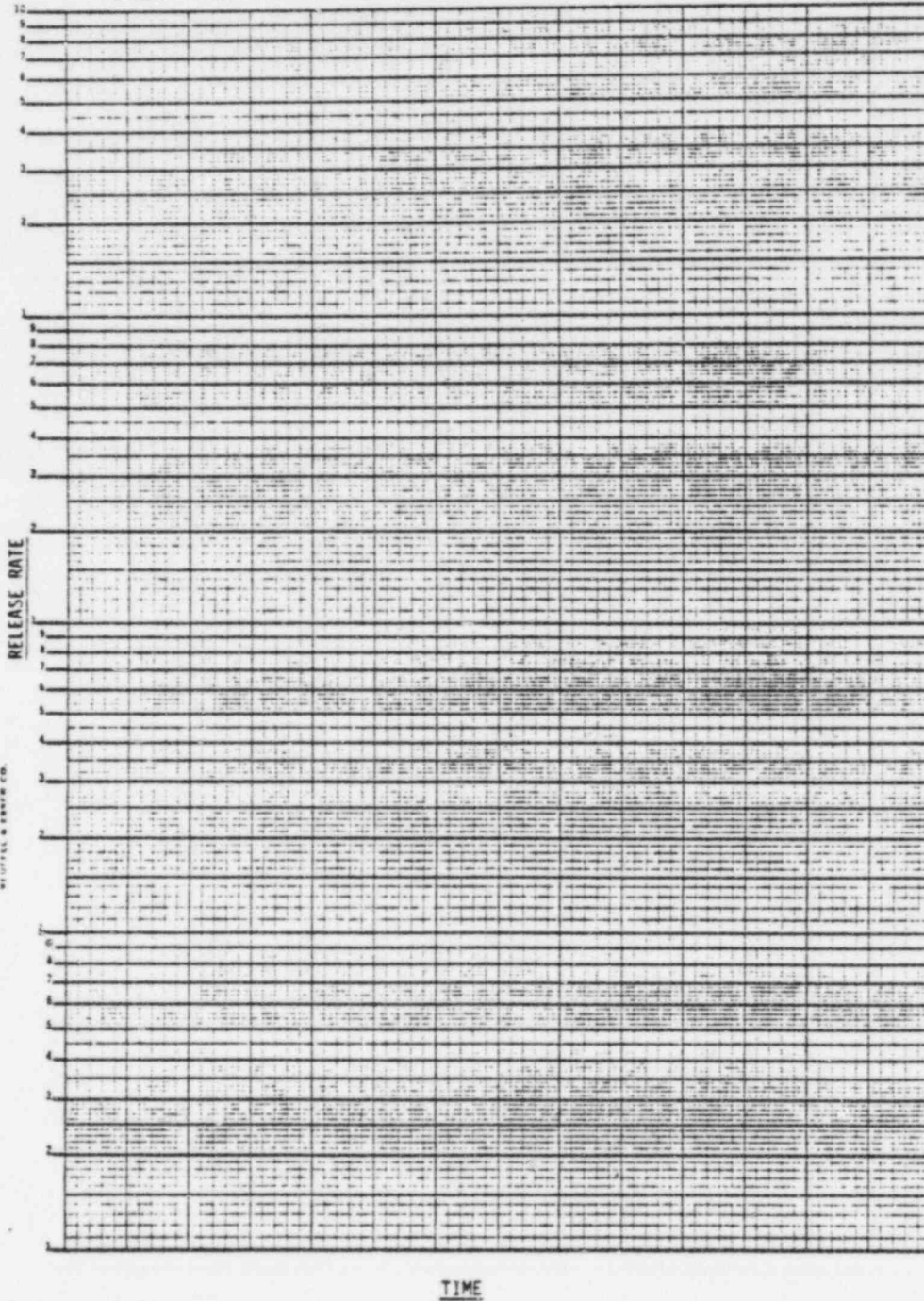
PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Attachment 1
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Page 2 of 2

16. Emergency Procedures
17. Medical Emergency Plan
18. Calculator/Printer



Release Rate (Ci/Sec) As a Function of Time (O--Radioiodine, N--Noble Gas)



1.2 MEMORANDUM 46 8010
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FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Datasheet 2
Issue 11
Page 1 of 1

FORT ST. VRAIN
FORWARD COMMAND POST PLANT STATUS BOARD

EMERGENCY CLASSIFICATION: _____ REACTOR SHUTDOWN DATE/TIME: _____

CURRENT DATE/TIME: _____

IF REACTOR SHUTDOWN, ARE ALL RODS INSERTED? _____

IS THERE ANY INDICATION OF FAILED FUEL? _____

PLANT STATUS PROGNOSIS/COMMENTS: _____

PSC FCP STAFF MEMBERS:	TITLE:
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____



CHECKLIST 1

CORPORATE EMERGENCY DIRECTOR'S CHECKLIST

NOTE: All information is to be recorded by the Clerical Assistant.

- | | <u>Time</u> |
|--|-------------|
| 1. Fort Lupton PSC office notified of intent to occupy building. | _____ |
| 2. Personnel Accountability | |
| a) Station Technical Liaison | _____ |
| b) Radiological Assessment Coordinator | _____ |
| c) Clerical Assistants | _____ |
| d) Media Relations | _____ |
| e) Additional personnel from outside agencies. | _____ |
| 1. Colorado Department of Health | |
| a) Radiological monitoring, technical, and health units, as required | _____ |
| b) Public information representative | _____ |
| 2. State Division of Disaster Emergency Services | _____ |
| 3. Weld County Sheriff's Office | _____ |
| 4. Colorado State Patrol | _____ |
| 3. Staffing requirements met. | _____ |
| 4. Communications established with TSC. | _____ |
| 5. TSC informed that FCP is manned and activated. | _____ |



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Checklist 1
Issue 11
Page 2 of 2

	<u>Time</u>
6. Status of emergency and assessment of plant condition received from TSC.	_____
7. Staff briefing conducted.	_____
8. Outside agency briefing conducted.	_____
9. Location of PCC requested and received.	_____
10. Communications established by ECP.	_____
11. ECP appraised of plant condition and informed of location of PCC.	_____
12. Communication established by State EOC.	_____
13. State EOC appraised of plant condition and informed of location of PCC.	_____
14. Initial Radiological Assessment (Actual) obtained Release Rate _____ Curies Released _____ Dose Rate _____ Dose Received _____ Protective Action Guide _____	
15. Preliminary Radiological Assessment (Projected) obtained Release Rate _____ Curies Released _____ Dose Rate _____ Dose Received _____ Protective Action Guide _____	
16. Meterological forecast obtained (12 hour).	_____



WORK/DATASHEET/CHECKLIST CONTROL LIST

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Title

Number Copies

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N/A

N/A

Datasheet No.

1	Forward Command Post Radiological Status Board	25
2	Plant Status Board	25

Checklist No.

1	Corporate Emergency Director's Checklist	2
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TITLE: <u>FIELD MONITORING PROCEDURE</u>		
ISSUANCE AUTHORIZED BY	<i>7-7-84</i> <i>De Wernburg</i>	
PORC REVIEW	PORC 580 JUL 31 1984	EFFECTIVE DATE 8-6-84

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General

Emergency offsite radiological monitoring, in the event of a radiological emergency at Fort St. Vrain, will be performed by FSV monitoring teams until field monitoring teams from the Colorado Department of Health (CDH) respond to the scene. The data collected by these field teams will be relayed directly to the Technical Support Center to aid in the assessment of offsite radiological consequences. The TSC will transmit field measurement data to the Forward Command Post for use by PSC and state radiological assessment personnel.

The PSC Field Monitoring Teams are deployed from the Personnel Control Center. The teams are in radio communication with the senior Health Physics representative at the TSC and report directly to him with all data. In addition, the field teams are directed by the senior Health Physics representative after initial deployment.

1.0 Criteria For Implementation

The Field Monitoring Teams are assembled at the Personnel Control Center anytime that the full FSV emergency organization is activated. The initial deployment of these teams is at the direction of the TSC Director.

2.0 Procedure

The Field Monitoring Teams shall be composed of a driver and an HP Technician. There is provision for the deployment of two field teams, one with survey responsibilities near site, primarily out to the site Exclusion Area Boundary (EAB), and the other from the EAB to the outer perimeter of the plume exposure Emergency Planning Zone (EPZ), approximately a five (5) mile radius.

2.1 The decision to deploy Field Monitoring Teams is the responsibility of the TSC Director. He shall make this decision, based upon projected offsite doses, as advised by the TSC Radiological Assessment individual, and the consideration of the ability to effectively assess these dose rates in the field (lower level of detection, weather conditions, etc.) as advised by the senior Health Physics representative at the Technical Support Center.

2.2 Each field monitoring team leader shall check required survey instrumentation for operability per Checklist 1.



2.3 The monitoring teams shall assure that all required instruments, equipment, and supplies are present in the survey vehicle prior to departure. This equipment shall include:

- RM-14 or RM-15
- RO 5A/D or RO 7 with RO 7-LD probe
- SAM-2 scaler
- 5 piece SAM-2 shield and detector
- Air sampler with Silver Zeolite cartridges and pre-filters
- Field Use Maps
- Wipes
- Pencil
- Field Radio
- Copy of RERP-FIELD
- Spare Batteries

2.4 The proper selection of dosimetry and protective equipment is the responsibility of the senior Health Physics representative at the TSC. He shall utilize calculated or estimated parameters to determine potential exposure and estimated stay times (see Datasheet 2). This information shall be relayed to the PCC director for use in the briefing of the field monitoring teams.

NOTE: Two separate copies of Datasheet 2 may need to be completed if projected conditions differ for the EAB and EPZ monitoring teams.

2.5 Field Monitoring teams act under the direction of the senior Health Physics representative after their initial deployment from the PCC. The Health Physics Technician assigned to each team shall ensure that good health physics practices are employed while in the field. This is to include:

- Keeping survey instruments (as appropriate to radiation levels) operating at all times to evaluate ambient radiation conditions and plume location;



- Wearing all protective clothing and equipment prescribed by the senior Health Physics representative at the TSC;
 - Spending as little time as necessary in elevated radiation exposure areas; and,
 - Travelling outside of predicted plume trajectory whenever possible, to minimize exposure and spread of contamination.
- 2.6 The senior Health Physics representative shall communicate the sampling location designations by utilizing easily recognizable landmarks, in particular, the intersections of county roadways (e.g., Weld County Roads 19 and 38, the confluence, meteorological monitoring towers, etc.).
- 2.7 The Field Monitoring Teams, in the interest of dose reduction and facilitating rapid data transmission, may transmit raw field monitoring data directly to the senior Health Physics representative at the TSC, where calculations may be performed. Worksheet 1 is provided for both data collection and calculations.
- 2.8 The Field Monitoring teams shall collect the following data at each sampling location:
- Ambient Radiation Level (mrem/hr)
 - I-131 Air Concentration ($\mu\text{Ci/cc}$)
 - Gross Particulate Concentration (cpm/cc)
- 2.9 The senior Health Physics representative at the Technical Support Center shall accumulate data on Worksheet 1 and complete all required calculations. After calculations are completed, data should be recorded on Datasheet 1, a partial scale survey map of the plume exposure EPZ. This map should be utilized in concert with dose projection results to keep the TSC Director and FCP personnel abreast of current data and dose assessment results.
- 2.10 Operation of Eberline SAM-2 counters is outlined below.
- Take a one minute background count and record on Worksheet 1 (or transmit to TSC via radio communication).
 - Collect Air Sample on Silver Zeolite Cartridge (HPP-12) and determine sample volume.



- Load cartridge in detector shield and close shield door.
- Take a one minute count of air sample cartridge and record on worksheet 1 (or transmit to TSC via radio communication).
- I-131 concentration ($\mu\text{Ci}/\text{cc}$ or Ci/m^3) =

$$\frac{\mu\text{Ci I-131}}{\text{cc}} = \frac{(\text{CPM}_S - \text{CPM}_B) \times 1.0\text{E-}10 \times 15}{V}$$

Where:

CPM_S = Gross counts per minute of sample

CPM_B = Counts per minute of background

1.0E-10 = Unit Conversion Factor

V = Sample Volume in ft^3

15 = Normal air sample volume
(3 ft^3/min x 5 min)

- 2.11 At the conclusion of FSV field monitoring activities, the driver shall return the vehicle, passengers, and contents to the Personnel Control Center, inform the PCC Director of the team's arrival, and request a contamination survey of the vehicle, its passengers, and its contents. Decontamination shall be handled in accordance with FSV Health Physics Procedures (HPP-10 and HPP-11) with area posting and control as required in accordance with HPP-9.

3.0 Responsibilities

3.1 Health Physics Technician (Field)

Perform surveys as directed by the senior Health Physics representative at the TSC. Ensure that good health physics practices are employed throughout the course of field monitoring efforts.

3.2 Health Physics Technician (PCC)

Perform contamination surveys as required on returning field monitoring personnel and equipment.

3.3 Senior Health Physics Representative (TSC)

Assume overall responsibility for the conduct of field monitoring activities. Direct field teams to appropriate sampling locations utilizing TSC dose projections and current meteorological conditions as a basis.



3.4 TSC Director

Assume ultimate responsibility for all activities centered from site, including the initial dispatch of field monitoring teams.

3.5 PCC Director

Brief departing monitoring teams of recommended protective actions, dosimetry, and estimated stay times as determined by senior Health Physics representative at the TSC. Ensure adequate contamination survey (and decontamination) of returning field monitoring personnel and equipment.

4.0 References

4.1 Instruction manuals for Eberline SAM-2 counting equipment.

5.0 Referenced or Supporting Procedures

5.1 RERP-EXP, Emergency Exposure Guidelines.

5.2 RERP-DOSE, Offsite Dose Calculation Methodology.

5.3 RERP-ORG, FSV Emergency Organization and Responsibility.

5.4 RERP-TSC, Technical Support Center Procedure.

5.5 RERP-PCC, Personnel Control Center Procedure.

5.6 HPP-9, Establishing and Posting Controlled Areas.

5.7 HPP-10, Area and Equipment Decontamination

5.8 HPP-11, Personnel Decontamination.

5.9 HPP-12, Portable Air Sample Collection and Analysis.

5.10 HPP-66, Operation of Portable Survey Instrumentation.

5.11 HPP-67, Calibration and Operation Procedure for the Eberline SAM-2 Stabilized Assay Meter.



TABLE 1

INSTRUMENT CHECK SOURCEQA/ENG PCC CHECK SOURCE

CS-137 SCN 103

<u>INSTRUMENT</u>	<u>ACCEPTABLE RANGE</u>
RM-14/15 with HP-210	2.100 - 6,300 cpm
PIC-6A	0.5 - 1.5 mRem/hr
RO-2	0.25 - 0.75 mRem/hr
RO-5A	0.15 - 0.45 mRem/hr
E-400	0.5 - 1.5 mR/hr
E-500	0.4 - 1.2 mR/hr

TRAINING PCC CHECK SOURCE

Ba-133 SCN 107

<u>INSTRUMENT</u>	<u>ACCEPTABLE RANGE</u>
RM-14/15 with HP-210	15,000 - 45,000 cpm
PIC-6A	5.5 - 16.5 mRem/hr
RO-2	4.5 - 13.5 mRem/hr
RO-5A	3.0 - 9.0 mRem/hr
E-400	7.5 - 22.5 mR/hr
E-500	6.5 - 19.5 mR/hr

H.P. ACCESS AREA CHECK SOURCE

Cs-137 SCN 80 Cs-137 SCN 75

<u>INSTRUMENT</u>	<u>ACCEPTABLE RANGE</u>
RM-14/15 with HP-210	19,000 - 57,000 cpm
PIC-6A	3.3 - 9.8 mRem/hr
RO-2	1.3 - 3.8 mRem/hr
RO-5A	1.1 - 3.3 mRem/hr
E-400	4.5 - 13.5 mR/hr
E-500	4.0 - 12.0 mR/hr

NOTE: Center active detector area directly over the source.



WORKSHEET 1, IN-FIELD SAMPLING DATA

- 1) Date: ____ / ____ / ____
 2) Time: ____ : ____
 3) Field Team: () EAB () EPZ (Check One)
 4) Sample Number: _____
 5) Sample Location (describe): _____

6) Ambient Radiation Level: _____ mrem/hr

7) Air Sample Data:

- a) Flow Rate _____ ft³/min
 b) Collection Time _____ minutes
 c) Volume Collected

7a) _____ ft³/min x 7b) _____ min = _____ ft³

d) Volume Correction Factor (VCF):

15.0 ft³
 _____ = _____

7c) _____ ft³

8) Particulate Activity Concentration:

- a) Particulate Filter Count Rate = _____ cpm
 b) Background Count Rate = _____ cpm
 c) Net Count Rate

8a) _____ cpm - 8b) _____ cpm = _____ cpm

d) Gross Beta Activity

[8c) _____ cpm x 7d) _____]
 _____ = _____ μ Ci/cc

2.36E+11



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9) 131I Activity:

a) Cartridge Count Rate = _____ cpm

b) Background Count Rate = _____ cpm

c) Net Count Rate

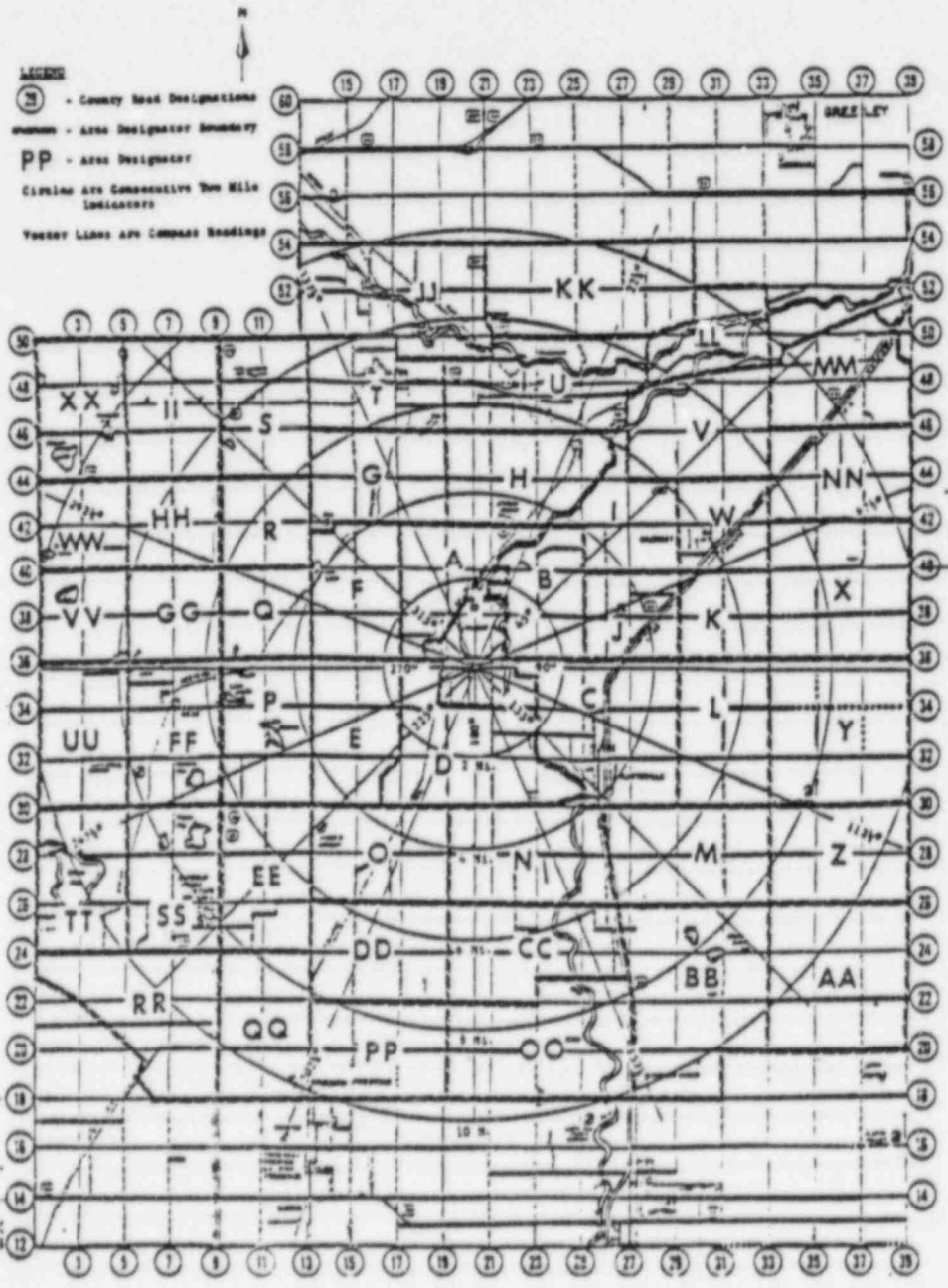
9a) _____ cpm - 9b) _____ cpm = _____ cpm

d) 131I Activity

9c) _____ cpm x 1.0E-10 x 7d) _____ = _____ $\mu\text{Ci/cc}$



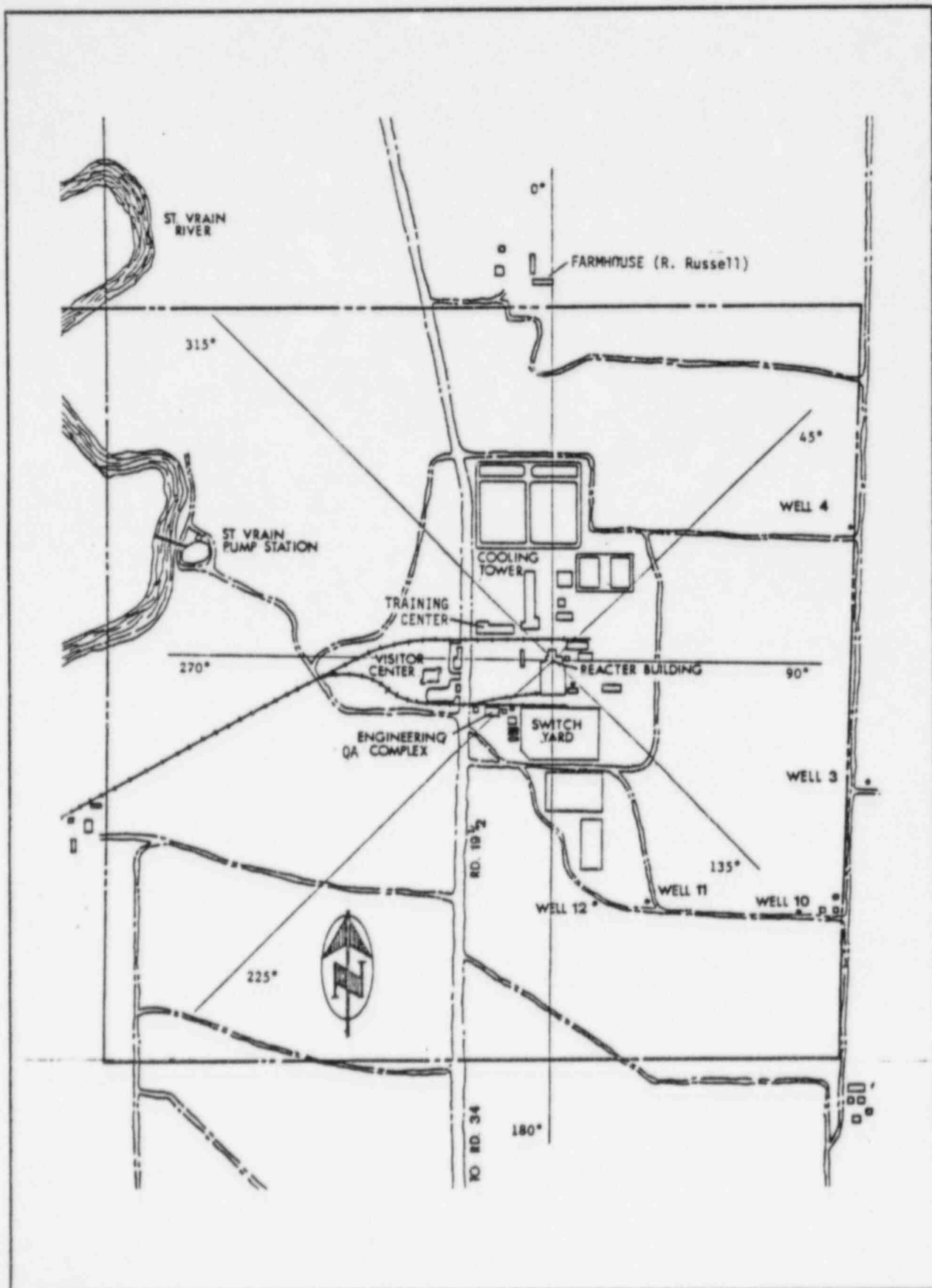
GEOGRAPHICAL AREA IDENTIFICATION DESIGNATION





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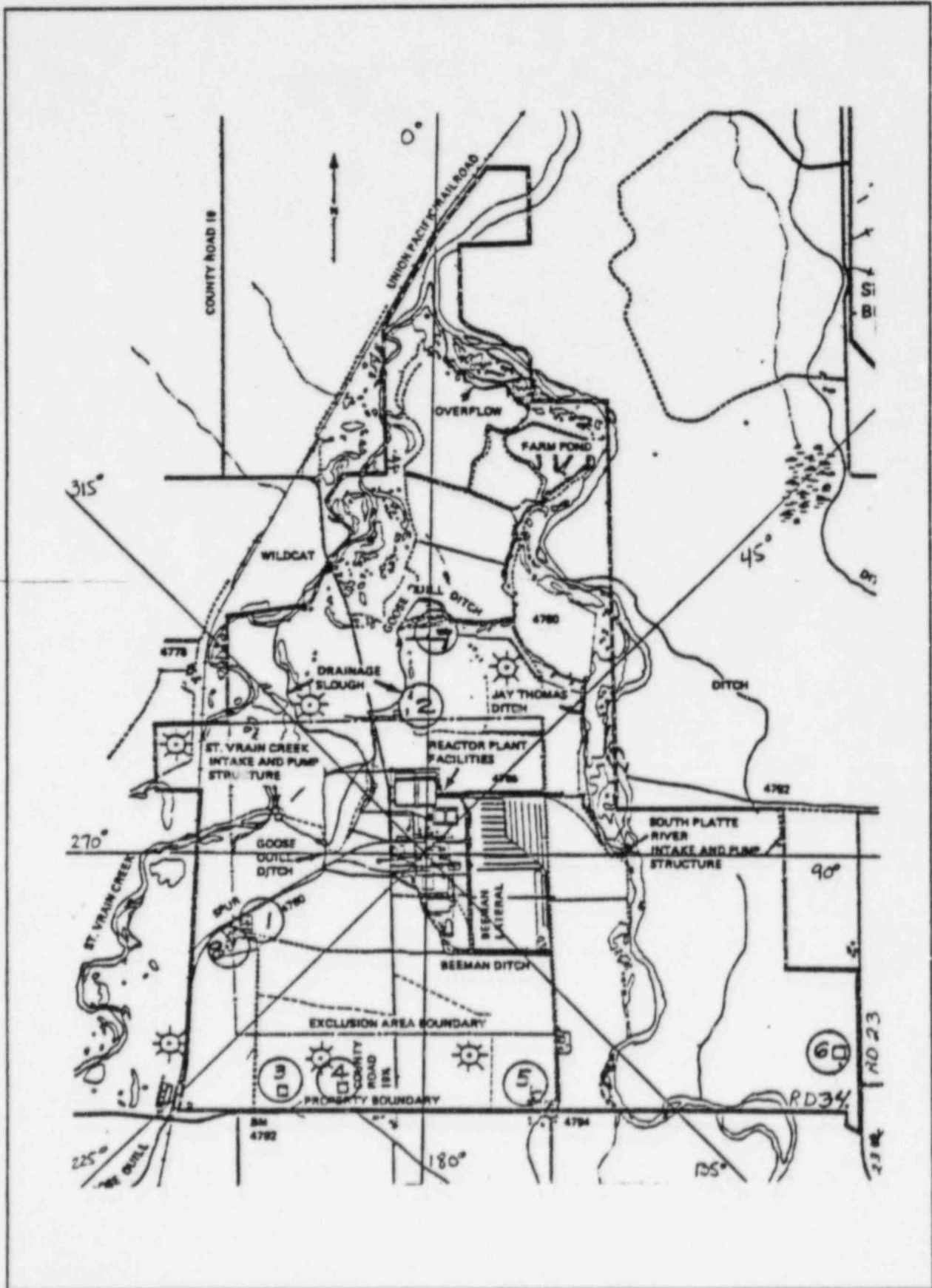
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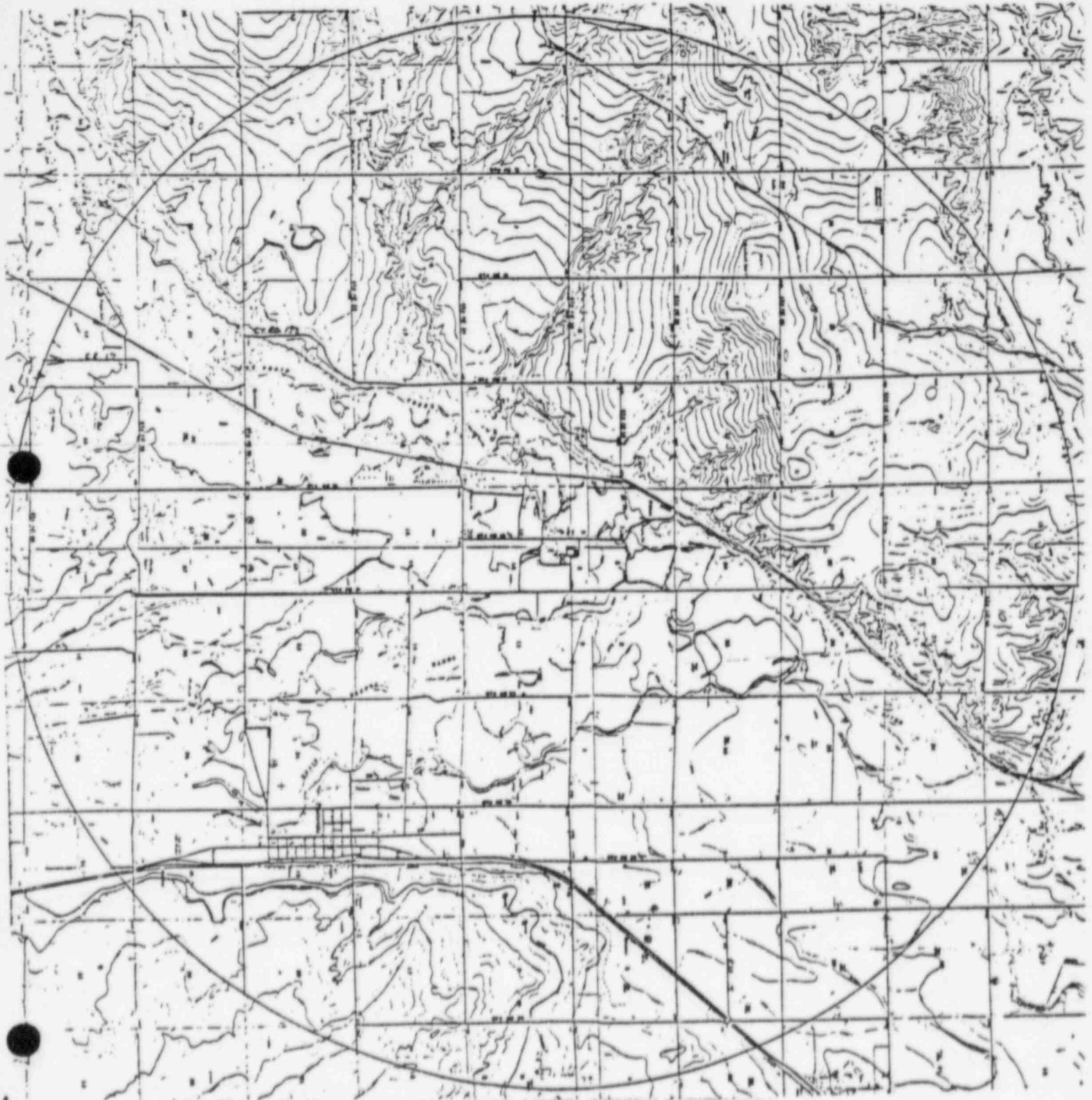




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EMERGENCY PLANNING ZONE (5-MILE)





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Datasheet 1
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Datasheet 1 - In-field Sampling Results

Sample Number (See Worksheet No. 1)	Ambient Radiation Levels (mR/hr)	Gross Particulate Activity (cpm/cc)	I-131 Air Concentration (uci/cc)	Location (Use simple description)
--	-------------------------------------	--	-------------------------------------	--------------------------------------



Datasheet 2

Field Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Route to be taken _____

3) Calculated or estimated parameters _____

a) General Radiation Level _____ (mrem/hr)

b) Airborne Activity Level _____ (uci/cc)

4) Projected Time to complete survey _____ (hr)

5) Projected Exposure

3)a) x 4) x 1.25 = _____ (mrem)

6) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)



7) Team Members: _____

8) Dosimetry requirements:

Pocket Dosimeter - High Range (required)

Other required dosimetry (circle):

Film Badge

Pocket Dosimeter - Low Range

9) Protective Equipment requirements

(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



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Datasheet 2
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10) Comments:

- | a) Save used filters and cartridges for Radiochemistry
| analysis.

- | b) Leave the emergency vehicle running while in the field and
| upon return to avoid battery discharge.

CHECKLIST 1EQUIPMENT OPERABILITY

(To be completed by field monitoring team leader.)

1. RM-14 or RM-15 _____

Verify that RM-14 or RM-15 exhibits proper response for given instrument check source (see Table 1).

2. RO 5A/D or RO 7 with RO 7-LD probe _____

Verify that PIC-6A or equivalent instrument exhibits proper response for given instrument check source (see Table 1).

3. SAM-2 _____

The SAM-2 is to be set up in the emergency vehicle, using 12V DC, and a routine performance check performed as follows:

- 1) Allow a two-minute instrument warmup and set switches to settings posted on instrument cover.
- 2) Take a one-minute background count on the empty shield. (CB)
- 3) Carefully place SCN 107.00 (133 Ba check source) in the sample holder. Slide the shelf into the assembly and close the door on the lead shield.
- 4) Take a one-minute count on the source. (CS)
- 5) Obtain the net count rate of the source by subtracting CB from CS.
- 6) Compare the net count rate with control limits established during calibration. These values are found on the instrument cover.
- 7) If instrument response is not within acceptable range, contact senior Health Physics representative at the TSC for further action.
- 8) Leave instrument running after operability check.



4. Air sampler _____

Verify that the air sampler is operable by setting it up in the emergency vehicle and running unit for approximately one minute at proper flows.



Work/Datasheet/Checklist Control List

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
1	In-Field Sampling Data	15

<u>Datasheet No.</u>	<u>Title</u>	<u>Number Copies</u>
1	In-Field Sampling Results	3
2	Field Monitoring Team Deployment	3

<u>Checklist No.</u>	<u>Title</u>	<u>Number Copies</u>
1	Equipment Operability	3



FORMS USE REPORTING SHEET

| Nuclear Documents Specialist:

This sheet is being transmitted to report use of forms from a controlled copy of the Radiological Emergency Response Plan Implementing Procedures, BOOK NO. _____, located at _____ . The following forms have been utilized from this copy:

Worksheet Numbers

Copies Used

Datasheet Numbers

Copies Used

Checklist Numbers

Copies Used

The procedure affected by this sheet is shown in the header to this page, unless otherwise noted below in the comments to this reporting form. When this form is received, it will be necessary to replace the noted number of forms, as well as this "Forms Use Reporting Sheet" for the affected procedure in the affected book.



FORMS USE REPORTING SHEET(Continued)

COMMENTS

Reported By: _____

Date: _____

| Nuclear Documents Specialist _____ *

Date Received _____

Date Replaced _____

| * Nuclear Documents Specialist will transmit this form to the originating individual/department upon completion of this form to notify users that the procedure has been updated and that all worksheets, checklists, and datasheets are present in the required number of copies.



TITLE: <u>HOME PACKET FOR OFF-SHIFT NOTIFICATIONS</u>																																																														
ISSUANCE AUTHORIZED BY	<i>Don Waremberg by Milt McBride</i>																																																													
PORC REVIEW	PORC 580 AUG 2 - 1984	EFFECTIVE DATE 8-6-84																																																												
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Sections</th> <th style="text-align: left; border-bottom: 1px solid black;">Description</th> <th style="text-align: right; border-bottom: 1px solid black;">Page</th> </tr> </thead> <tbody> <tr> <td>1.0</td> <td><u>Criteria for Implementation</u>.....</td> <td style="text-align: right;">3</td> </tr> <tr> <td>2.0</td> <td><u>Procedure</u>.....</td> <td style="text-align: right;">3</td> </tr> <tr> <td>3.0</td> <td><u>Responsibilities</u></td> <td style="text-align: right;">5</td> </tr> <tr> <td>4.0</td> <td><u>References</u></td> <td style="text-align: right;">5</td> </tr> <tr> <td>5.0</td> <td><u>Referenced or Supporting Procedures</u>.....</td> <td style="text-align: right;">5</td> </tr> <tr> <td>Figure 1</td> <td>Notification Fanout.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Figure 2</td> <td>Facility Staffing Requirements</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Checklist 1</td> <td>Management Contact Notification List for an UNUSUAL EVENT.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 1</td> <td>Plant Management Contacts.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 2</td> <td>Non-Emergency Event: Four-Hour Report</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 3</td> <td>Non-Emergency Event: One-Hour Report.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 4</td> <td>NOTIFICATION OF UNUSUAL EVENT Table.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 5</td> <td>ALERT Table.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 6</td> <td>SITE AREA EMERGENCY Table.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 7</td> <td>GENERAL EMERGENCY Table.....</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Attachment 1</td> <td>Impaired Fire Protection Notice (ANI)</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Attachment 2</td> <td>Initial Notification, Non-Emergency Event</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Attachment 3</td> <td>NOTIFICATION OF UNUSUAL EVENT (Notification Form)</td> <td style="text-align: right;">1</td> </tr> <tr> <td>Attachment 4</td> <td>Notification of Emergency Event</td> <td style="text-align: right;">1</td> </tr> </tbody> </table>			Sections	Description	Page	1.0	<u>Criteria for Implementation</u>	3	2.0	<u>Procedure</u>	3	3.0	<u>Responsibilities</u>	5	4.0	<u>References</u>	5	5.0	<u>Referenced or Supporting Procedures</u>	5	Figure 1	Notification Fanout.....	1	Figure 2	Facility Staffing Requirements	1	Checklist 1	Management Contact Notification List for an UNUSUAL EVENT.....	1	Table 1	Plant Management Contacts.....	1	Table 2	Non-Emergency Event: Four-Hour Report	1	Table 3	Non-Emergency Event: One-Hour Report.....	1	Table 4	NOTIFICATION OF UNUSUAL EVENT Table.....	1	Table 5	ALERT Table.....	1	Table 6	SITE AREA EMERGENCY Table.....	1	Table 7	GENERAL EMERGENCY Table.....	1	Attachment 1	Impaired Fire Protection Notice (ANI)	1	Attachment 2	Initial Notification, Non-Emergency Event	1	Attachment 3	NOTIFICATION OF UNUSUAL EVENT (Notification Form)	1	Attachment 4	Notification of Emergency Event	1
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Attachment 5	ECP Director's Call List.....	1
Attachment 6	FCP Director's (CEDs) Call List	1
Attachment 7	PCC Director's Call List.....	1
Attachment 8	State EOC Call List	1
Attachment 9	TSC Director's Call List.....	1
Attachment 10	Facility Directors/Alternates	1



General

This procedure is provided for use, at home, by plant management contacts, RERP facility directors and alternates, and by the first individual on each facility director's call list. The purpose of this procedure is: (1) To assist plant management in determining the severity of an occurrence when contacted at home by the FSV duty Shift Supervisor; (2) To provide plant management contacts with copies of notification forms to assist the the duty Shift Supervisor in their completion; (3) To provide required telephone numbers for facility activation if required; and, (4) To assure that individuals who may potentially be required to call-in individuals for off-shift emergency facility activation are clearly identified.

1.0 Criteria for Implementation

This procedure may be utilized under virtually any off-normal off-shift situation where consultation regarding reportability or activation requirements must be addressed.

2.0 Procedure

2.1 ANI Notifications

Notification to American Nuclear Insurers (ANI) is required under five (5) general categories listed below:

- Losses believed to be near, or above, the deductible (\$50,000);
- Incidents where fixed fire protection systems have operated under other than test conditions;
- Incidents where prompt assistance could help prevent further loss or expense, or where assistance is otherwise desirable;
- Incidents where incendiarism or malicious mischief is suspected; or
- Emergency impairments to fire protection equipment.

Whenever the on-duty Shift Supervisor believes an occurrence matches one of these circumstances, he will contact a plant management contact for consultation (where possible). The Shift Supervisor and plant management contact will jointly complete Attachment 1 to this procedure. Additional plant management contacts may be made utilizing Table 1 for reference.



2.2 Non-Emergency Event Notifications

Notification to the NRC operations center within four (4) hours is required for events which fall under the general descriptions shown in Table 2, and within one hour for events as described in Table 5. When these events transpire, or when the on-duty Shift Supervisor believes an event may require such reporting, he may contact one of the plant management contacts listed in Table 1. Together, where possible, they will jointly complete the "Non-Emergency Event Notification Form," Attachment 2 of this procedure. Additional plant management contacts may be made at the Shift Supervisor's discretion utilizing Table 1.

2.3 Radiological Emergency Response Plan (RERP) Notifications

Notification to both offsite authorities and the NRC within fifteen (15) minutes of event classification is required when a situation has arisen that meets classification criteria set forth in Tables 4-7 of this procedure. Events classified as a NOTIFICATION OF UNUSUAL EVENT are reported to the state utilizing the notification format of Attachment 3. The plant management contact shall assist the completion of this form. If the event is an ALERT, or higher, RERP event, Attachment 4 shall be completed. The Shift Supervisor may consult with plant management regarding incident classification.

2.3.1 NOTIFICATION OF UNUSUAL EVENT

For a NOTIFICATION OF UNUSUAL EVENT, where appropriate, the initial management contact shall notify other contacts per Checklist 1 and forward the completed form to the Technical Services Department.

2.3.2 ALERT or Higher RERP Event

For an ALERT or higher RERP event, the notification fanout shown in Figure 1 of this procedure shall occur to assure prompt facility activation and staffing. Under these conditions, Facility Directors will be contacted by the PSCo Telephone Operator. The Facility Director will in turn contact his alternate. The alternate, or the next person contacted, is then responsible for performing the additional notifications specified herein. Each facility's call list is reproduced as Attachments 5-9, herein. The Facility Director primary and alternates are shown on Attachment 10.



3.0 Responsibilities

3.1 Duty Shift Supervisor

Classify the situation, contacting a plant management contact for assistance in accordance with existing Operations Orders, Notification Procedures, or RERP-Implementing Procedures, where possible.

3.2 Plant Management Contacts

Assist the Shift Supervisor, as required, and perform additional notifications, as appropriate to a given situation.

4.0 References

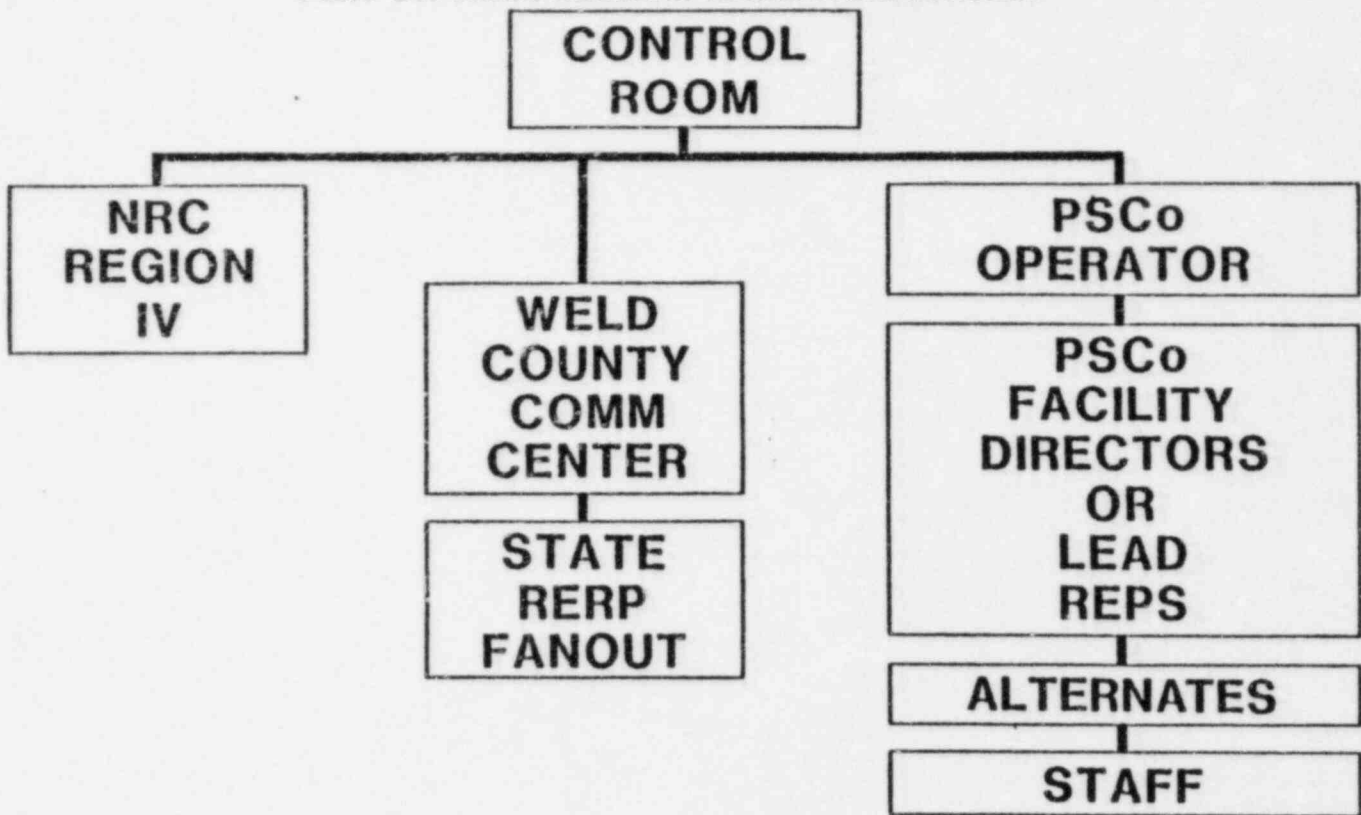
4.1 FSV Radiological Emergency Response Plan

5.0 Referenced or Supporting Procedures

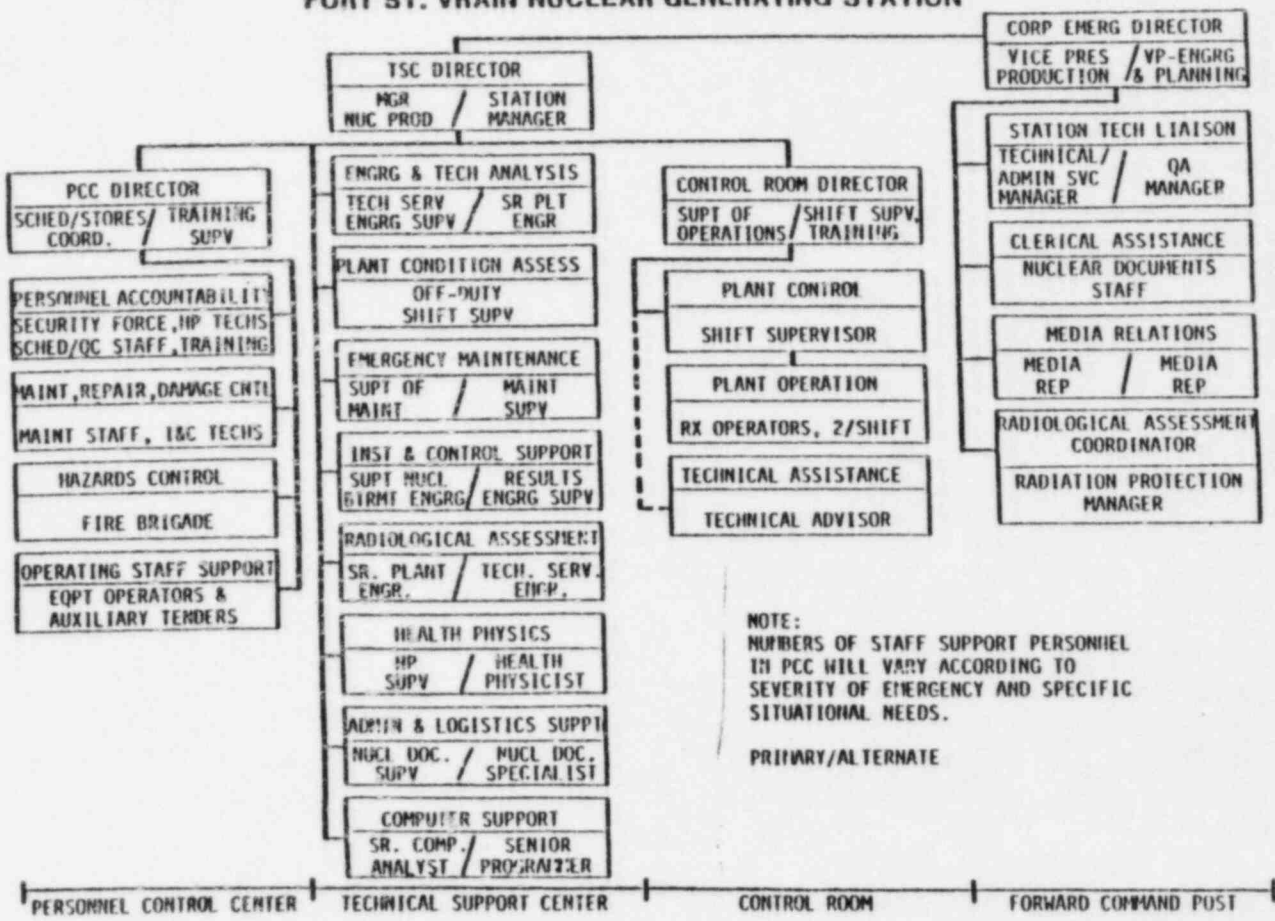
5.1 RERP-PHONE LISTS

5.2 RERP-CR, Control Room Procedure

NOTIFICATION FANOUT
FORT ST. VRAIN NUCLEAR GENERATING STATION



**EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY)
FORT ST. VRAIN NUCLEAR GENERATING STATION**



NOTE:
NUMBERS OF STAFF SUPPORT PERSONNEL
IN PCC WILL VARY ACCORDING TO
SEVERITY OF EMERGENCY AND SPECIFIC
SITUATIONAL NEEDS.
PRIWRY/ALTERNATE





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MANAGEMENT CONTACT NOTIFICATION LIST
FOR AN UNUSUAL EVENT

The first management contact will make the following notifications, and forward the completed form to the Technical Services Department.

Subsequent Contacts	Date/Time	Remarks
Plant Management (Contact 1) Supt. of Oper. 218; 532-3489		
Station Manager 201; 442-3829		
Administrative/ Tech. Serv. Mgr. 202; 663-2363		
Manager, Nuclear Production 200; 833-4092		
Radiation Pro- tection Manager 203; 663-1230		
Vice President, Production 571-7305 797-4122		
Media Relations Bob Burns 571-8481 759-9740 or Gary Reeves 571-8479 424-4958 or Marilyn Mora 571-8462 694-2369		
NRC G.L. Plumlee, III 490; 776-9541; Pager: 890-2225		

*Calls to PSC phones from outside of the PSC telephone system may require use of a different telephone exchange. In these cases, utilize the exchange in parentheses.



TABLE 1

PLANT MANAGEMENT CONTACTS*

	<u>Page Phone</u>	<u>Plant Ext.</u>	<u>Home Phone</u>
Supt. of Operations	890-0558	218	532-3489
Station Manager	890-0698	201	442-3829
Admin./Tech.			
Serv. Manager	890-0810	202	663-2363
Mgr. Nuclear Prod.	890-0699	200	833-4092
Rad. Protection			
Manager	890-1775	203	663-1230
Vice Pres., Prod.	N/A	797-4122, 8-571-7305	659-1180

* Listed in order of preferred contact sequence.



TABLE 2

NON-EMERGENCY EVENTS: FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
1. Any event, found while the reactor is shut-down, that, had it been found while the reactor was in operation, would have resulted in the plant, including its principal safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety.	1. Determination as result of surveillance testing of Plant Protective Systems (PPS) that failure of PPS modules would have prevented a required reactor scram from occurring.
2. Any event or condition that results in manual or automatic actuation of an Engineered Safety Feature, including the Reactor Protection System.	2. Reactor scrams, loop shutdowns, and automatic starting and loading of diesel generators only.

EXCEPTIONS:

- a) Manual scram initiated at 2% during a normal shutdown.
- b) Only one of three channels tripped manually or automatically, but no final protective action takes place, nor is required.
- c) Actuation of the aforementioned systems which result from, and are a part of, the planned sequence during surveillance testing or reactor operation.



TABLE 2

NON-EMERGENCY EVENTS: FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
3. Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to:	3. a) During refueling operations, a $.01\Delta p$ shutdown margin is not maintained due to incorrect rod removal sequence.
a) shut down the reactor and maintain it in a safe shutdown condition;	b) Incorrect valve lineup which results in shut off of secondary system decay heat removal sequence.
b) remove residual heat;	c) Liquid waste monitor setpoints raised for liquid waste release completed. Reactor Building sump pumps taken out of pull-to-lock. Setpoints not reset.
c) control the release of radioactive material; or	d) Loss of HEPA filtration.
d) mitigate the consequences of an accident.	



TABLE 2

NON-EMERGENCY EVENTS: FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
4. a) Any airborne radioactive release that exceeds 2 times the applicable concentrations of the limits specified in Appendix B, Table II of 10CFR20 in unrestricted areas when averaged over a time period of one hour.	4. As determined by analysis and evaluation.
b) Any liquid effluent release that exceeds 2 times the limiting combined MPC (see Note 1 of Appendix B of 10CFR20) at the point of entry into the receiving water (i.e., unrestricted area) for all radionuclides except tritium and dissolved noble gases, when averaged over a time period of one hour.	
NOTE: Immediate notifications made under this paragraph also satisfy the requirements of paragraphs (a)(2) and (b)(2) of 10CFR20.403.	
5. Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment.	5. As occurring.



TABLE 2

NON-EMERGENCY EVENTS: FOUR-HOUR REPORT

<u>Event</u>	<u>Typical Indication Initiating Event</u>
6. Any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made.	6. a) Onsite fatality for which a news release will be made. b) Inadvertent release of radioactive material not in excess of 10CFR20 limits for an unrestricted area, but requiring report to the State. c) Oil or chemical spill which could reach the South Platte River or St. Vrain Creek and which is therefore reportable to the EPA.



TABLE 3

NON-EMERGENCY EVENTS: ONE-HOUR REPORT

<u>Event</u>	<u>Typical Initiating Event</u>
1. a) The initiation of any plant shutdown required by Technical Specifications.	1. a) As occurring.
b) Any deviation from Technical Specifications authorized pursuant to 10 CFR 50.54(x).	b) Any deviation from a Technical Specification, when the action is immediately needed to protect the public health and safety, and no action consistent with Technical Specifications which can provide adequate or equivalent protection is immediately apparent. (The action should be approved, as a minimum, by a senior licensed operator.)



TABLE 3

NON-EMERGENCY EVENTS: ONE-HOUR REPORT

<u>Event</u>	<u>Typical Initiating Event</u>
2. Any event or condition during operation that results in the condition of the plant, including its principle safety barriers being seriously degraded; or results in the plant being:	
a) In an unanalyzed condition that significantly compromises plant safety;	2. a) As determined.
b) In a condition that is outside the design basis of the plant; or	b) 1. Reactor pressure in excess of design limits with failure to trip plant. 2. Winds experienced in excess of FSAR design levels.
c) In a condition not covered by the plant's operating and emergency procedures.	c) As determined.
3. Any natural phenomenon or other external condition that poses an actual threat to the safety of the plant or significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant.	3. a) Toxic gas release in immediate vicinity of plant. b) Extremely high winds or severe storm preventing plant personnel from completing requisite assignments.



TABLE 3

NON-EMERGENCY EVENTS: ONE-HOUR REPORT

<u>Event</u>	<u>Typical Initiating Event</u>
4. Any event that results in a major loss of emergency assessment capability, offsite response capability, or communications capability.	4. a) Loss of significant portion of Control Room indication. b) Loss of all offsite communication systems.
5. Any event that poses an actual threat to the safety of the plant, or significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant, including fires, toxic gas releases, or radioactive releases.	5. a) Fire posing undue personnel hazard. b) Severe chlorine release from chlorine cylinders. c) Accidental gaseous radiological release resulting in onsite concentrations in excess of 10 CFR 20 Appendix B, Table I.



TABLE 4

NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
1. Any unplanned radiological release to the Reactor Building or its ventilation system.	1. Alarms on: RT 7312 CAM(s) RT 7324-1 RT 7324-2 RT 7325-1 RT 7325-2 RT 4801 RT 4802 RT 4803 RT 73437-1, 2
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.
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 (RR 93256). b) SR 5.2.11 results.
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.



TABLE 4

NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
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 LCO 4.1.9 for region outlet mismatch, or region ΔT , 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.
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 site explosions that may be subject to public concern because of possible detrimental effect on the plant; or,	7. As visually observed by, or reported to, station personnel.



TABLE 4

NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
7. c) Onsite or near site plant related accidents that could result in the release of toxic material or spills of flammable materials.	
8. Any serious radiological exposure of plant personnel or the transportation to offsite facilities of contaminated personnel who may have been injured. (Probably cannot be determined within two hours- call to be made in a timely fashion.)	8. As occurring.
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



TABLE 4
NOTIFICATION OF UNUSUAL EVENT

<u>Event</u>	<u>Indication</u>
10. (Cont).	<ul style="list-style-type: none">3) PCRV penetration flow restriction devices - LCO 4.2.7 and LCO 4.2.94) PCRV penetration secondary closures - LCO 4.2.7 and LCO 4.2.95) PCRV Safety Valves - LCO 4.2.8 SL 3.2 LSSS 3.3.2.cb) Fire Protection System - LCO 4.2.6, LCO 4.10.1- LCO 4.10.5
11. Indication or alarms on radiological effluent monitors not functional.	<ul style="list-style-type: none">11. Data Logger Alarm/Alarm Summary indication of non-operational alarm or indication on:<ul style="list-style-type: none">a) RT 7324-1, 2 <u>and</u> RT 4803; orb) RT 7325-1, 2, RT 4802, <u>and</u> RT 73437-1; orc) RT 73437-2 <u>and</u> RT 4801; ord) RT 6212 <u>and</u> RT 6213. <p>NOTE: Use ELCO 8.1.1 Technical Specification Limits as basis.</p>



TABLE 5

ALERT

<u>Event</u>	<u>Indication</u>
1. Rapid, severe fuel particle coating failure.	1. Coolant Inventory of a) >2.4 (CI) (Mev) Beta-Gamma 1b b) circulating I-131 activity equivalent $>24\text{Ci}$ c) plate out I-131 $>1 \times 10^4$ Ci d) SR 5.2.6 or SR 5.2.11 results.
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 <u>and</u> RAT undervoltage/loss of power alarm.
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 <u>and</u> area monitor or stack monitor alarm
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.



TABLE 5

ALERT

<u>Event</u>	<u>Indication</u>
5. Loss of offsite power <u>and</u> vital onsite AC power for up to 30 minutes.	5. 230 KV OCB trips <u>and</u> RAT undervoltage/loss of power alarm accompanied by 4 KV bus undervoltage 480V bus undervoltage, <u>and</u> Diesel Trouble alarms.
6. Loss of all vital DC power for up to 30 minutes.	6. DC bus 1 < 10 volts and DC bus 2 < 10 volts
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 c) verbal reports

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



TABLE 5

ALERT

<u>Event</u>	<u>Indication</u>
11. Radiological effluents exceed 10 times technical specifications instantaneous limits.	11. a) RT 7324-1 indicating $\geq 2.5 \times 10^{-2}$ $\mu\text{Ci/cc}$ b) RT 7324-2 indicating $\geq 2.5 \times 10^{-2}$ $\mu\text{Ci/cc}$ c) RT 7325-1 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ d) RT 7325-2 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ e) RT 73437-1 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ I-131. f) RT 4802 indicating $\geq 7.0 \times 10^{-8}$ $\mu\text{Ci/cc}$ I-131. g) RT 4803 indicating $\geq 2.5 \times 10^{-2}$ $\mu\text{Ci/cc}$ Utilize reading from above instruments and calculate dose rate per procedures
12. Ongoing security compromise.	12. As observed or reported.



TABLE 5

ALERT

<u>Event</u>	<u>Indication</u>
13. Severe natural phenomenon being experienced or 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 (≥ 0.05 g) 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 to, station personnel.
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



TABLE 5

ALERT

Event

Indication

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 6

SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
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 LCD 4.2.18.)	1. All He flow indicators read zero.
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.
3. PCRV relief valve remains open.	3. RT 93252-12 alarm and rapidly decreasing Reactor pressure.
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.
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 - .01Δp at 220°F.
6. Major damage to spent fuel due to severe cask damage resulting in release of radioactivity to plant environs.	6. a) Visual observation. b) area radiation monitor alarms.



TABLE 6
SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
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.
8. a) Effluent monitors detect levels corresponding to greater than 50 mrem/hr, or greater than 500 mrem/hr whole body for two minutes at the site boundary under adverse meteorology (or levels 5 times the above for thyroid dose rate). b) These dose rates are projected based on other plant parameters or are measured in the environs.	8. Stack monitor alarm with corresponding stack concentration indications on: a) RT 73437-1, RT 4802, and RT 7325-1, 2 $\geq 6.7 \times 10^{-5} \mu\text{Ci/cc}$ I-131; or, b) RT 7324-1, 2, and RT 4803 $> 6.6 \times 10^{-2} \mu\text{Ci/cc}$ mixed noble gasses.
9. Imminent loss of physical control of the plant due to security breach. (Response detailed in Station Security Plan.)	9. Situation evident.



TABLE 6
SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
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.
11. Other hazards being experienced or projected with reactor not shutdown, such as;	11. As observed by or reported to, station personnel.
a) aircraft crash affecting vital structures;	
b) severe damage to safe shutdown equipment;	
c) entry of toxic/flammable gas into vital areas.	
12. Reactor building louvers open due to building being overpressurized by primary coolant. (DBA #2)	12. a) Louvers Open Alarm (3 inches water) b) Reactor building radiation alarms.



TABLE 6

SITE AREA EMERGENCY

<u>Event</u>	<u>Indication</u>
13. Evacuation of control room, accompanied by inability to locally control shutdown systems within 15 minutes.	13. Remote shutdown instrumentation indications (panel I-49).
14. Other plant conditions warranting activation of FCP/EOCs, monitoring teams, and precautionary public notification.	14. As determined by Shift Supervisor.



TABLE 7

GENERAL EMERGENCY

<u>Event</u>	<u>Indication</u>
1. a) Effluent monitors detect levels corresponding to 1 rem/hr. whole body (or 5 rem/hr thyroid) at the exclusion area boundary under <u>actual</u> 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.
b) These dose rates are projected based on other plant parameters, or are measured in the environs.	
2. Loss of physical control of the facility. (due to security breach).	2. Situation evident.
3. Other plant conditions exist that make release of large amounts of radioactivity possible.	3. As determined by Shift Supervisor.



ATTACHMENT I
IMPAIRED FIRE PROTECTION NOTICE

Report No. _____ - _____
Year Sequence No.

NOTE: It is important that the time of all calls and names of people contacted be logged. Any further followup calls received or made should be logged as to time and identity of persons involved and the information transmitted or received shall also be logged.

GIVE THIS INFORMATION AS SHOWN

1. Facility Name: Public Service Company of Colorado Unit No. One
2. Location: Fort St. Vrain, Platteville, Colorado

Below Is the Information Which Will Be Requested Of The Caller

3. Caller's Name: _____ Phone: _____

4. Date and time of occurrence: _____

5. Details and extent of impairment:

6. Did impairment result from a loss? *Yes No If yes,
details: _____

*Loss would be a fire, accidental system operation, windstorm damage, etc.

7. Restoration (of system) begun? Yes No

Restoration work to be continuous? Yes No

8. Impaired area or equipment operable? Yes No

Estimated restoration time: _____



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9. Precautions: Valves tagged out
 Discontinued welding, cutting, and hot work
 Discontinued smoking
 Notify Control Room (Shift) Supervisor, or other applicable management.
 Notify Fire Department/Fire Brigade
 Increased watchman service to _____ hourly
 Extra extinguishers/firehose in area

Other: _____

10. Contacts made by Shift Supervisor:

a) Name of ANI contact: _____

b) Time of ANI contact: _____

Management Contact:

a) Name of management contact: _____

b) Time of management contact: _____

11. Additional contacts made/received:

a) Per attached call sheet log.

12.

RESTORED

a) Repeat Steps 1 and 2 above

b) Caller's Name: _____

c) Date and time of restoration: _____

d) Name of ANI contact: _____

e) Time of ANI contact: _____

13. The Shift Supervisor shall send the completed copies of the completed forms directly to Technical Services.



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14. If Notification was a Fire/All-Risk Emergency, Technical Services will:
- a) Determine if a Reportable Occurrence is required, and prepare a facsimile copy if a 14 day report is indicated.
 - b) Assign a sequential number and send a copy to the Superintendent, Operations and a copy to PORC.



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Initial Notification, Non-Emergency Event

Report No. _____ - _____
Year Sequence No.

IMPORTANT:

It is important that the time of all calls and names of people contacted be logged. Any further follow-up calls received or made should be logged as to time and identity of persons involved and the information transmitted or received shall also be logged.

1. Name and Identity of Caller: _____

2. Date of Event: _____ Time of Event: _____

3. This notification appears to be required pursuant to 10CFR 50.72, paragraph ((b)(1), "One-Hour Report"; or (b)(2), "Four-Hour Report") (circle one).

4. Description of Event:

Reactor power prior to event: _____

Loop Shutdown? _____ Scram? _____

Initiating signal(s): _____

Was event result of an LCO Action Statement? _____

Other pertinent information: _____

5. Actions Taken: _____



6. Status:

Reactor power at time of report: _____

_____ Under control by on-site staff, no off-site assistance anticipated. Final report.

_____ Under control by on-site staff. Will keep NRC advised.

_____ Off-site assistance may be required. Will advise. (See Item #7)

_____ Off-site assistance required. (See Item #7)

7. If off-site assistance is anticipated or required, describe assistance that has been or may be requested:

8. Does the event involve off-site releases of the potential for off-site release that would affect the general health and safety of the public as the result of Fort St. Vrain conditions?

_____ Yes _____ No

9. If yes, provide a good description: _____

10. Contacts made by Shift Supervisor:

a) Name of NRC contact: _____

b) Time of NRC contact: _____



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Management Contact

a) Name of management contact: _____

b) Time of management contact: _____

11. Contacts made by management:

a) Per attached call sheet log.

12. The Shift Supervisor and Management Contact shall send their copies of the completed forms directly to Technical Services who will:

- a) Determine if a reportable occurrence is required and prepare a facsimile copy if a 14 day report is indicated.
- b) Send a copy to the Superintendent, Operations.
- c) Send a copy to PORC.



NOTIFICATION OF UNUSUAL EVENT

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.)



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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).



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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 described in Attachment 1 of RERP-CR.)

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 Attachment).

3. RECORD the following information:

Name of NRC Contact _____ Date/Time _____



NOTIFICATION OF EMERGENCY EVENT

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

Required Information

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 radioactive release IS taking place, but NO protective actions are recommended at this time 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. Personnel Control Center to be located _____

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



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
11. Estimated accumulated dose at EAB:
WB _____ rem; Thyroid _____ rem



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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)

<u>Projected Dose</u> (rem)	<u>Recommended</u> <u>Protective Action</u>
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 _____

18. Name of person providing report _____

19. Telephone number for call back _____



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20. Description of any requested off-site assistance _____

B. The Emergency Coordinator will make notifications in sequence as follows:

PSC Company Operator 8-571-4591
or 8-571-0111

1. INSTRUCT the Operator to initiate the "Fort St. Vrain Radiological Emergency Call List."

2. READ verbatim the information recorded in Part A (Page 1 of this attachment).

3. RECORD the following information:

Time PSC Operator Notified _____

Time Operator Callback Received _____

Weld County (911 Using Greeley Line)

1. READ verbatim the information recorded in Part A (Page 1 of this attachment).

2. RECORD the following information:

Time Weld County Notified _____

Time Weld County Callback Received _____



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NRC OPERATIONS CENTER (HOT LINE OR (202) 951-0550)

(Alternate means of notification are described in Attachment 1 of RERP-CR.)

1. READ Items 1) through 4) from Part A.
2. READ the following sentences verbatim. "THIS EVENT IS BEING REPORTED PURSUANT TO 10CFR50.72, PARAGRAPH (a)(3). WE ARE PRESENTLY ACTIVATING STATE AND LOCAL EMERGENCY RESPONSE CENTERS."
3. READ the supplemental information (Page 2 of this attachment).
4. RECORD the following information:

NAME of NRC Contact _____

TIME of NRC Contact _____



ECP DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director (the alternate will complete the calls on the attached list).
 - b. If you cannot contact your Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the Director:
 - a. Complete the attached call list.
3. If you are the response center/post Alternate Director and are contacted by the PSC Operator:
 - a. Call the first person on the attached list and inform him to complete the call list.



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ECP DIRECTOR'S CALL LIST

First call all primaries, then call all alternates.

	<u>PSC</u> <u>Extension</u>	<u>Home</u>	<u>Time</u>
<u>Manager - Technical Support</u>			
Primary - M. E. Niehoff	785-1403	690-3879	_____
Alternate - Mike Holmes	571-8409	988-4522	_____
<u>Manager - Media Relations</u>			
Primary - R. T. Person, Jr.	571-7323	753-9292	_____
Alt. - W. D. Fitzmaurice	571-7158	424-8053	_____
<u>Manager - Resources</u>			
Primary - D. D. Hock	571-7211	394-3063	_____
Alternate - J. Bumpus	571-7821	388-7645	_____
<u>Manager - Security</u>			
Primary - E. O'Neal	571-7709	757-0038	_____
Alternate - E. Lane	571-8533	321-4016	_____



CORPORATE EMERGENCY DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director.
 - b. If you cannot contact your Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the PSC Operator or the center/post Director:
 - a. Call the first person on the attached list and inform him to complete the call list.
3. If you are the first person on the attached list and are contacted by the Alternate Director or the Director:
 - a. Complete the attached list.



CORPORATE EMERGENCY DIRECTOR'S CALL LIST (FCP)

First contact all primaries, then call all alternates.

Extension Home Time

Station Technical Liaison

(One of the Station Technical Liaisons is also contacted by the PSC Operator.)

Primary - C. H. Fuller	785-1202	663-2363	_____
Alternate - J. W. Gahm	785-1350	452-0507	_____

Radiological Assessment

Primary - T. Borst	785-1203	663-1230	_____
	(Pager)	890-1775	_____

Clerical Assistance

Primary - D. Merritt	785-1271	737-2339	_____
Primary - D. Heath	785-1272	223-5121	_____
Alternate - S. Katcher	785-1212	356-0351	_____

Media Relations

Primary - M. Mora	571-8462	694-2369	_____
Alternate - S. Volsted	571-7242	755-5164	_____



PCC DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director (the alternate will complete the calls on the attached list).
 - b. If you cannot contact your Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the Director:
 - a. Contact persons to set up the facility by calling those individuals with asterisks (*) after their names and by notifying four (4) Health Physics Technicians listed. Inform all persons of the location of the PCC. Call the remainder of personnel upon arrival at the PCC. (This responsibility may be delegated.)
3. If you are the response center/post Alternate Director and are contacted by the PSC Operator:
 - a. Call the first person on the attached list and inform him to complete the call list as specified in 2.a. above.



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PCC DIRECTOR'S CALL LIST

	<u>Plant Extension</u>	<u>Home</u>	<u>Time</u>
<u>Personnel Accountability and i & C Technicians</u>			
G. Redmond*	251	9-339-3152	_____
T. Bashline	262	8-303-686-9763	_____
P. Bearly	455	8-303-669-6636	_____
M. Benedict	313	9-353-7209	_____
M. Blossom*	261	9-785-6302	_____
R. Dickerson	273	8-303-287-6089	_____
T. Dillen	262	9-356-3370	_____
R. Erwin	315	9-330-7178	_____
D. Frye	276	9-587-4768	_____
R. Hamblin	254	8-303-667-1703	_____
C. Harding	311	9-785-2398	_____
K. Hays	319	8-303-778-7702	_____
J. Hohn	260	9-785-6322	_____
W. Holcomb	312	9-330-2068	_____
R. Hooper	458	8-303-452-3614	_____
D. Horihan	250	78-776-7976	_____
S. Lehr*	451	8-303-422-1280	_____
G. McAfee	260	8-303-857-6498	_____
R. Moler	456	78-772-9357	_____
G. Murphy*	254	9-785-2542	_____
M. Murphy	454	8-303-279-6762	_____
G. Powers	252	8-303-426-1623	_____
D. Reed*	314	9-785-2159	_____
R. Rivera	453	8-303-667-1906	_____
T. Shafer*	457	9-587-4061	_____
C. Stieff*	209	9-587-2500	_____
J. Switzer	452	9-587-4134	_____
R. Teel	261	8-303-288-1959	_____
R. Wyatt	262	8-303-493-3649	_____

Maintenance, Repair, and Damage Control

R. Webb*	229	78-776-8219	_____
	(Pager)	855-7257	_____
R. Lamb*	336	78-772-0757	_____
D. Nelson*	246	9-587-4189	_____



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Monitoring Teams - Health Physics (Notify four of the following initially.)

J. Brown	245	9-339-3972	_____
P. Glahn	245	8-303-450-5292	_____
L. Hutchins	245	9-330-7187	_____
G. Madison	245	8-303-833-2278	_____
K. Morse	245	9-353-6163	_____
K. Nasveschuk	245	78-651-6254	_____
E. J. O'Donoghue	245	8-303-452-3514	_____
S. Sherrow	245	9-353-1338	_____
S. Sieg	245	8-303-663-3468	_____
G. Valentine	245	8-303-532-4861	_____

Radiochemistry

V. McGaffic (P)*	278	9-587-2752	_____
D. Miller(A)*	279	8-303-663-3595	_____
S. Poet(A)	279	78-652-2297	_____
M. Prochownik (A)	279	9-785-6010	_____
S. Rima (A)	279	78-772-4068	_____

Operating Staff Support

As Required - See RERP Phone Lists.

Maintenance (Electrical, Mechanical)

As required at the discretion of the PCC Director - Refer to RERP Phone Lists.

Hazards Control Team

Fire Brigade Members



STATE EOC CALL LIST INSTRUCTIONS
(For Contacts by PSC)

In the event you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the PSC primary contact:
 - a. Call the PSC alternate contact and instruct him to complete the call list.
 - b. If you cannot reach the PSC alternate contact, call the first person on the attached list and inform him to complete the call list.
2. If you are the PSC alternate contact and are notified by the PSC primary contact:
 - a. Complete the attached call list.
3. If you are the PSC alternate contact and are notified by the PSC operator:
 - a. Call the first person on the attached list and inform him to complete the call list.



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STATE EOC CALL LIST
(For Contacts by PSC)

	<u>Extension</u>	<u>Home</u>	<u>Time</u>
<u>Technical Assistance</u>			
H. L. Brey (Primary)	571-8404	469-4238	_____
J. R. Reesy (Alt.)	571-8406	755-1720	_____
<u>Radiological Consultant</u>			
Janet Johnson	491-5930	482-3029	_____
<u>Media Relations</u>			
R. A. Burns (Primary)	571-8481	759-9740	_____
G. Reeves (Alt.)	571-8479	424-4958	_____



TSC DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director (the alternate will complete the calls on the attached list).
 - b. If you cannot contact you Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the Director:
 - a. Complete the attached call list.
3. If you are the response center/post Alternate Director and are contacted by the PSC Operator:
 - a. Call the first person on the attached list and inform him to complete the call list.



TSC DIRECTOR'S CALL LIST

First call all primaries, then call all alternates.

<u>Reactor Physics</u>	<u>Plant Extension</u>	<u>Home</u>	<u>Time</u>
Primary - F. Novachek	270	457-8034	_____
	(Pager)	890-1941	_____
Alternate - R. Heller	284	772-1093	_____

Radiological Assessment

Primary - J. Sills	265	221-5059	_____
	(Pager)	890-2223	_____
Alternate - S. Johnson	267	663-1431	_____

Plant Condition Assessment

Call two off-duty Shift Supervisors

M. Deniston	219	776-3776	_____
D. Evans	219	776-9672	_____
J. Hak	219	776-1904	_____
D. Hood*	219 or 347	776-1843	_____
J. Hunter	219	330-1411	_____
H. O'Hagan	219	776-8232	_____
G. Reigel	219	330-4235	_____
J. VanDyke	219 or 346	772-2476	_____

Emergency Maintenance

Primary - W. Craine	222	667-5427	_____
Alternate - J. Petera	233	427-6273	_____

Instrument and Control

Primary - B. Burchfield	249	351-0373	_____
Alternate - J. McCauley	248	667-0635	_____

Health Physics/Health Physicist

Primary - T. Schleiger	242	785-6314	_____
Alternate - B. Woodard	244	678-0818	_____

| * Also contacted as alternate to Control Room Director by PSC operator.



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Administration/Logistics

Primary - A. Kitzman	206	737-2578	_____
Alternate - P. Collins	207	587-2172	_____
Alternate - P. Bollig	204	339-3972	_____
Alternate - D. Connelly	210	353-4575	_____

Telephone Console Operators

Primary - D. Edwards	217	669-1680	_____
Alternate - D. Libal	213	651-1404	_____

Computer Support

*Primary - D. Klaus	437	466-5046	_____
*Alternate - D. Bilstein	333	532-2546	_____
*Alternate - D. Haloin	376	353-1993	_____

*Computer Services Page Number: 855-3234

ATTACHMENT 10
Facility Directors/Alternates

	<u>Extension</u>	<u>City</u>	<u>Home</u>	<u>Time</u>
<u>Technical Support Center</u>				
a. Primary: D. W. Warembourg Alternate: L. M. McBride	5-785-1200 5-785-1201	Frederick Boulder	5-303-833-4092 5-303-442-3829	_____ _____
<u>Control Room Director</u>				
b. Primary: W. J. Franek Alternate: D. P. Hood	5-785-1218 5-785-1347	Berthoud Longmont	5-303-532-3489 5-303-776-1843	_____ _____
<u>Personnel Control Center</u>				
c. Primary: J. Glass Alternate: S. R. Willford	5-785-1253 5-785-1327	Brighton Brighton	5-303-659-4118 5-303-659-5258	_____ _____
<u>Forward Command Post</u>				
d. Primary: C. H. Fuller Alternate: J. W. Gahn	5-785-1202 5-785-1350	Loveland Northglenn	5-303-663-2363 5-303-452-0507	_____ _____
<u>Corporate Emergency Director (at Forward Command Post)</u>				
e. Primary: D. R. Lee Alternate: J. K. Fuller	797-4122, 571-7305 329-1104	Brighton Denver	9-659-1180 9-779-1109	_____ _____
<u>Executive Command Post</u>				
f. Primary: R. F. Walker Alternate: B. O'Donnell	571-7333 571-7381	Denver Denver	9-234-9298 9-388-0211	_____ _____
<u>State Emergency Operations Center</u>				
g. Primary: D. McNeillis Alternate: H. L. Brey	571-7254 571-8404	Denver Broomfield	9-985-3197 9-469-4238	_____ _____



TITLE: FSV EMERGENCY ORGANIZATION AND RESPONSIBILITIES

ISSUANCE AUTHORIZED BY	<i>9/25/84</i> <i>Boast for JWGAHM</i>	
PORC REVIEW	PORC 589 OCT 3- 1984	EFFECTIVE DATE 10-10-84

<u>Section</u>	<u>Description</u>	<u>Page</u>
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General

This procedure defines the authority and general responsibilities of key individuals within the FSV Emergency Organization. Positions and responsibilities of personnel located at the six emergency response facilities; Forward Command Post, Technical Support Center, Control Room, Personnel Control Center, Executive Command Post, and State Emergency Operations Center; are discussed (see Figure 1).

This procedure is general in nature and cannot specify the actions of personnel on a step-by-step basis. Personnel are trained in their areas of responsibility and are expected to be able to utilize the multitude of implementing procedures and emergency equipment provided.

This procedure is provided for reference purposes during a radiological emergency at Fort St. Vrain.

1.0 Criteria

This procedure is automatically implemented whenever an event has occurred at Fort St. Vrain which is classified as an ALERT or higher emergency class, as determined by the on-duty Shift Supervisor (Emergency Coordinator). Staffing changes, if required by a particular situation, may be made at the discretion of the responsible facility directors.

2.0 Procedure2.1 Emergency Coordinator

The Emergency Coordinator is the on-duty Shift Supervisor. The title of Emergency Coordinator is retained by the duty Shift Supervisor until he is relieved by either the Control Room Director or the Technical Support Center Director, upon activation of the FSV Emergency Organization (see Figure 2). The Emergency Coordinator is responsible for:

- Initial accident classification;
- Recommending protective actions;
- Initiating emergency actions to mitigate the accident;
- Notifying offsite authorities;
- Diagnosing accident conditions;
- Estimating radiological exposures; and
- Establishing communications with the TSC.

Responsibility for the decision for offsite notification and protective action recommendation may not be delegated.

2.2 Forward Command Post (FCP)

The FCP functions as the control and coordination center for on-scene state/local/federal emergency response forces, and communicates with the State EOC and the Weld County EOC (Weld County Communication Center) for effective coordination of state and county forces. A senior representative of Division of Disaster Emergency Services (DODES) is responsible for control and coordination with FCP emergency response activities.

2.2.1 Corporate Emergency Director (CED)

The CED assumes overall command of PSC emergency operations, and is the prime contact between FSV and governmental authorities.

The CED is responsible for direction and coordination of:

- PSC onsite and offsite emergency functions;
- Interface between PSC and state/local/federal emergency response activities;
- Transmission of plant status updates and radiological release data to the ECP, PSC personnel at the State EOC, and media center personnel;
- Notification of state and local agencies regarding recommended protective actions;
- Provision of administrative, technical, and logistics support to station emergency operations via the ECP; and
- Continuity of emergency organization resources.

The CED provides direction to the TSC Director and the Nuclear Engineering Manager at the State EOC. He will coordinate additional headquarters support via the Executive Command Post, and is responsible to make the determination of when the emergency condition is terminated, and the recovery phase has begun.

2.2.2 Station Technical Liaison

The Station Technical Liaison is responsible to provide assistance and substantiated data on emergency status and conditions as required. He also serves to coordinate company emergency response actions with those of state/local/federal agencies.

2.2.3 Media Relations

The PSC Media Relations personnel at the FCP provide assistance to the State Public Information Coordination Team (PICT) in the preparation of news and related media releases, and the control of rumors in accordance with the PSC RERP Public Information Plan.

2.2.4 Radiological Assessment Coordinator

The Radiological Assessment Coordinator is responsible for coordinating the radiological assessment activities between PSC and those of state/local/federal agencies. His particular responsibilities include:

- In coordination with the TSC Radiological Assessment individual, perform and/or evaluate a preliminary assessment of the actual and/or potential radiological release.
- Based upon the above assessment, identify affected offsite areas, and recommend an emergency classification and recommended offsite protective actions to the Corporate Emergency Director.
- Obtain a 12 hour weather prediction from the National Weather Service.
- Continue to evaluate radiological assessment data as it arrives and continue to make recommendations of emergency classification and offsite protective actions to the Corporate Emergency Director.
- Confer with state/local federal agencies on an as-needed basis to discuss PSC radiological assessment activities relative to those of offsite authorities.

2.2.5 Clerical Staff

The PSC clerical personnel assigned to the FCP maintain an ongoing record (log) of all actions taken by PSC at the Forward Command Post. In addition they assume responsibility for the posting of the FCP status board information and assist in the timely transmission of data between the FCP and TSC, as well as between the FCP and the State Emergency Operations Center (SEOC) PSC staff and the Executive Command Post (ECP).

2.3 Technical Support Center

Site emergency command activities are centered in the Technical Support Center, located immediately adjacent to the Reactor Building and within short walking distance of the Control Room. The TSC also serves as the primary point for onsite-offsite communications.

2.3.1 TSC Director

The TSC Director is in command of onsite emergency operations. The TSC Director is authorized to initiate emergency actions, including declaration of a particular emergency class and providing protective action recommendations to offsite authorities.

The TSC Director's responsibilities are:

- Assumes overall responsibility for the coordination and direction of onsite emergency response centers;
- Transmits preliminary assessment information to the FCP;
- Directs the Personnel Control Center (PCC) actions;
- Confers, on an on-going basis, with the Corporate Emergency Director after activation of the FCP; and
- Notifies the Corporate Emergency Director of the need for assistance or support.

2.3.2 Engineering and Technical Analysis

Engineering and Technical Analysis personnel are responsible for direction of core physics analysis, electrical and mechanical engineering activities, licensing related activities, procedures development, and system analysis as required.

2.3.3 Plant Condition Assessment

Plant Condition Assessment personnel are responsible for the assessment of plant status, focusing on significant plant problems and trends, and for providing recommended corrective actions to the TSC Director.

2.3.4 Emergency Maintenance

Emergency Maintenance personnel are responsible to recommend repair/damage control and corrective actions for plant mechanical and electrical systems. This individual estimates time and manpower requirements for emergency repairs, and develops emergency repair work procedures, as required.

2.3.5 Instrumentation and Control Support

The Instrumentation and Control (I&C) individual determines alternative I&C capabilities or configurations, and advises for the repair/installation/modification of I&C equipment.

2.3.6 Radiological Assessment

The Radiological Assessment individual is responsible to assess offsite radiological doses and consequences, determine affected offsite areas, and confer with both the TSC Director and the Radiological Assessment Coordinator (FCP) regarding calculation results and recommended offsite protective actions. In addition, the Radiological Assessment individual should confer with the Health Physics representative at the TSC regarding offsite dose projections in areas where field monitoring teams are to be deployed. The Radiological Assessment individual is responsible for verification of any calculation prior to transmission to the Radiological Assessment Coordinator at the FCP.

2.3.7 Health Physics

The senior Health Physics representative at the TSC is responsible for the assessment of onsite radiological doses, direction of all Health Physics/Radiochemistry survey personnel or teams, ensuring that adequate personnel dosimetry measures are taken, and evaluation of doses of field and emergency team personnel (particularly with regard to a need for thyroid blocking).

2.3.8 Administrative and Logistics Support

The Administrative and Logistics Support individual provides technical documents, provides assistance with communications and analytical equipment, arranges required clerical support beyond the personnel directly assigned to the TSC, and makes any arrangements necessary for food/transportation/housing support as required.

2.3.9 Computer Support

Computer support personnel provide technical support in the areas of computer hardware and software modifications/development/or repair, as required. In addition, this individual is responsible to arrange for timely offsite advice or assistance as directed by the TSC Director.

Computer support personnel also have received training in offsite Dose Calculation methodology. This training is provided for the purpose of assisting the TSC Radiological Assessment individual in gathering data and, where requested, assist in data entry at the TSC plant computer console.

2.4 Control Room

Emergency control and accident mitigation is provided by Control Room personnel. Initially, accident assessment and control is directed from the Control Room (see Section 2.1).

2.4.1 Control Room Director

The Control Room (CR) Director is responsible for control of plant operations, assessing plant operational aspects, and implementing any recommended corrective actions. In addition, the CR Director may request any additional operations personnel necessary through the TSC Director.

2.4.2 Technical Advisor

The Technical Advisor is responsible to provide technical analysis and advice as requested, and to provide recommendations of corrective actions necessary to restore the plant to a safe and stable condition.

2.4.3 Plant Control and Plant Operations

Plant Control and Plant Operations responsibilities are handled by personnel already on-shift and assigned those responsibilities.

2.5 Personnel Control Center

The Personnel Control Center (PCC) serves as manpower marshalling location to provide a pool of personnel available for emergency assignment. Personnel are assigned to perform functions consistent with their routine job classification.

2.5.1 Personnel Control Center Director

The PCC Director 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. In particular, his responsibilities include the following:

- Continued personnel accountability;
- Assuring that all emergency workers at-risk are evaluated by the Senior Health Physics representative at the TSC, with regard to a need for thyroid blocking;
- Coordinates with Security personnel to control access to the owner controlled area;

- Dispatches personnel to notify any individuals living in the owner controlled area who were unable to be contacted by telephone;
- Coordinates medical transport for injured personnel;
- Coordinates access for personnel arriving from outside the plant with Weld County Sheriff's Department;
- Coordinates entry/re-entry of required personnel with the Lead Security Officer;
- Relocates the PCC to an alternate onsite or offsite location, as required;
- With the concurrence of the TSC Director, authorizes volunteer emergency workers to receive doses in excess of 10 CFR 20 limits (see RERP-EXP); and,
- Receives reports of accidental or emergency exposure in excess of occupational limits, and informs the TSC Director of these occurrences; and,
- Refers any requests for outside assistance to the TSC Director.

2.5.2 Personnel Accountability

Personnel Accountability personnel are responsible for maintaining continued personnel accountability and exposure estimates, handling search and rescue assignments, performing first aid and personnel decontamination, and assisting in the medical transport of injury victims.

2.5.3 Maintenance, Repair, and Damage Control

Perform mechanical and electrical repair/damage control, emergency maintenance, and temporary modifications.

2.5.4 Hazards Control

Extinguish fires, purge hazardous gases, and combat natural emergencies.

2.6 Executive Command Post

The Executive Command Post (ECP) is manned by senior corporate personnel with the authority to activate corporate personnel, facilities, equipment, and financial resources in an emergency situation (see Figure 3). The ECP supports PSC personnel stationed at onsite and offsite emergency response centers.

2.6.1 ECP Director

The ECP Director will assume overall responsibility for providing the Corporate Emergency Director with the counsel, expertise, and resources available within the PSC organization. He coordinates emergency assistance, provides re-entry and recovery support, station and site modifications review by the Nuclear Facilities Safety Committee.

2.6.2 Manager of Technical Support

The Manager of Technical Support 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.

2.6.3 Manager of Media Relations

The Manager of Media Relations will coordinate communications between the ECP and other emergency facilities, and will assist the ECP Director and PSC media relations personnel in preparation of press releases, announcements, and interviews.

2.6.4 Manager of Resources

The Manager of Resources 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 support; 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.

2.6.5 Manager of Security

The Manager of Security will coordinate PSC security operations with public law enforcement agencies. He acquires additional security manpower hardware, and equipment, as requested.

2.7 State Emergency Operations Center

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

2.7.1 Vice President of Governmental Affairs or the Manager of Nuclear Engineering

This individual is responsible to coordinate PSC emergency response activities with those of state/local/federal agencies.

2.7.2 Media Relations Manager or News Director

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

2.7.3 Radiation Specialist

The Radiation Specialist is responsible for providing assistance and substantiated data regarding the site's emergency status and plant conditions to state/local/federal emergency response agencies assigned to the State EOC.

3.0 Responsibilities

This procedure will be implemented whenever the Shift Supervisor declares an ALERT, or higher, emergency classification. Individual responsibilities are specified in Section 2.0 of this procedure.



Public
Service

FORT ST. VRAIN NUCLEAR GENERATING STATION
PUBLIC SERVICE COMPANY OF COLORADO

RERP-ORG
Issue 7
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1.0 References

- 4.1 Fort St. Vrain Nuclear Generating Station Radiological
Emergency Response Plan
- 4.2 PSC RERP Public Information Plan

5.0 Procedures Referenced

- 5.1 RERP-CR, Control Room Procedure
- 5.2 RERP-ECP, Executive Command Post Procedure
- 5.3 RERP-FCP, Forward Command Post Procedure
- 5.4 RERP-PCC, Personnel Control Center Procedure
- 5.5 RERP-SEOC, State Emergency Operations Center Procedure
- 5.6 RERP-TSC, Technical Support Center Procedure
- 5.7 RERP-EXP, Emergency Exposure Guidelines
- 5.8 RERP-SUPORG, Use and Coordination of Non-PSC Support
Organizations

FIGURE 1

ONSITE-OFFSITE EMERGENCY ORGANIZATION
Fort St. Vrain Nuclear Generating Station

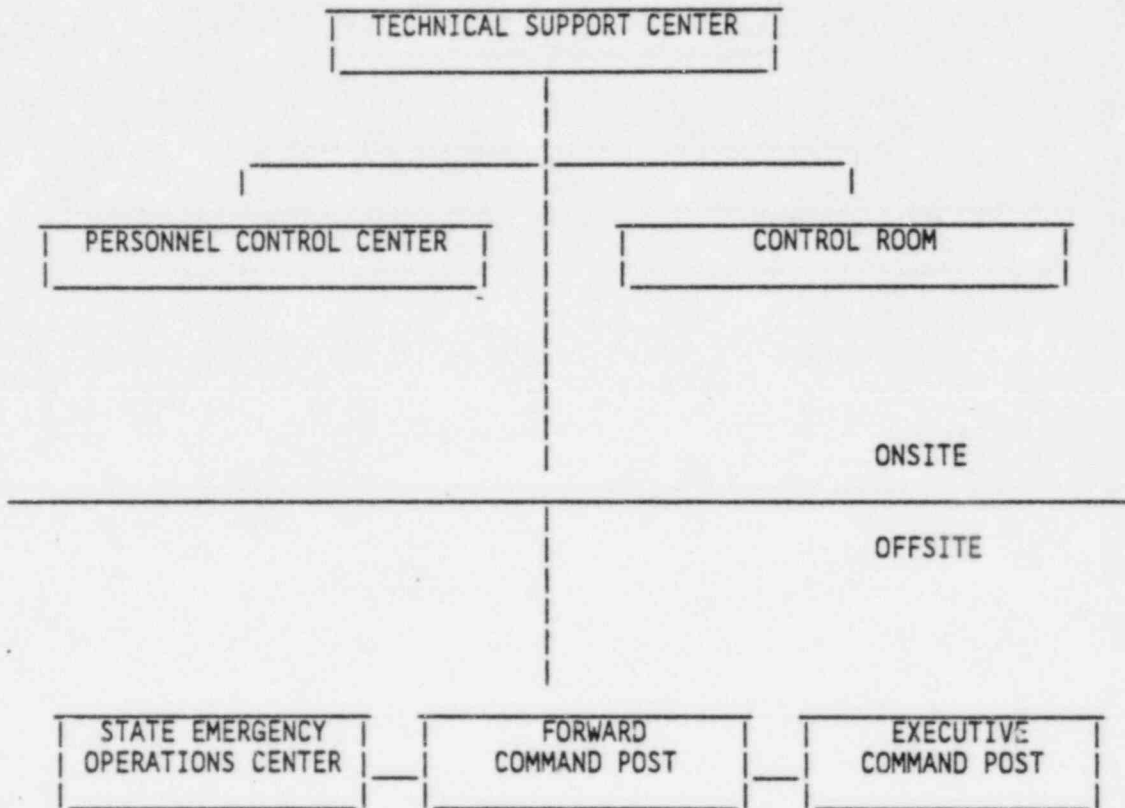
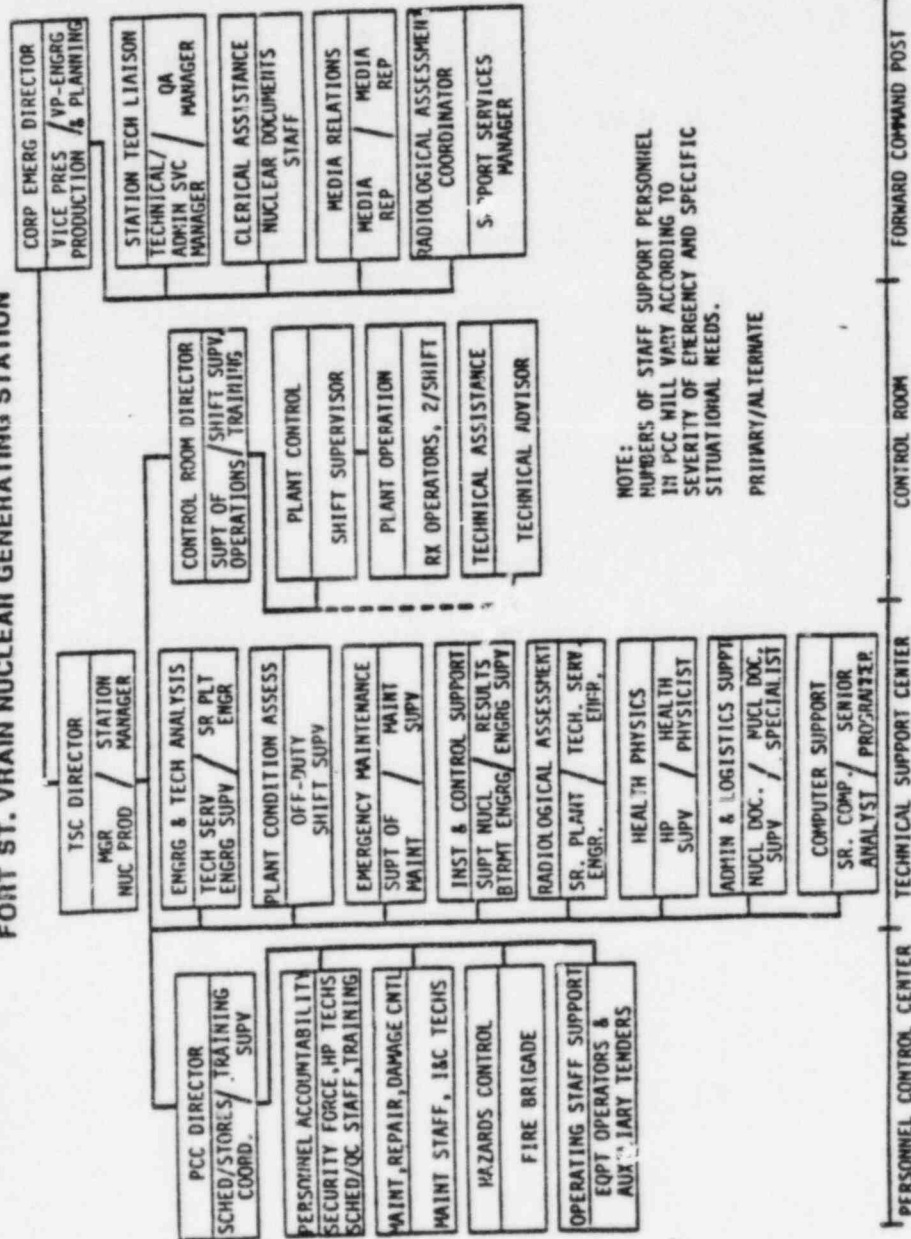


FIGURE 2
**EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY)
FORT ST. VRAIN NUCLEAR GENERATING STATION**


EXECUTIVE COMMAND POST ORGANIZATION Fort St. Vrain Nuclear Generating Station

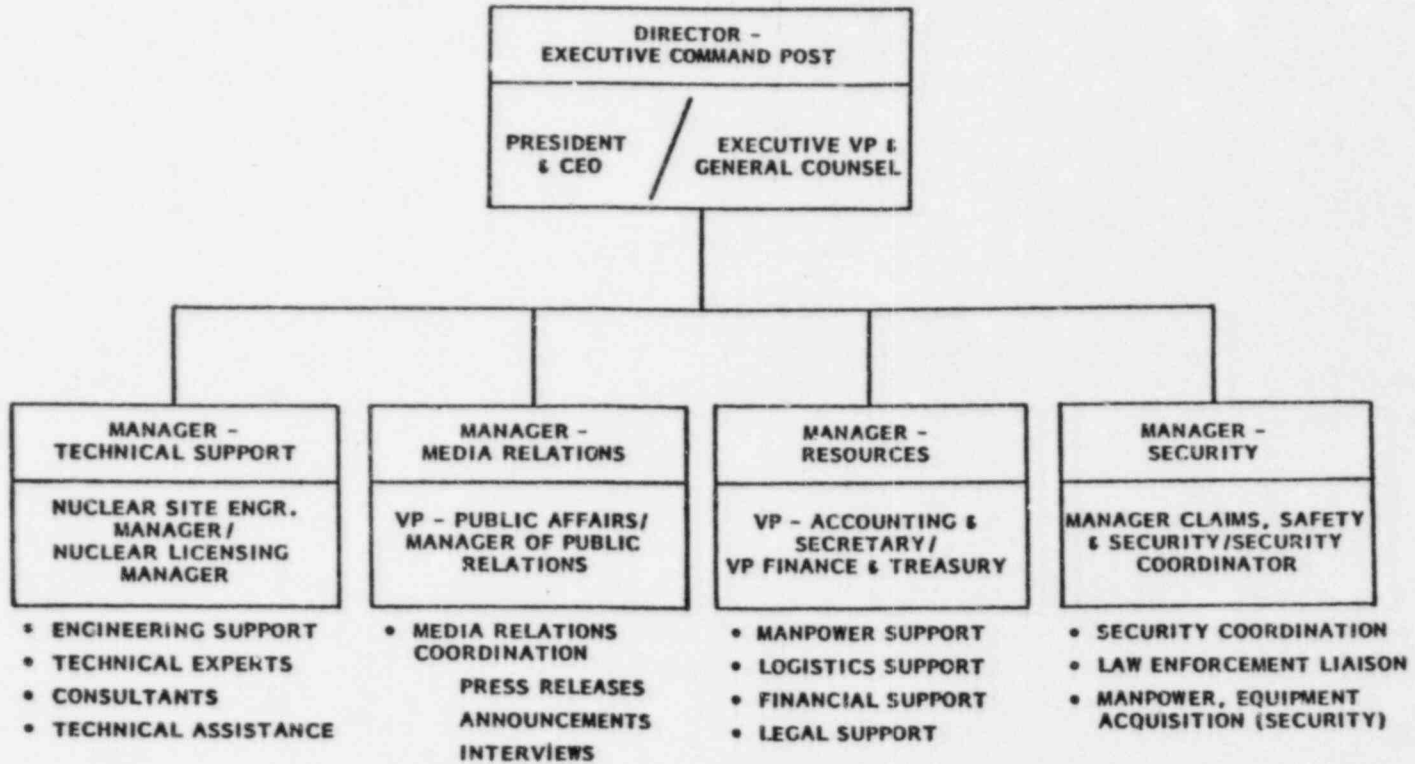


FIGURE 3



TITLE: <u>PROTECTIVE ACTION GUIDELINE RECOMMENDATIONS</u>		
ISSUANCE AUTHORIZED BY	<i>Don Wahrenburg by</i> <i>Milt Mubande</i>	
PORC REVIEW	PORC 580 AUG 2 - 1984	EFFECTIVE DATE 8-6-84

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General

This procedure discusses the mechanism for making recommendations of offsite protective actions to state authorities during a radiological emergency at Fort St. Vrain. This procedure also discusses the mechanism for decision-making regarding protective action recommendations.

The decision as to the appropriate protective actions to recommend rests, initially, with the Emergency Coordinator and, after facility activation, with the Corporate Emergency Director. The Corporate Emergency Director is assisted in this task by the Radiological Assessment Coordinator and the Technical Support Center Director. The decision should be based upon dose projections, field monitoring results, plant system parameters, expected duration of release, weather conditions, and, most importantly, dose avoidance.

1.0 Criteria For Implementation

This procedure is intended for use by the Emergency Coordinator or by Radiological Assessment personnel at the Technical Support Center (TSC) and the Forward Command Post (FCP) for determination of the most practical method of protecting the general public. This information shall be relayed to the TSC Director and the Corporate Emergency Director. Additionally, this procedure may be used for reference information by the TSC Director and the Corporate Emergency Director to assist in decision making.

This procedure is to be implemented whenever there is an ALERT or higher emergency class event in progress.

2.0 Procedure

Protective action recommendations are to be based upon the U.S. EPA Protective Action Guidelines. These Protective Action Guides (PAGs) are summarized in Table 1 of this procedure. The PAGs presented in Table 1 refer to avoidable doses, not simply to projected doses. In other words, for a protective action to provide any benefit, a substantial dose avoidance must be realized. The PAG values in no way imply an acceptable dose; they are simply values of dose avoidance where the benefit of taking a protective action is highly likely to exceed the risks associated with taking that action.

Utilize Table 1 as the basis for making protective action recommendations. The following subsections of this procedure describe the various factors to consider in making a protective action recommendation. Datasheet 1 is provided as a central place to record the appropriate data.



2.1 Evacuation effectiveness

The effectiveness of evacuation in limiting the radiation dose received is a function of the time available to complete evacuation prior to plume arrival. If the public can be evacuated prior to the plume's arrival, then the evacuation is totally effective in dose avoidance. The "Evacuation Time Study of the 10-Mile Radius Area About the Fort St. Vrain Nuclear Generating Station," April 1981, states that the entire two mile radial area around the plant can be evacuated in approximately one (1) hour after notification, and that the entire plume exposure Emergency Planning Zone (EPZ) can be evacuated within 2.75 hours. These numbers are good weather estimates based upon notification by Weld County Sheriff's personnel. More detailed estimates, including adverse weather estimates and credit for use of the Early Warning Alert (EWA) system, are available in Table 2 for reference purposes. Figure 1 provides a reference map showing sector boundaries and summarizes the population distribution around the plant.

The above stated values should be utilized in conjunction with a stated value for plume arrival delay, in order to assess the effectiveness of an evacuation in dose avoidance. Simply stated, plume arrival delay (T_A) is the sum of the time available before a projected release begins (T_B) and the time projected for plume travel (T_T) for a given windspeed and downward distance once the release has begun.

$$T_A \text{ (hours)} = T_B + T_T$$

2.2 Sheltering Effectiveness

Sheltering will always provide a measure of protection to the public, whenever carried out as instructed. It is extremely difficult, however, to quantify any specific protection factor that this will provide for all members of the public in all types of structures. Sheltering should be advised in any case where a definite hazard exists, but there are constraints against evacuation.

Sheltering as a protective action includes the following actions:

- (1) Seeking shelter indoors near the center of the lowest floor of the structure;
- (2) Securing all intake/exhaust ventilation to the structure during passage of the cloud;



- (3) Sealing door cracks and window ledges with wet towels or rags;
- (4) Covering mouth and nose with moistened handkerchief or cloth; and
- (5) Restoring structure ventilation as quickly as possible after passage of the cloud.

3.0 Responsibilities

3.1 Corporate Emergency Director

After the full activation of the FSV emergency organization, the Corporate Emergency Director has the authority and responsibility to make all protective action recommendations. The Corporate Emergency Director should confer with the Radiological Assessment Coordinator and the Technical Support Center Director in this decision.

3.2 Radiological Assessment Coordinator

After activation of the FSV emergency organization, make assessments of protective action needs based upon the current radiological conditions and the considerations contained herein. Inform the Corporate Emergency Director of the results of this appraisal and submit an assessment of recommended protective actions.

3.3 Emergency Coordinator

Prior to the activation of the FSV emergency organization, the Shift Supervisor, in the role of Emergency Coordinator, has the authority and responsibility to recommend protective actions to offsite authorities.

3.4 Technical Support Center Director

Confer with the Corporate Emergency Director, as requested, with respect to current plant conditions and the need for offsite protective actions.

3.5 Radiological Assessment (TSC)

Assist the TSC Director and Radiological Assessment Coordinator with this evaluation as requested. Confer with the Radiological Assessment Coordinator regarding persistence or prospect of conditions worsening.



4.0 References

- 4.1 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U.S.E.P.A., June, 1980.
- 4.2 Reactor Safety Study, Appendix VI, WASH-1400, October 1975.
- 4.3 Examination of Offsite Radiological Emergency Protective Measures for Nuclear Reactor Accidents Involving Core Melt, NUREG/CR-1131, D. C. Aldrich, P. McGrath, N. C. Rasmussen, October, 1979.
- 4.4 "Evacuation Time Study of the 10-Mile Radius Area About the Fort St. Vrain Nuclear Generating Station," Public Service Company of Colorado, April, 1981.

5.0 Referenced or Supporting Procedures

- 5.1 RERP-DOSE, Offsite Dose Calculation Methodology.
- 5.2 RERP-CR, Control Room Procedure
- 5.3 RERP-ORG, FSV Emergency Organization and Responsibilities
- 5.4 RERP-FIELD, Field Monitoring Procedure

TABLE 1
PROTECTIVE ACTION GUIDELINES

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

<u>Projected Dose (Rem) to the population</u>	<u>Recommended Actions (a)</u>	<u>Comments</u>
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 for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration.
- (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 2*
ESTIMATED EVACUATION TIME OF THE PERMANENT POPULATION WITHIN THE PLUME EXPOSURE EMERGENCY PLANNING ZONE (EPZ)

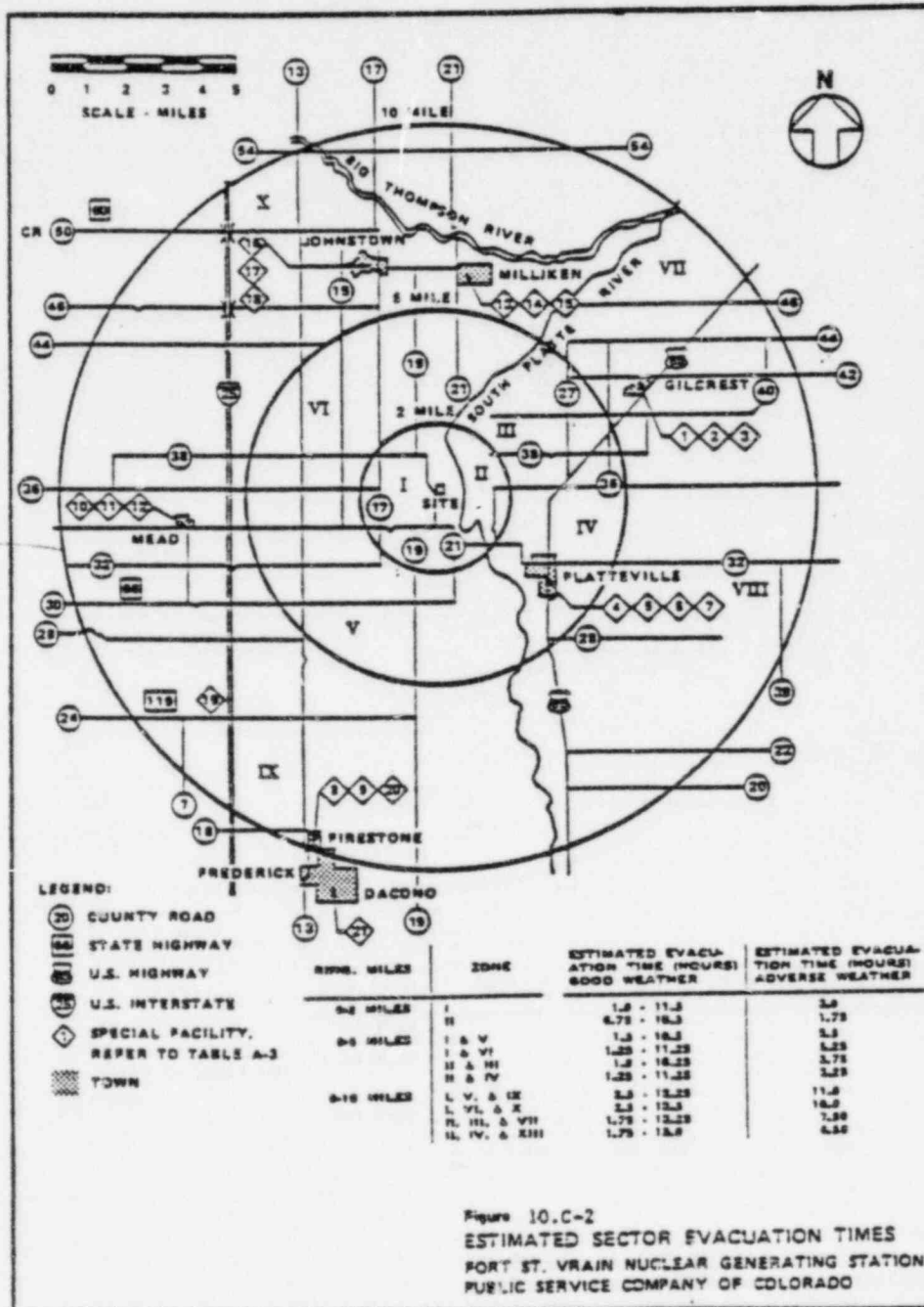
Zone	Estimated 1980 Resident Population	Estimated Notification Time By Sheriff's Department for Good Weather (Hours)	Estimated Evacuation Time for Good Weather - Sheriff's Department (Hours)	Estimated Adverse Weather Evacuation Time - Notification (Hours)	Estimated Evacuation Time for Good Weather - EWA Notifica- tion (Hours)	Estimated Adverse Weather Evacuation Time - EWA Notification (Hours)
0-2 Miles	216	0.5	1.0	3.0	0.75	1.45
I	140	0.5	1.0	3.0	0.75	1.55
II	76	0.3	0.75	1.75	0.70	1.40
0-5 Miles	3176	2.0	2.75	12.0	1.0	1.85
I & V	711	0.9	1.5	5.5	0.85	1.75
I & VI	502	0.9	1.25	5.25	0.60	1.70
II & III	363	0.6	1.0	3.75	0.65	1.70
II & IV	1816	0.5	1.25	3.25	1.0	1.70

* Based upon April 1981, "Evacuation Time Study of the 10-Mile Radius Area About the Fort St. Vrain Nuclear Generating Station," and a stated 15 minute notification utilizing the Early Warning Alert (EWA) system.



FIGURE 1

Population Distribution Summary





Datasheet 1 - Protective Action Recommendations

Date ____/____/____

Time ____:____

Initials _____

Response Center _____

Comments



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-PAG
WS/DS/CL
Issue 3
Page 1 of 3

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Protective Action Recommendations

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Checklist No.

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Datasheet 1 - Protective Action Recommendations

Date ____/____/____

Time ____:____

Initials _____

Response Center _____

Comments



Datasheet 1 - Protective Action Recommendations

Date ____/____/____

Time ____:____

Initials _____

Response Center _____

Comments



Datasheet 1 - Protective Action Recommendations

Date ____/____/____

Time ____:____

Initials _____

Response Center _____

Comments



Datasheet 1 - Protective Action Recommendations

Date ____/____/____

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Datasheet 1 - Protective Action Recommendations

Date ____/____/____

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Initials _____

Response Center _____

Comments



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TITLE: PERSONNEL CONTROL CENTER PROCEDURE

ISSUANCE
AUTHORIZED
BY

*An Whrenburg by
Milt McBride*

PORC
REVIEW

PORC 580 AUG 2 - 1984

EFFECTIVE
DATE

8-6-84

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1.0 Criteria for Implementation

When the FSV Radiological Emergency Response Plan (RERP) requires augmentation of onsite resources, the Personnel Control Center (PCC) shall be activated.

2.0 Procedure

The PCC shall be activated by the Personnel Control Center Director at the direction of the Shift Supervisor (see RERP-CR). The Shift Supervisor prior to ordering PCC activation, shall determine the PCC location. There are two designated onsite PCC locations, and three designated offsite PCC locations. The preferred location is the Training Center and the preferred alternate location is the Engineering/QA Complex. Facility locations are as follows:

- a) Onsite (in order of preference)
 - (1) Training Center;
 - (2) Engineering/QA Complex;
- b) Offsite (in order of preference)
 - (1) Johnstown County Shops;
 - (2) Platteville Volunteer Fire Departments;
 - (3) Longmont Public Service Company Service Center.

The decision of PCC location will be made based upon prevailing wind conditions and site accessibility to offsite respondents.

2.1 In the event that the PCC must be established offsite, the PCC Director is responsible for the transport of emergency equipment, including decontamination supplies, necessary to establish the offsite PCC.

- a) Emergency kits are stored at both the Training Center and the Engineering/QA Complex (see HPP-37). The kits include:
 - 1) Emergency radiological monitoring equipment
 - 2) First-aid and decontamination equipment
 - 3) Protective clothing
 - 4) Communications equipment
 - 5) Portable lighting
 - 6) Protective breathing apparatus



- 2.2 The PCC Director shall perform personnel accountability to assure that the initial manning requirements of the PCC can be met.

If not during normal working hours, those personnel required to man the PCC are notified by telephone (see RERP-HOME). It is the responsibility of the PCC Alternate Director, or the first individual contacted by the Director, to ensure that the notifications are made.

- 2.3 The PCC Director shall establish initial communications with the Technical Support Center (TSC) and verify that primary and secondary communication links are available. Communications personnel should be assigned to maintain constant communication with the TSC.

- 2.4 Personnel reporting to the PCC

- Individuals assigned to the PCC must enter at the entrances designated on Figure 1 (Training Center) or Figure 2 (Engineering/QA Complex); remain in the FRISKING (or waiting) area until monitored for contamination.
- If contamination is found, proceed to the decontamination area as directed and initiate decontamination procedures (see HPP-11).
- If contamination is not found, proceed to a clean area of the PCC as directed.

- 2.5 PCC Habitability

Initially, and throughout the period that the PCC is activated, the PCC director is responsible for assurance of facility habitability. The PCC director shall request that Health Physics periodically monitor the area (approximately every 15-20 minutes). Habitability is determined using an RM 14/15 set to alarm at 500 cpm, or if radiation levels are greater, by periodic air sampling. The HP Technician performing habitability checks shall inform the PCC Director of each survey's results, and assure that the Recorder enters results in PCC Log.

- 2.6 Personnel Accountability and Exposure Control

After initial personnel accountability is completed at emergency stations (see G-5, Personnel Emergency Response), each facility director assumes responsibility for continued personnel accountability of the personnel assigned to him. This task is most challenging at the PCC, where repair/damage control teams, survey teams,



PCC, where repair/damage control teams, survey teams, reserve operating staff, and search and rescue teams are assembled and dispatched into the plant.

The PCC Director shall assign a member of the PCC staff proximate responsibility for maintaining records of personnel accountability and personnel exposure records for those individuals assigned to the PCC. This individual, the Personnel Accountability and Exposure Controller, reports directly to the PCC Director, who maintains ultimate responsibility for continued Personnel Accountability. Additionally, the PCC Director has the responsibility for authorization of selected volunteers to receive emergency exposures in excess of occupational limits (only with joint concurrence of TSC Director and the senior Health Physics representative at the TSC). These responsibilities are described in detail in RERP-EXP, and include specific requirements for record keeping and job briefings.

Responsibility for record keeping of personnel accountability and exposure is assigned to the Personnel Accountability and Exposure Controller. He is provided Datasheet 1 to assist him in maintaining the required records.

2.7 Personnel Assignments

After activation of the PCC, the PCC Director shall assign one member of his staff responsibility for maintaining control over personnel assignments to teams or tasks. This individual is the Personnel Assignment Controller, and his responsibilities are summarized below.

NOTE: The senior Health Physics representative at the Technical Support Center and the TSC Director shall be consulted prior to dispatching any personnel from the personnel Control Center.



2.7.1 Distribute equipment and appropriate Attachments or Datasheets of the PCC Procedure and record on the assignment board as personnel arrive and are available.

- a) Recorder Attachment 1
Checklist 2
- b) Communication Attachment 2
- c) Personnel Accountability and Exposure Controller Datasheet 1
- d) Decontamination Attachment 3
- e) Security Attachment 4
- f) Drivers Attachment 5
- g) First Aid Attachment 6
- h) Instrument Repair and Accountability Attachment 7
- i) Assign first supervisor to arrive at the PCC the duty of directing additional personnel to their areas and retrieving them as necessary.
- j) Additional Personnel

2.7.2 Make every effort to ensure all arriving persons are assigned to each group in accordance with individual qualifications or, if not immediately assigned, assembled in an out-of-the-way place for further instructions.

2.7.3 Provide each group with additional manpower as required.

2.7.4 With the assistance of the Personnel Accountability and Exposure Controller, contact or account for all personnel onsite and at the PCC.

2.7.5 Record all data for the master log.

2.7.6 List all available personnel on the control board from the Emergency Kit so that, if additional assistance is needed, personnel can be called in.

2.7.7 Keep records of additional personnel assignments for master log.



2.8 Radiological Monitoring Teams

Radiological monitoring teams are dispatched from the PCC upon approval of the TSC Director, and under the overall direction of the senior Health Physics representative at the TSC. Protective clothing and equipment requirements along with maximum stay times, are determined by the senior Health Physics representative at the TSC and relayed to the PCC Director for use in the briefing of the monitoring teams (see Datasheets 2 and 3).

2.8.1 Field Survey Teams

Field Survey Teams to survey both the Exclusion Area Boundary (EAB) and the plume exposure Emergency Planning Zone (EPZ) are dispatched as required (see RERP-FIELD). Field Teams consist of a Health Physics Technician and a Driver. Keys for the two site assigned Emergency Response vehicles and for two site assigned vehicles generally located at the Engineering/QA complex are stored in the PCC Emergency Kits.

2.8.2 Inplant/Onsite Monitoring Teams

Monitoring teams to survey the plant and protected areas consisting of at least a Health Physics Technician and an assistant shall be dispatched as required (see RERP-SURVEY).

2.9 Notification of Persons Living on Plant Property

The PCC Director is responsible to assure prompt (within 30 minutes of activation) notification of individuals living on plant property. This may be done by telephone (see Attachment 2) or by personal contact.

2.10 Medical Transport

Transport of injured or contaminated individuals is to be performed in accordance with the FSV Medical Emergency Plan. The TSC Director shall be notified of all such transport.



2.11 Site Access Control/Security

2.11.1 PCC Guard

Upon notification to activate the PCC, the Lead Security Officer (LSO) shall dispatch one security guard to the PCC. Security responsibilities at the PCC are as follows:

- Assist in gate control of authorized personnel and vehicles at the PCC (if Engineering/QA Complex selected).
- Ensure that the outer perimeter gate is secured and that non-PCC personnel are not admitted to the PCC without proper authorization.
- Assist with radio communications and access authorizations in cooperation with the LSO.

2.11.2 Site Response Guards

After activation of the Personnel Control Center the PCC Director will coordinate access of personnel and vehicles into the protected area or vital areas with the LSO. Site response security personnel will:

- Check all site visitors out through the Search and Identification Facility.
- Facilitate the exit of onsite personnel reporting to the PCC.
- Assist in personnel accountability (in particular the Central Alarm Station as specified in Procedure G-5).
- Assist with personnel and vehicle ingress/egress to and from protected and vital areas.



2.12 Locating or Relocating the Personnel Control Center Offsite

In the event that the Personnel Control Center must be located or relocated offsite, one of the three locations listed below, in order of preference, will be used. An Emergency Kit and Instructions from a site facility will be utilized and must be transported to the alternate PCC. It is the PCC Director's responsibility to assure transport of Emergency Kit supplies. Privately owned vehicles will be used for transportation.

2.12.1 Johnstown County Shop

The Johnstown County Shop keys are located with the Emergency supplies in the PCC Emergency Kit. During business hours, the county should be notified of an anticipated use of the facility (See RERP PHONE LIST).

During non-business hours, the County shall be notified by calling one of the individuals listed in RERP PHONE LIST, at home. The physical location of the Johnstown County Shop is shown on Figure 3.

2.12.2 Platteville Volunteer Fire Department

The Platteville Fire department should be notified of an anticipated use of the facility (See RERP PHONE LIST). Location of the facility is shown on Figure 4.

2.12.3 Longmont PSCo Service Center

The Longmont Service Center should be notified of an anticipated use of the facility (See RERP PHONE LIST).

Keys (two) to the gate and side door of the Service Center are located with the emergency supplies. Access to the building shall be via the east side door. One key opens the yard gate and the other key opens the building door. Light switches are located on the east wall, just south of the overhead door, and on the north wall by the entrance. Physical location of the facility is shown on Figure 5.



2.13 Decontamination/Controlled Areas

Areas for the decontamination of site personnel and for control of radiologically contaminated equipment shall be established on an as-needed basis in accordance with existing Health Physics Procedures (see HPP-9, Establishing and Posting Controlled Areas; HPP-10, Area and Equipment Decontamination; HPP-11, Personnel Decontamination; and, HPP-21; Surface Radioactive Contamination Surveys).

2.14 Re-entry and Egress

It is the responsibility of the PCC Director to coordinate re-entry into the plant for support plant operations personnel, emergency teams, or corporate resources personnel when directed to do so by the TSC Director.

PCC Director will coordinate access to the plant site with the Weld County Sheriff's Department if PCC is to be established onsite.

The PCC Director is also responsible for accountability of personnel leaving the plant after re-entry or being relieved.

2.14.1 Re-entry Guidelines

For support plant operations personnel, and corporate resources personnel the PCC Director shall:

- a) Conduct briefings for the personnel to appraise them of personnel protective equipment requirements as advised by the senior Health Physics representative at the TSC and the TSC Director.
- b) Have the Personnel Accountability and Exposure Controller record accountability and exposure information.
- c) Have the LSD inform security of the personnel arriving and prepare to clear them through security.



2.14.2 Emergency Teams (see RERP-TEAMS)

- a) The PCC Director will select individuals with the appropriate qualifications in Health Physics, First Aid, Operations, or Maintenance to make up a re-entry team and appoint a team leader.
- b) Conduct a briefing of the personnel to appraise them of conditions affecting them and personnel protective equipment requirements as advised by the senior Health Physics representative at the TSC. (See Datasheet 4).

The PCC Director must clear all Emergency Team re-entry with the senior Health Physics representative at the TSC, and request assessment of protective equipment, clothing requirements, thyroid prophylaxis needs, and any Emergency Exposure limitations as specified by RERP-EXP.

- c) Furnish team leaders with communication equipment and have the Personnel Accountability and Exposure Controller record information.
- d) Have the LSD inform Security of the personnel arriving and prepare to clear them through Security.
- e) The re-entry team will enter the area, establish communication with the TSC, perform the duties in the most safe and efficient manner possible, and inform the TSC of completion of duties and intent to leave the area.
- f) Once their operations have been completed, the team personnel will follow self-monitoring and personnel decontamination procedures as specified by the team leader.
- g) Return to the PCC to be screened through the Personnel Accountability and Exposure Controller and report to the PCC Director.
- h) The PCC Director will inform the TSC of the return of the emergency team.



2.14.3 Personnel Leaving the Plant After Re-Entry or Being Relieved

- a) Report to the PCC for accountability.
- b) The PCC Director informs the TSC.

3.0 Responsibilities

The Personnel Control Center (PCC) serves as manpower marshalling location to provide a pool of personnel available for emergency assignment. Personnel are assigned to perform functions consistent with their routine job classification.

3.1 Personnel Control Center Director

The PCC Director 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. In particular, his responsibilities include the following:

- Continued personnel accountability;
- Assuring that all emergency workers at-risk are evaluated by the Senior Health Physics representative at the TSC with regard to a need for thyroid blocking;
- Coordinates with Security personnel to control access to the owner controlled area (Shift Supervisor, in the capacity of Emergency Coordinator, may perform before PCC activation);
- Dispatches personnel to notify any individuals living in the owner controlled area who were unable to be contacted by telephone;
- Coordinates medical transport for injured personnel;
- Coordinates access for personnel arriving from outside the plant with Weld County Sheriff's Department;
- Coordinates entry/re-entry of required personnel with the Lead Security Officer;
- Relocates the PCC to an alternate onsite or offsite location, as required;



- With the concurrence of the TSC Director, authorizes volunteer emergency workers to receive doses in excess of 10 CFR 20 limits (see RERP-EXP);
- Receives reports of accidental or emergency exposure in excess of occupational limits, and informs the TSC Director of these occurrences; and,
- Refers any requests for outside assistance to the TSC Director.

3.2 Senior Health Physics Representative (TSC)

The senior Health Physics representative at the TSC is responsible for the direction of radiological monitoring teams dispatched from the PCC. He is also responsible for assessment of protective clothing, dosimetry, and equipment requirements and maximum stay times for the teams.

3.3 Personnel Accountability and Exposure Control

Personnel Accountability personnel are responsible for maintaining continued personnel accountability and exposure estimates, handling search and rescue assignments, performing first aid and personnel decontamination, and assisting in the medical transport of injury victims.

The initial personnel accountability assessment prior to activation of the PCC shall be handled in accordance with Administrative Procedure G-5 and Security Instruction 6.10.

3.4 Maintenance, Repair, and Damage Control

Perform mechanical and electrical repair/damage control, emergency maintenance, and temporary modifications.

3.5 Hazards Control

Extinguish fires, purge hazardous gases, and combat natural emergencies.

3.6 Other Personnel

Detailed responsibilities of personnel assigned functions of Recorder, Communications, Decontamination, Security, Drivers, First Aid, and Instrument Repair/Accountability may be found in the Attachments to this procedure.

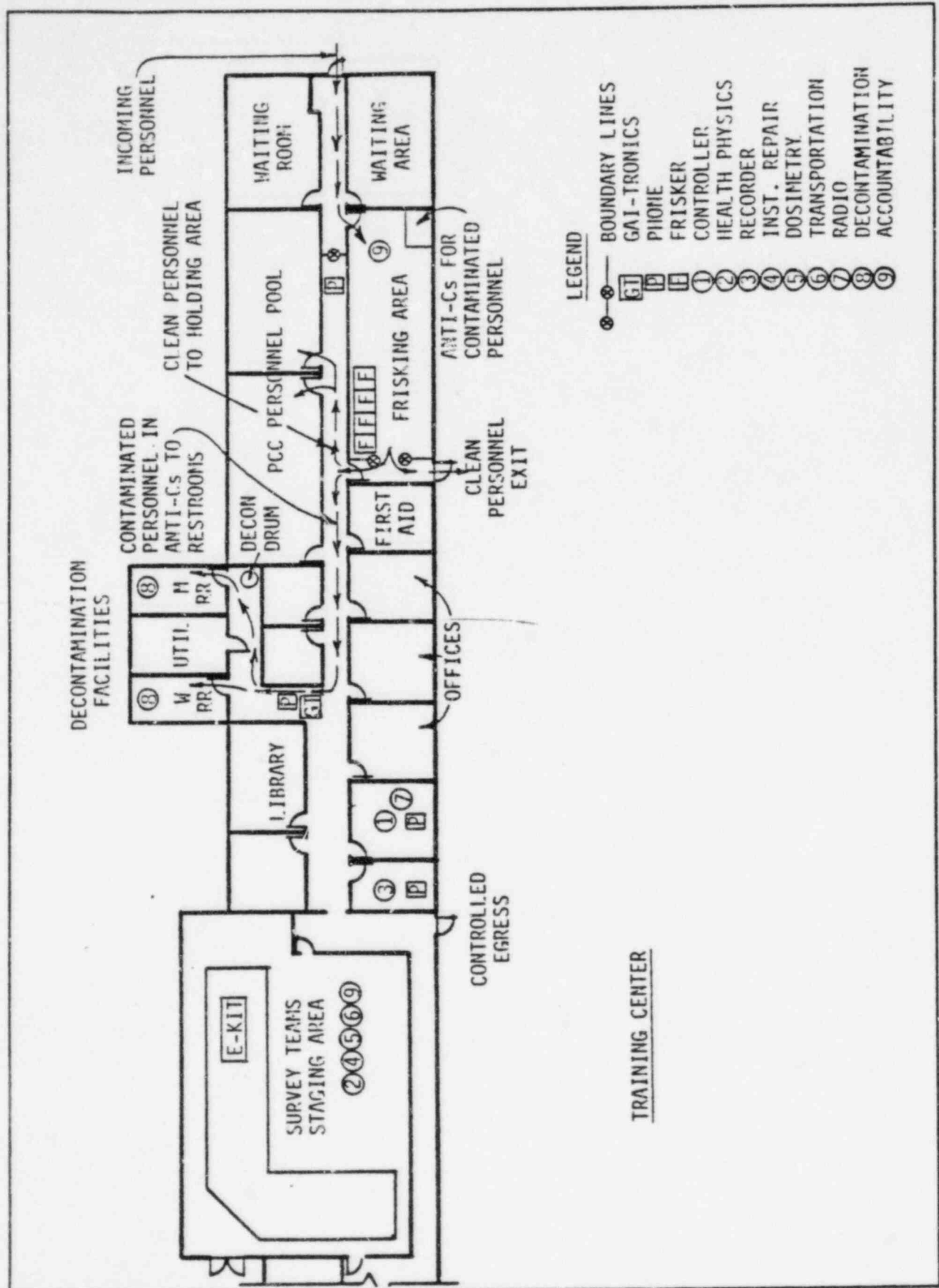


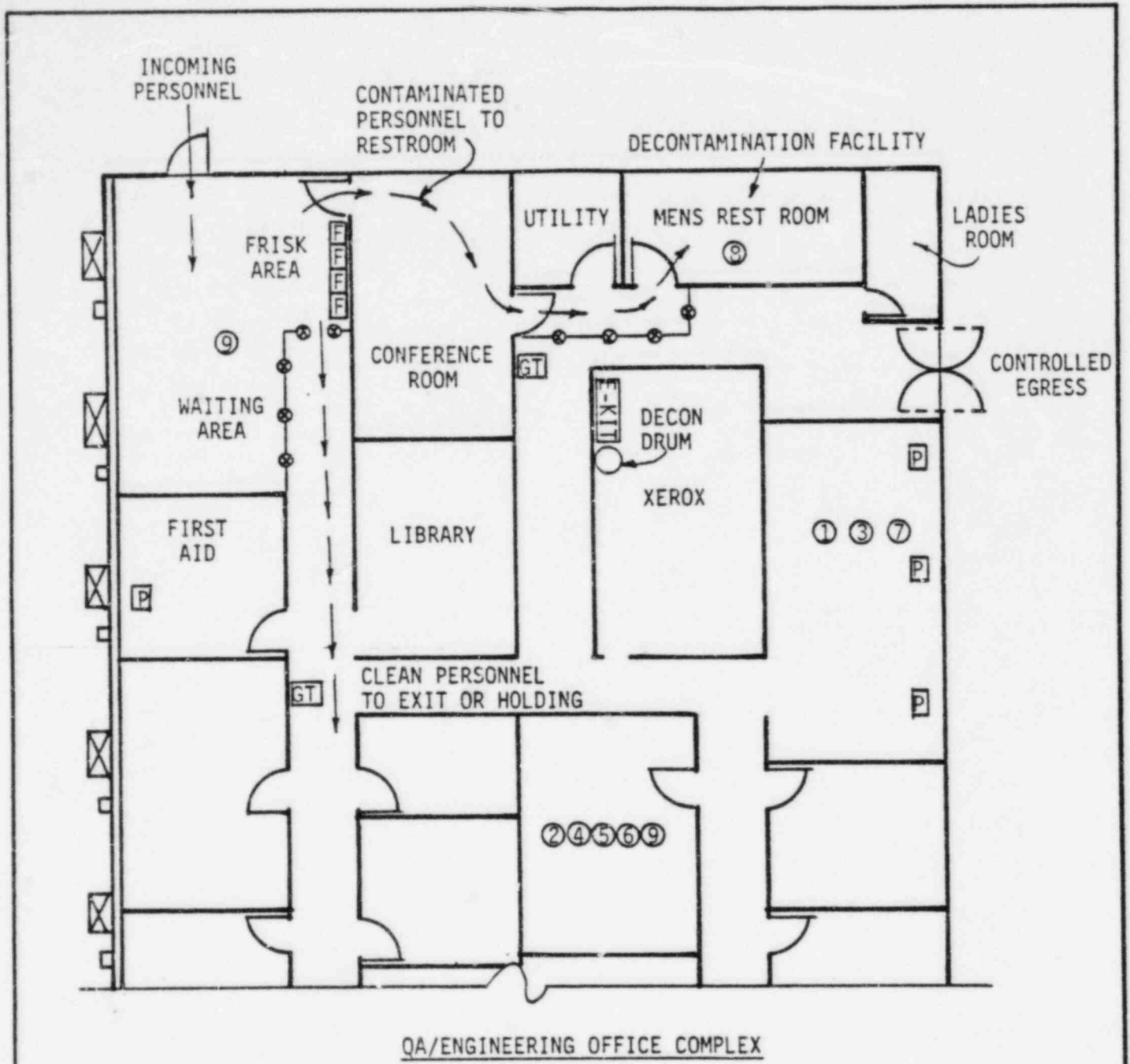
4.0 References

- 4.1 FSV Radiological Emergency Response Plan
- 4.2 State Radiological Emergency Response Plan
- 4.3 PPC-83-1336

5.0 Referenced or Supporting Procedures

- 5.1 RERP-ORG, FSV Emergency Organization and Responsibilities
- 5.2 RERP-FIELD, Field Monitoring Procedure
- 5.3 RERP-SURVEY, Inplant/Onsite Monitoring Teams
- 5.4 RERP-THYROID, Thyroid Blocking Agent Administration
- 5.5 RERP-EXP, Emergency Exposure Guidelines
- 5.6 RERP-TSC, Technical Support Center Procedure
- 5.7 RERP-CR, Control Room Procedure
- 5.8 RERP-HOME, Home Packet for Off-shift Notifications
- 5.9 RERP-PHONE LIST
- 5.10 RERP-SUPORG, Use and Coordination of Non-PSC Support Organizations
- 5.11 MEP, FSV Medical Emergency Plan
- 5.12 HPP-9, Establishing and Posting Controlled Areas
- 5.13 HPP-10, Area and Equipment Decontamination
- 5.14 HPP-11, Personnel Decontamination
- 5.15 HPP-12, Portable Air Sample Collection and Analysis
- 5.16 HPP-21, Surface Radioactive Contamination Surveys
- 5.17 HPP-37, RERP Inventory List
- 5.18 HPP-57, Radiation and Airborne Radioactivity Monitoring During Abnormal Releases in the Plant
- 5.19 Security Instructions, Section 6.10, Personnel Accountability for Station Emergencies
- 5.20 G-5, Personnel Emergency Response





QA/ENGINEERING OFFICE COMPLEX

LEGEND

- | | | | |
|--|----------------|---|-----------------|
| | BOUNDARY LINES | ③ | RECORDER |
| | GAI-TRONICS | ④ | INST. REPAIR |
| | PHONES | ⑤ | DOSIMETRY |
| | FRISKER | ⑥ | TRANSPORTATION |
| | CONTROLLER | ⑦ | RADIO |
| | HEALTH PHYSICS | ⑧ | DECONTAMINATION |
| | | ⑨ | ACCOUNTABILITY |



FIGURE 3

MAP: JOHNSTOWN COUNTY SHOP

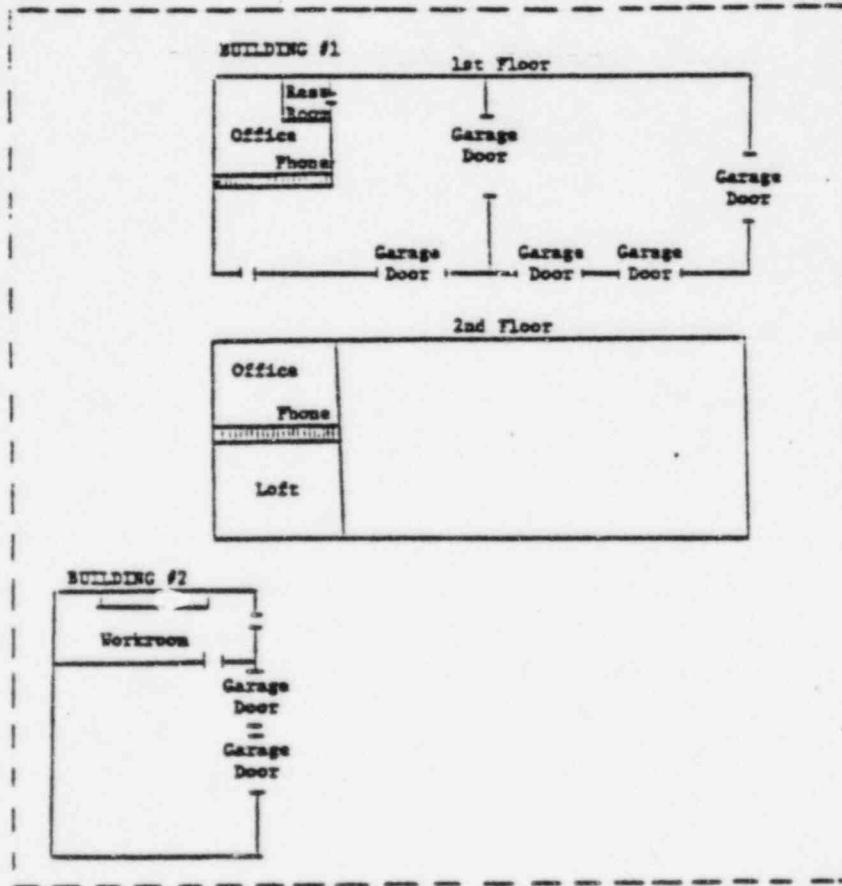
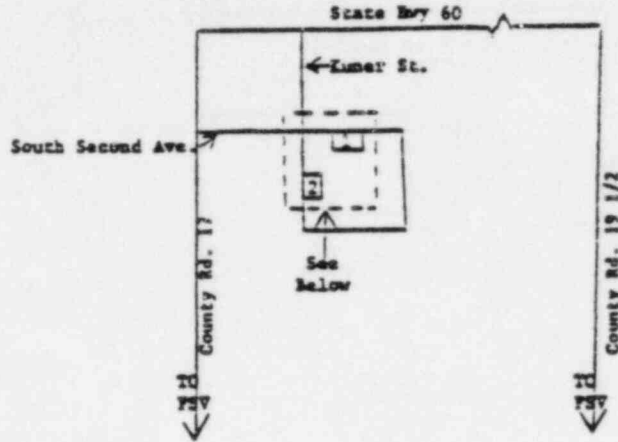




FIGURE 4

MAP: FIREHOUSE, PLATTEVILLE

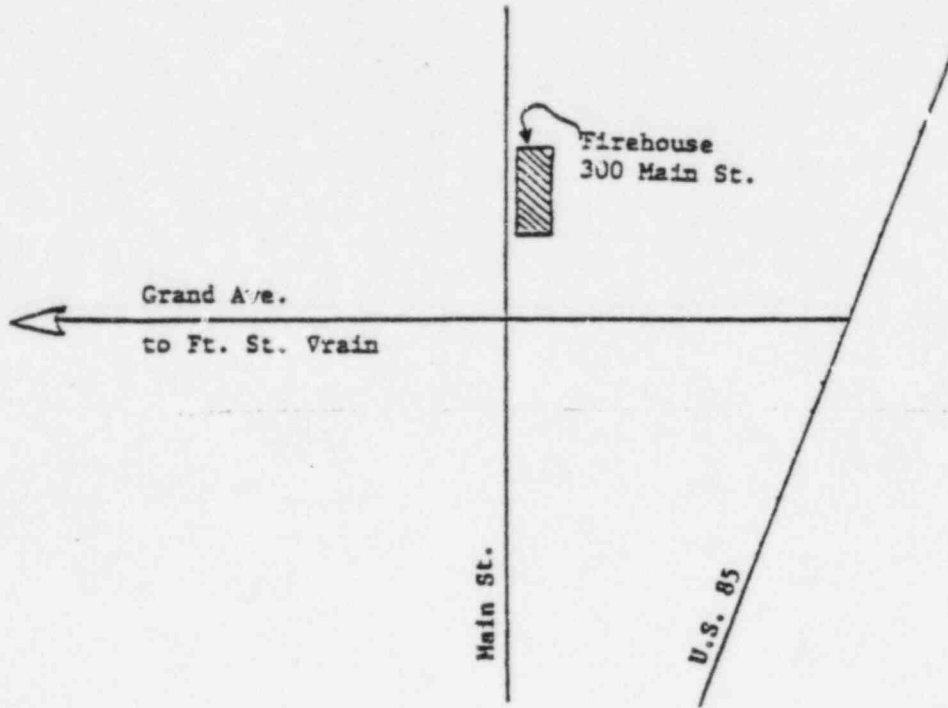




FIGURE 5

MAP: PSC SERVICE CENTER, LONGMONT

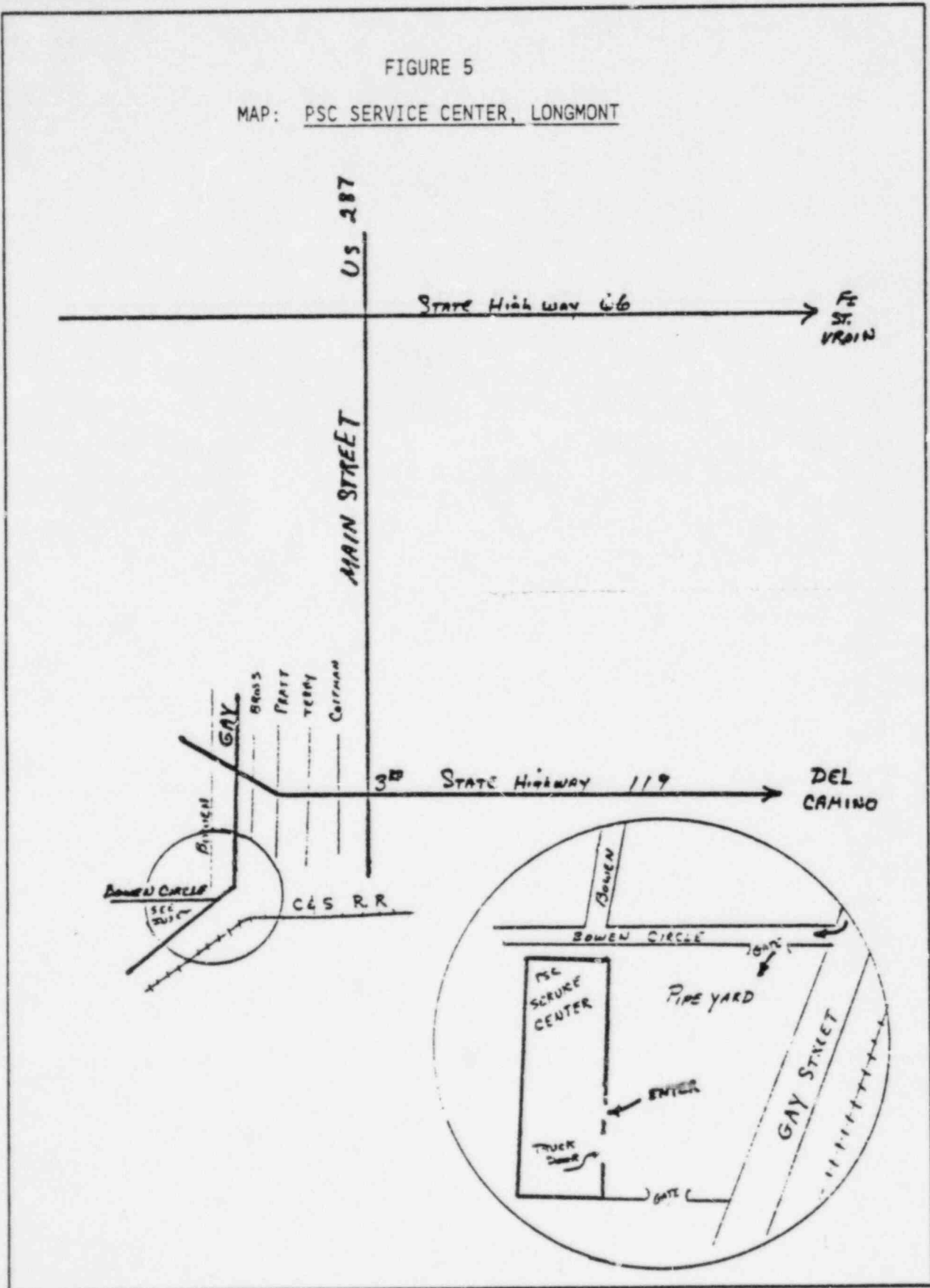




FIGURE 6

SITE SECTOR MAP

SECTORIAL AREA INVESTIGATION DESIGNATION

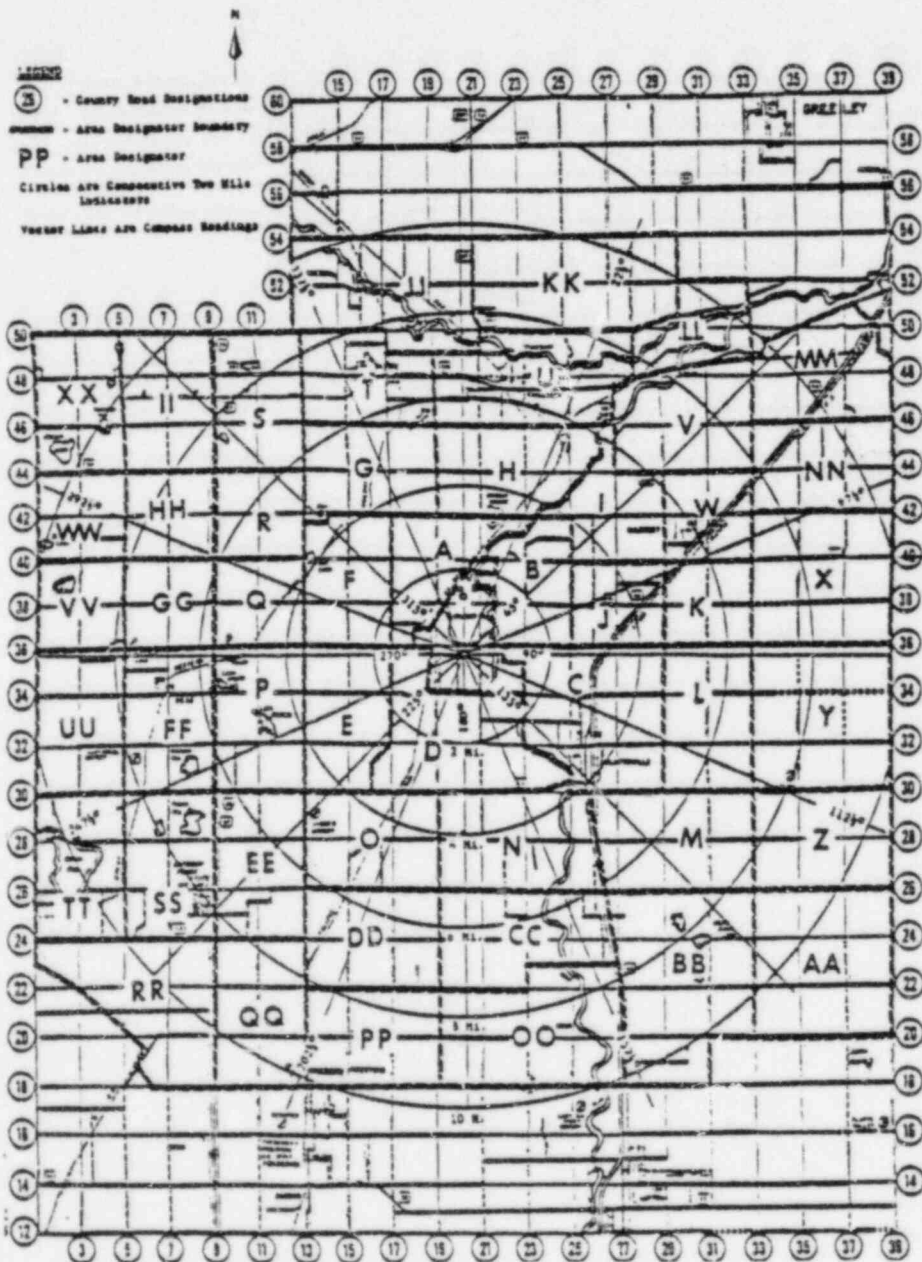




FIGURE 7
SITE MAP

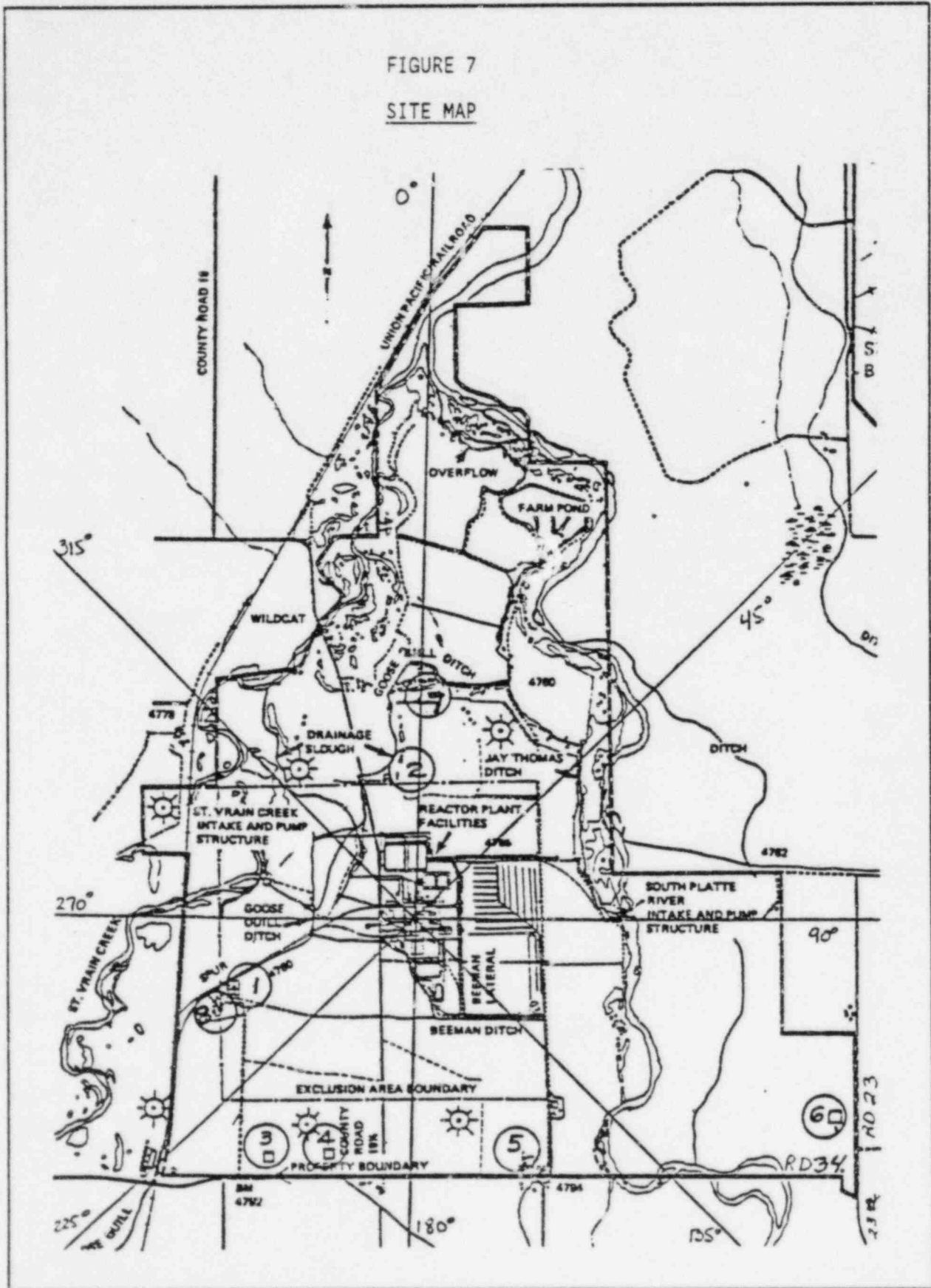




FIGURE 8
EXCLUSION AREA MAP

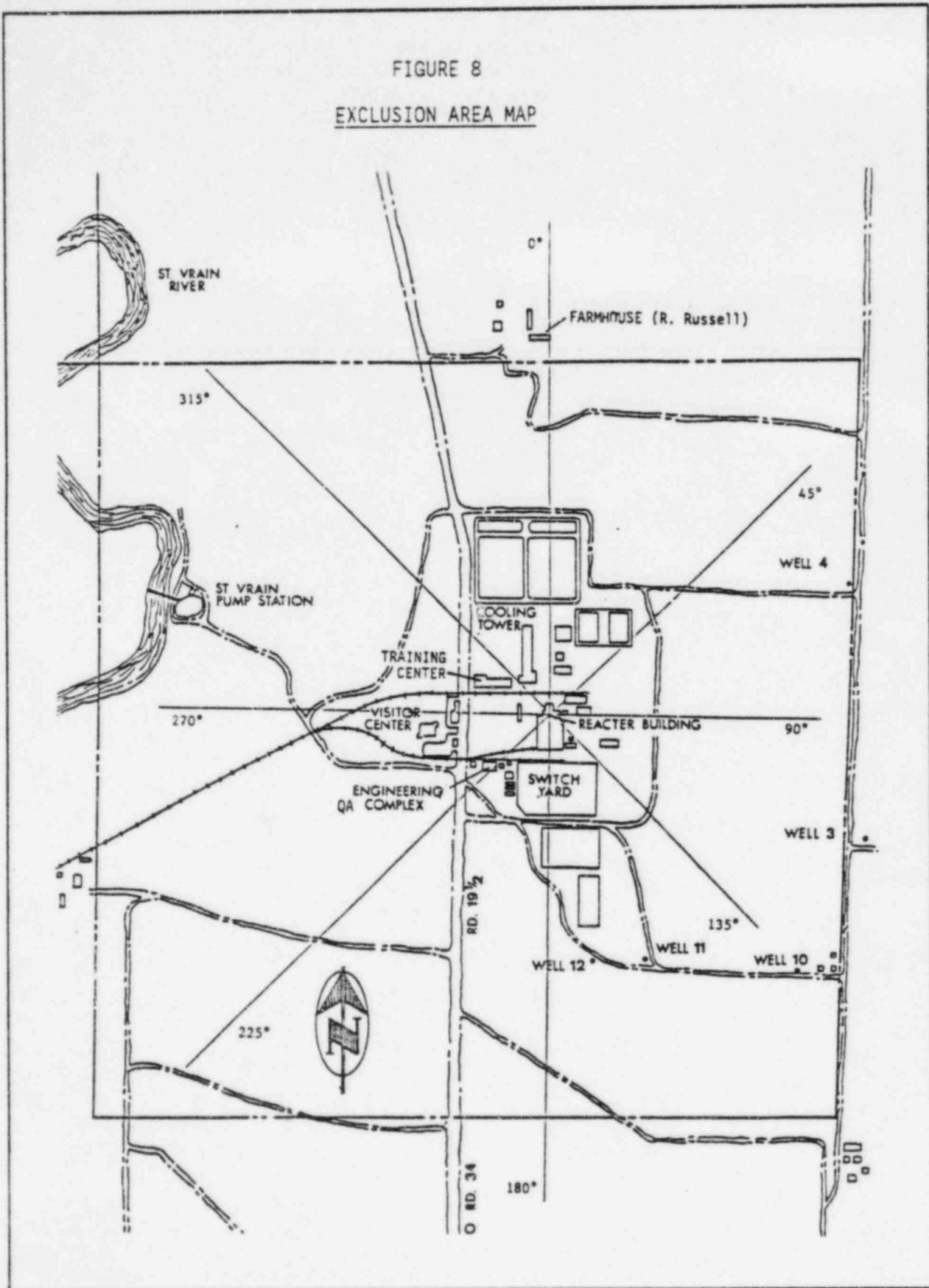
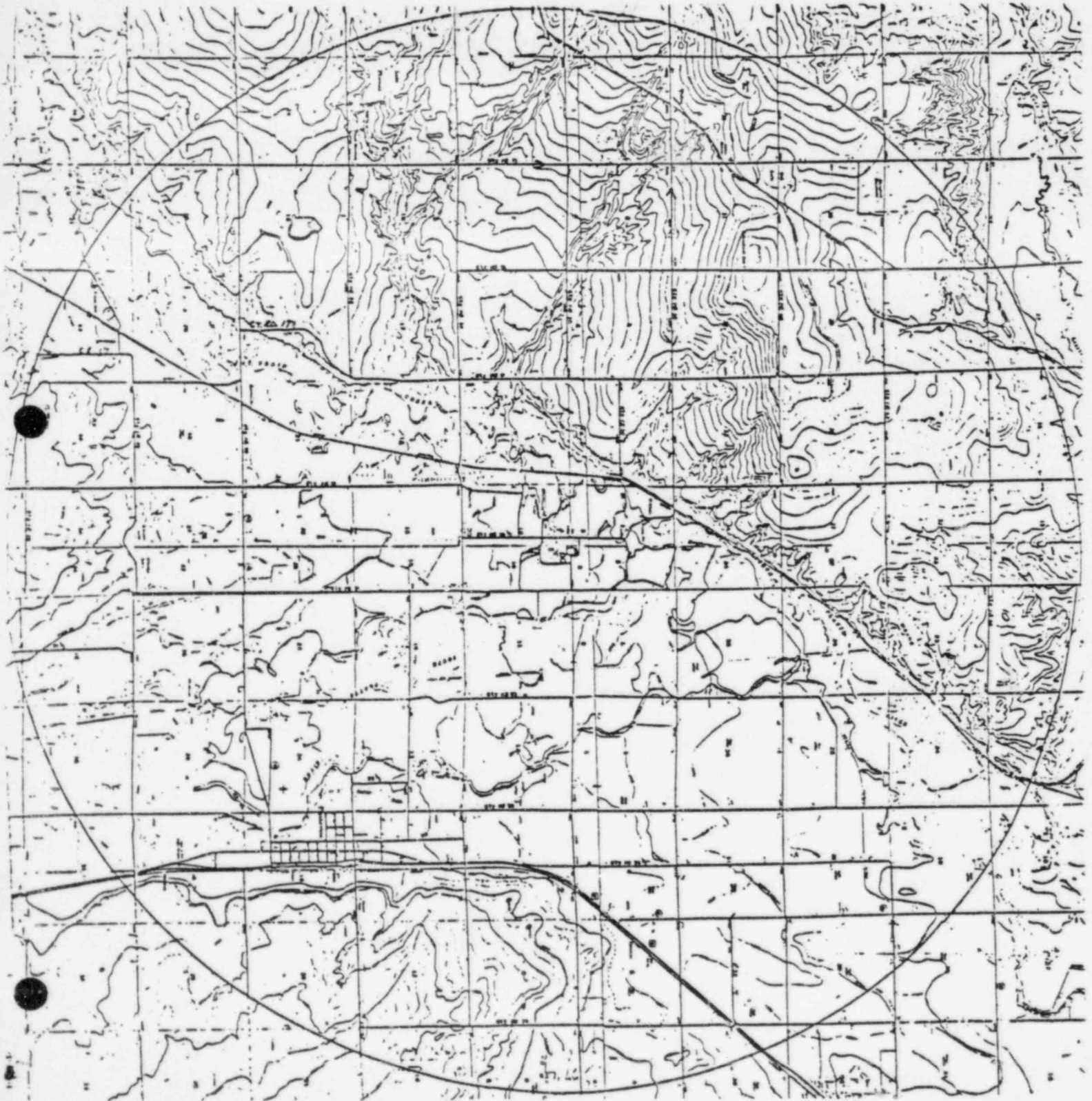




FIGURE 9

EMERGENCY PLANNING ZONE (5-MILE)



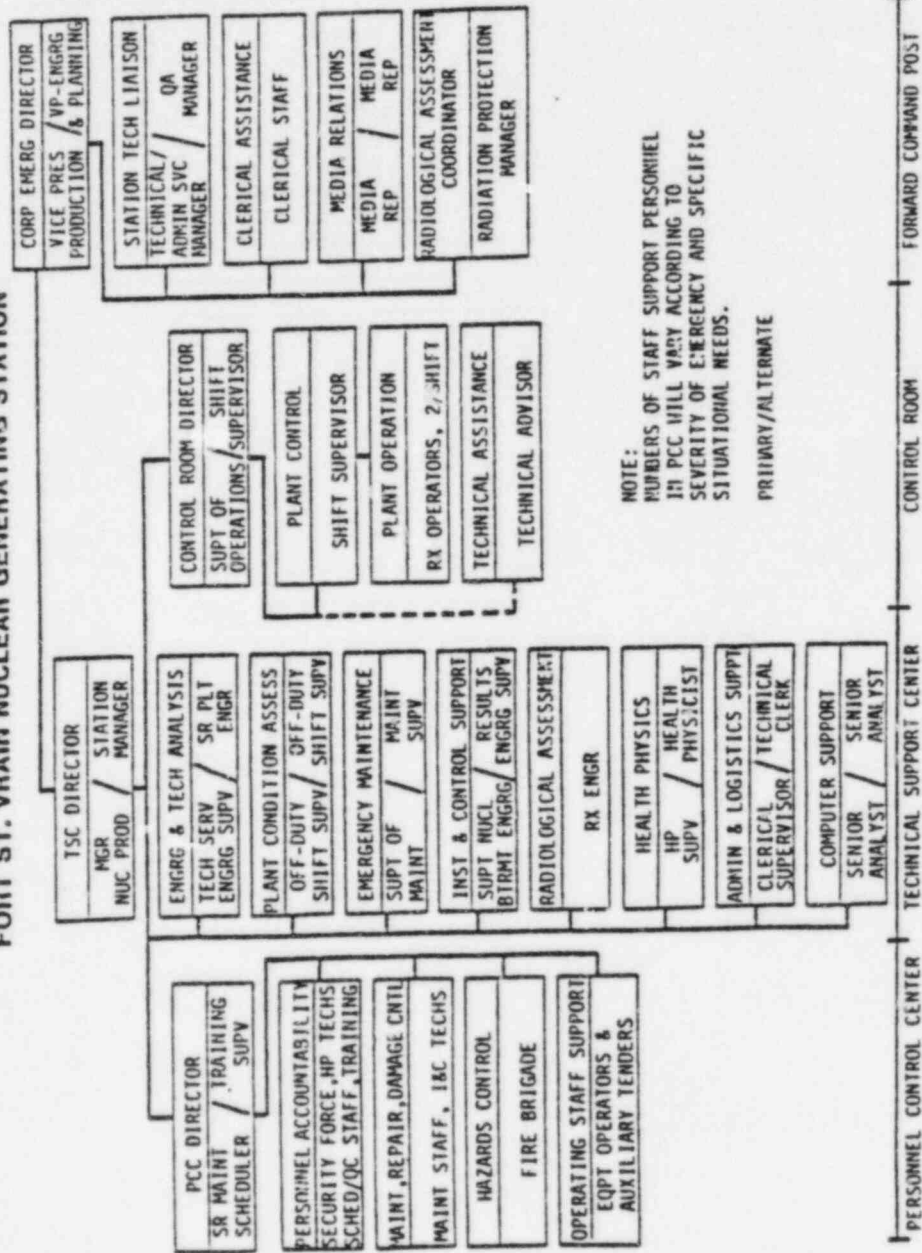


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EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY) FORT ST. VRAIN NUCLEAR GENERATING STATION





PERSONNEL ACCOUNTABILITY AND EXPOSURE CONTROLLER

1. Assume the duty of maintaining accountability and recording personnel exposure for evacuated personnel and for emergency team personnel leaving the PCC on assignments.
2. Issue film badge and dosimeter(s) (at least a high range dosimeter is required for all team members). Record initial dosimeter readings, name and SSN number on film badge.
3. When personnel leave the PCC, record the time out and indicate their destination. It is the responsibility of the Personnel Assignment Controller to notify the Personnel Accountability and Exposure Controller of team assignments and destinations. It is the individual's responsibility to report to the Personnel Accountability and Exposure Controller upon their return/arrival to the PCC.
4. Logged Exposure is Final Dosimeter Reading minus Initial Dosimeter Reading.
5. Current Exposure is Previous Exposure plus Logged Exposure.
6. Each time an individual is sent out on a team assignment, there should be a separate entry on the Personnel Accountability and Exposure Record Form. It will be necessary to review the form for any previous exposure that an individual may have received.
7. Maintain records of all dosimetry and assignments for master log.
8. Assist the Personnel Assignment Controller in maintaining the status of all personnel on-site and at the Personnel Control Center.
9. Maintain accountability and recording of personnel contamination.



Datasheet 2

Briefing Sheet for Field Monitoring Teams

(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Route to be taken _____

3) Calculated or estimated parameters

a) General Radiation Level _____ (mrem/hr)

b) Airborne Activity Level _____ (μ ci/cc)

4) Projected Time to complete survey _____ (hr)

5) Projected Exposure

3)a) x 4) x 1.25 = _____ (mrem)

6) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

_____ (hr)



| 7) Team Members: _____
| _____
| _____

| 8) Dosimetry requirements:

| Pocket Dosimeter - High Range (required)

| Other required dosimetry (circle):

| Film Badge

| Pocket Dosimeter - Low Range

| _____

| 9) Protective Equipment requirements

| (Circle required equipment):

| Full Anti-C's

| Shoe Covers and Gloves

| No Protective Clothing Required

| Full-Face Respirator

| Scott Air Pack

| Thyroid Blocking Agent (see RERP-THYROID)

| No Respiratory Protection Required



| 10) Comments:

- | a) Save used filters and cartridges for Radiochemistry analysis.
- | b) Leave the emergency vehicle running while in the field and upon return to avoid battery discharge.



| Datasheet 3

| Briefing Sheet for Inplant/Onsite Monitoring Teams

| (To be completed by senior HP representative at the TSC)

| 1) Area to be surveyed _____
| _____
| _____

| 2) Known parameters

| a) General Radiation Level _____ (mrem/hr)
| Detector RIS- _____

| b) Airborne Activity Level _____ (μ ci/cc)
| Detector _____

| c) Surface Contamination Levels* _____ DPM/100cm²

| 3) Projected Time to complete survey _____ (hr)

| 4) Projected Exposure

| 2)a) x 3) x 1.25 = _____ (mrem)

| 5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC Director's Concurrence, the guidelines of RERP-EXP, Emergency Exposure Guidelines)

| _____ (hr)

| * This parameter may be unknown prior to team deployment.



| 6) Team Members: _____
| _____
| _____

| 7) Briefing of HP Technician Team Leader By:
| _____ (PCC Director).

| 8) Dosimetry requirements:
| Pocket Dosimeter - High Range (required)
| Other dosimetry requirements (circle):
| Film Badge
| Pocket Dosimeter - Low Range
| TLD Finger Ring
| Other: _____

| 9) Protective Equipment requirements
| (Circle required equipment):

| Full Anti-C's
| Shoe Covers and Gloves
| No Protective Clothing Required

| Full-Face Respirator
| Scott Air Pack
| Thyroid Blocking Agent (see RERP-THYROID)
| No Respiratory Protection Required



| 10) Comments:

| a) Save used filters and cartridges for Radiochemistry
| analysis.

Datasheet 4Briefing Sheet for Emergency Teams

1) Area(s) to be entered _____

2) Known parameters:

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete task _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time

• Based upon 10CFR20 limits (3 rem/quarter whole body with completed NRC Form 4, 3 E-09 μ ci/cc unidentified airborne contamination) or, with the TSC Director's Concurrence (NOTE: Prior to activation of emergency organization, the Shift Supervisor may authorize exposures in excess of 10CFR20 limits), the guidelines of RERP-EXP, Emergency Exposure Guidelines

_____ (hr)

* This parameter may be unknown prior to team deployment.



| 6) Team Members: _____
| _____
| _____

| 7) Briefing of Team By: _____

| 8) Dosimetry requirements:

| Pocket Dosimeter - High Range (required)

| Other required dosimetry (circle):

| Film Badge

| Pocket Dosimeter - Low Range

| TLD Finger Ring

| _____

| 9) Protective Equipment requirements

| (Circle required equipment):

| Full Anti-C's

| Shoe Covers and Gloves

| No Protective Clothing Required

| Full-Face Respirator

| Scott Air Pack

| Thyroid Blocking Agent (see RERP-THYROID)



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| No Respiratory Protection Required

| 10) Comments:



PCC DIRECTOR'S CHECKLIST

TIME

NOTE: All information is to be logged by the Recorder.

1. Notification received to initiate Personnel Control Center (PCC) at the following location: _____

2. Notify alternate director of emergency conditions and location of PCC. During off-duty hours, advise alternate to complete call list, location of PCC and wind direction.

3. Notify Health Physics to proceed to PCC to verify habitability (normal working hours).

4. (Off duty hours) Make or request HP survey of habitability.

5. Habitability confirmed at PCC.

6. (Normal working hours) make announcement by using telephone. Dial 6-0-4 and announce "PCC Emergency Team, report to Personnel Control Center located at _____. All other personnel remain at your emergency station." (Verify announcement was communicated by checking with Tech. Support Center personnel.)



PCC DIRECTOR'S CHECKLIST

TIME

7. Assign duties to arriving PCC response team members.

Note: Do not dispatch personnel from the PCC except under the direction of the TSC Director, and only after the senior Health Physics representative at the Tech. Support Center has been consulted.

	Name	Time
a) Health Physics (Habitability)	_____	_____
b) Personnel Assignment Controller	_____	_____

Note: Advise assignment controller to assign duties to other PCC emergency team members.

8. Controlled area established. All doors locked except the one being utilized for controlled entry into the PCC.

9. Manning requirements adequately met.

10. Verify area set up to receive contaminated personnel.

11. Notify Tech. Support Center of PCC status.

12. Status of plant and emergency as well as assessment of condition received from Tech. Support Center.

13. Transport of injured/contaminated person(s) to St. Luke's Hospital required?



PCC DIRECTOR'S CHECKLIST

TIME

a) If so, indicate transported individuals.

b) TSC Director notified of need to transport injured/contaminated personnel offsite for treatment.

14. Wind direction and affected sectors identified, and need for protective clothing/equipment established by TSC.

15. Deployment of radiological monitoring teams requested by TSC.

| 16. Field Monitoring Teams

| a) Briefing Sheets completed (Datasheet 2).

| 1) EAB

| 2) EPZ

| b) Briefing of teams conducted.

| 1) EAB

| 2) EPZ

| c) Teams dispatched.

| 1) EAB

| 2) EPZ



PCC DIRECTOR'S CHECKLIST

	<u>TIME</u>
17. Inplant/Onsite Monitoring Teams	
a) Briefing sheet completed (Datasheet 3).	_____
b) Briefing of team(s) conducted.	_____
c) Team(s) dispatched.	_____
18. Emergency Teams	
a) Briefing sheet completed (Datasheet 4).	_____
b) Briefing of team(s) conducted.	_____
c) Team(s) dispatched.	_____
19. Personnel dispatched to establish road blocks to the North and South of the plant along County Road 19½. IF NOT ALREADY DONE BY COUNTY/STATE LAW ENFORCEMENT AGENCIES.	_____
20. STANDARD MESSAGE FORM Completed - persons living within property boundary notified <u>AND/OR</u>	_____
Driver(s) dispatched.	_____



PCC DIRECTOR'S CHECKLIST

TIME

| 21. Notification to Visitor's Center confirmed.
| (May be performed by Emergency Coordinator.)

| 22. Fort Lupton Fire Department notified to
| receive Visitor's Center occupants (See RERP
| PHONE LIST).

| 23. Personnel accountability verification
| completed - TSC notified.

| 24. Need for immediate evaluation of film
| badge(s) indicated by Personnel
| Accountability and Exposure Controller?

| 25. Additional Health Physics samples and surveys
| required?

| 26. Additional PCC samples and surveys being
| performed as required (every 15-20 minutes
| while airborne release persists).

| 27. Prepared to use PCC as a staging area for
| relief and support personnel.

| 28. Colorado State University Personnel arrived
| at PCC and TSC Director informed.



CHECKLIST 2

Recorder PCC Closeout Checklist

1. Collect PCC Director's Checklist. _____
2. Collect Personnel Accountability and Exposure
Controller Datasheets (Datasheet #1) _____
3. Collect any Emergency Exposure Job
Briefing Datasheets utilized (RERP-EXP,
Datasheet #1) _____
4. Attach Recorder Logs of PCC events
and activities _____
5. Forward all Documents to the
FSV Nuclear Documents Supervisor
for disposition. _____



RECORDER

1. Keep a running log of all actions taken.
 - a) These notes must be complete. The log could be used as an evaluation of the incident and could serve as a legal document.
 - b) Any corrections by person recording the events must be initialled.
2. Keep records of distribution of all contents of Emergency Kit.
3. Log records kept by all other PCC personnel into master log.
4. Assure that all data sheets and work sheets are collected and given to PCC Director when PCC operations are terminated (Checklist 2).



COMMUNICATIONS

1. Establish communications with the Technical Support Center (TSC) and verify primary and secondary communication links are operable.
 - a) If PCC is Onsite
 - Primary
 - Telephone (Open Line)
 - PSC Radio
 - Secondary
 - PSC Gai-Tronics
 - Telephone
 - b) If PCC is Offsite
 - Primary
 - Telephone
 - Secondary
 - PSC Radio
2. When instructed to do so, inform the TSC that the PCC is manned and ready and prepared to receive personnel.
3. Receive status of plant and emergency and assessment of condition and inform PCC Director who will brief the PCC personnel.
4. With the PCC Director, fill out the STANDARD MESSAGE Form (Page 3).
5. Notify all persons living within the property boundary of the plant emergency. Record the time notified and initial the CALL SHEET (Page 4). If unable to contact persons by phone, notify PCC Director. The PCC Director will dispatch personnel to inform persons - Record time Driver(s) dispatched.
6. Confirm Visitor's Center notification of emergency. Confirm that Ft. Lupton Fire Station has been notified to receive Visitor Center evacuees. Record time verified or notified.



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7. Notify St. Luke's Hospital in accordance with Medical Emergency Plan to prepare to receive injured and contaminated person(s) if required.
8. Notify a medical facility to prepare to receive injured person(s) if required.
9. If necessary to relocate PCC, call facility as directed by PCC Director. Record the time of notification (See RERP PHONE LIST for telephone numbers).
10. Maintain communications flow between PCC and the TSC.
11. Keep records of all pertinent information for master log.



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STANDARD MESSAGE

FILL IN THE BLANKS OF THE FOLLOWING STATEMENT, WHICH WILL
BE READ VERBATIM TO THE PERSONS ON THE FOLLOWING LIST.

At (TIME) _____ there was an incident at the Fort St. Vrain
Nuclear Power Generating Plant. The precautionary protective
measures we are taking for the populace in the affected area
are: (EVERYONE STAY INDOORS), (SELECTIVE EVACUATION OF CHILDREN
AND PREGNANT WOMEN), (EVACUATION OF AFFECTED AREA TO FT. LUPTON
FIRE DEPARTMENT), _____



CALL SHEET

Persons Living Within Property Boundary (Numbers correspond to Map, Pg. 5)

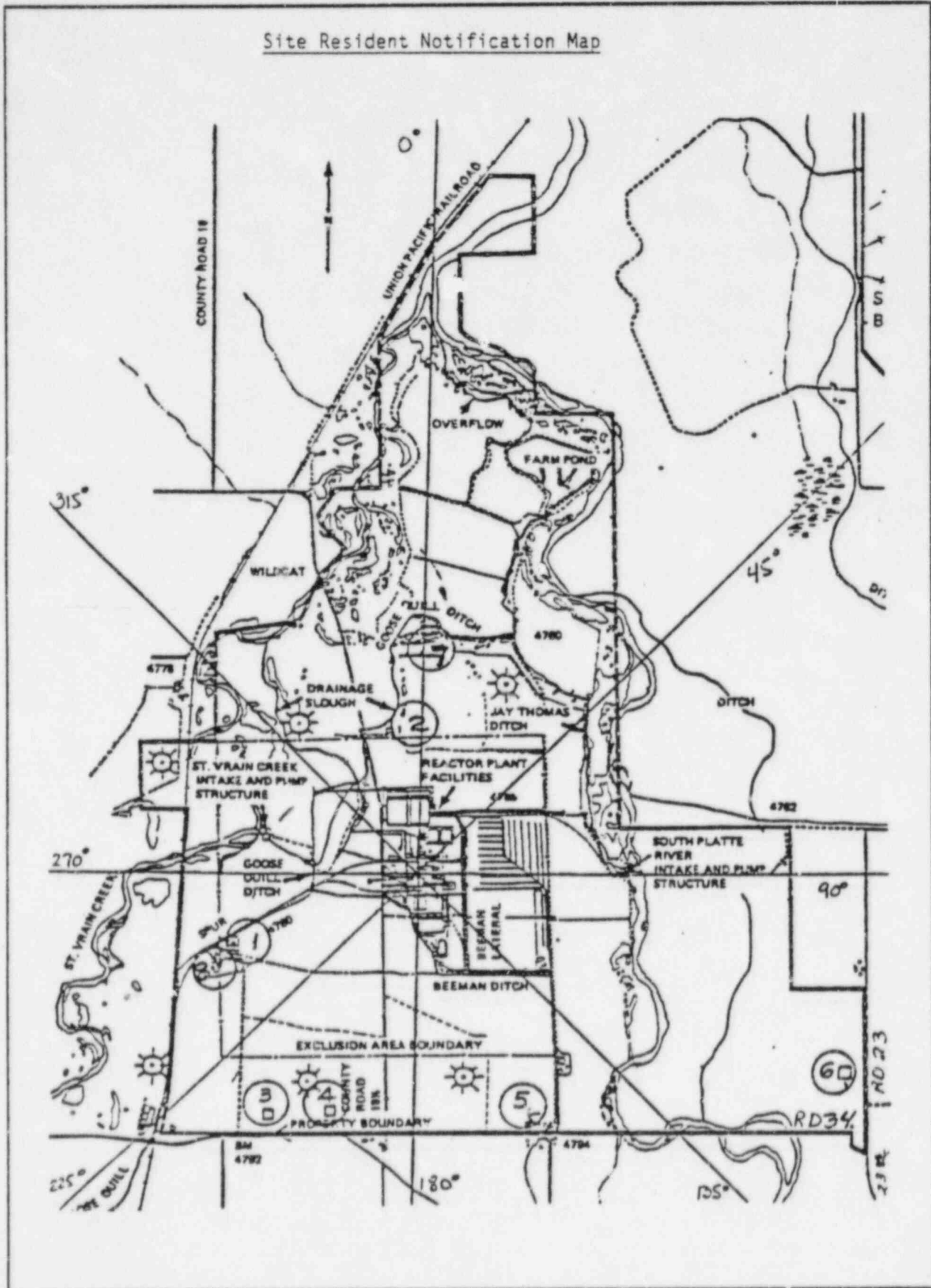
<u>Name</u>	<u>Phone No.</u>	<u>Time Notified</u>	<u>Driver Dispatched</u>
1. Ben Houston	785-2408	_____	_____
2. Randy Russell	785-6326	_____	_____
3. Bill Pitt	785-6274	_____	_____
4. Raymon Marin	785-2862	_____	_____
5. Vacant	No Phone	_____	_____
6. Scott Houston	785-2358	_____	_____
7. Keith Russell	785-2589	_____	_____
8. Dave LaChance	785-6303	_____	_____



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Site Resident Notification Map





DECONTAMINATION

1. Survey all portions of the body.
2. Remove contaminated clothing.
3. Decontaminate the contaminated portions of the body using waterless hand cleaner (or mild soap and water if waterless hand cleaner is unavailable). Put a small amount of hand cleaner on the contaminated area(s) and lightly rub it around. Using Terry Towels or a similar soft paper towel, wipe the cleaning solution off of the victim. If mild soap is used, care should be taken to minimize the amount of rinse water, and the area should be patted dry.
4. Resurvey the area and determine the effectiveness of the decontamination effort.
5. Continue this method of decontamination until the levels of contamination are reduced below allowable limits* or until the area is free of contamination.
6. If contamination cannot be removed by above methods, proceed to the following steps:
 - a) If a person is injured and requires evacuation to a medical center, outline contaminated areas on skin. Tag person with information on radiation levels in these areas. Tags are in the Emergency Kit.
 - b) Inform PCC Director of the need to transport injured person to St. Luke's Hospital so that he may coordinate move.
 - c) If a person is uninjured, follow the decontamination instructions included in the Emergency Kit under Health Physics Procedure for Personnel Decontamination (HPP-11).

Utilize HPPs-9, 10, 11, and 21 as reference, if required.

* < 10 DPM/100 cm² alpha and < 100 DPM/100 cm² beta-gamma activity removable contamination outside radiological controlled areas.



SAMPLE BODY TAG

PATIENT: _____
ADDRESS: _____
HOME PHONE: _____
INJURY DESCRIPTION: _____
FIRST AID ADMINISTERED: _____
RADIATION CATEGORY FOR INJURY: _____

FRONT BACK

WHOLE BODY EXPOSURE _____ REM

CONTAMINATION LEVELS, AREAS 1 TO 10

No. 1 _____	No. 6 _____
No. 2 _____	No. 7 _____
No. 3 _____	No. 8 _____
No. 4 _____	No. 9 _____
No. 5 _____	No. 10 _____

RIGHT LEFT

FRONT

BACK

1. Mark areas that are contaminated.
2. Number the areas.
3. Record levels of contamination in spaces given on back of card.
4. Secure tag to the individual.



FORT ST. VRAIN

SECURITY DEPARTMENT

PERSONNEL CONTROL CENTER RESPONSE GUARD

1. One guard reports to the Personnel Control Center.
2. Assist in gate control of authorized personnel and vehicles at the Personnel Control Center (Engineering/QA Complex) for equipment called to assist, if necessary.
3. Keep records of all PCC security actions taken for master log.
4. Ensure that the outer perimeter gate is secured and that non-PSC personnel are not admitted to the PCC without proper authorization.
5. Assist with radio communications and access authorizations with the LSO.

SITE RESPONSE GUARDS

1. Check all site visitors out through Search & Identification Facility.
2. Facilitate exiting of onsite personnel to PCC.
3. Assist in personnel accountability as requested.
4. Assist with personnel and vehicle ingress/egress to/from the protected and vital areas as required by the PCC Director.

NOTE: PCC Director or Emergency Coordinator coordinates access of personnel and vehicles into the protected area or vital areas with the LSO (i.e., names of drivers, vehicle types).



DRIVERS

1. Drive vehicles and assist teams. (Health Physics, Roadblock)
2. Obtain personnel dosimetry, instructions, maps, and communications equipment.



FIRST AID*

1. Establish first aid area.
2. Administer first aid to injured utilizing HP assistance as needed.
3. Inform PCC Director of the need to transport injured person(s) to a medical facility in order that he may coordinate the move.
4. Assist Decontamination personnel when tagging injured personnel to be transported off-site.
5. Keep records for master log of injured personnel, and extent of injuries.

* Utilize Fort St. Vrain Medical Emergency Plan as reference.



INSTRUMENT ACCOUNTABILITY AND REPAIR

1. Repair instruments.
2. Keep records of who has been issued instruments.
3. Assist Health Physics with surveys.
4. Keep records of all actions taken.



WORK/DATASHEET/CHECKLIST CONTROL LIST

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
None	N/A	N/A

Datasheet No.

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2	Briefing Sheet for Field Monitoring Teams	3
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1	PCC Director's Checklist	2
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Attachment No.

2	Communications	2
6	First Aid	2

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TITLE: STATE EMERGENCY OPERATIONS CENTER PROCEDURE

ISSUANCE AUTHORIZED BY	9/25/84 <i>Boise for JWG/AM</i>	
PORC REVIEW	PORC 589 OCT 3- 1984	EFFECTIVE DATE 10-10-84

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ESTABLISHING THE STATE EMERGENCY OPERATIONS CENTER

1.0 Criteria For Implementation

When the FSV Radiological Emergency Response Plan (RERP) requires augmentation of resources, generally for an ALERT or higher emergency classification, the State Emergency Operations Center (State EOC) shall be activated.

2.0 Procedure

2.1 Staffing

The Assistant VP, Governmental Affairs (VP), or his alternate, the Manager of Nuclear Engineering shall perform personnel accountability to assure that the Public Service Company manning functions at the State EOC can be met. If not during normal working hours, those personnel required to man the State EOC are notified by telephone (see RERP-HOME). It is the responsibility of the VP's Alternate, or the first person contacted by the VP, to ensure that the notifications are made. Refer to the State EOC call list for instructions, names, and phone numbers. The VP, or his alternate, shall establish communications and verify that primary and secondary communication links to the Forward Command Post (FCP) are available.

2.2 Location

The State Emergency Operations Center (State EOC) is located in DODES headquarters at Camp George West in Golden, Colorado. Provision is made for a facility to accommodate the needs of the media.

2.3 Function and Staffing

The 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).

Staffing of the State EOC consists of authorized representatives of:

- a) Office of the Governor
- b) Division of Disaster Emergency Services
- c) Colorado Department of Health

- i) Provide up-to-date site information to the Public Information Coordination Team (PICT) Chief (Governor's Office representative) and assist the PICT in the preparation of mutually acceptable news releases, fact sheets, and background material media releases.
- j) Briefs PSC Staff Personnel at the State EOC.
- k) Terminates manning by PSC personnel at the State EOC when the emergency condition is terminated.

2.4.2 Manager of Nuclear Engineering or Alternate (Nuclear Design Manager)

Provide assistance and substantiated data regarding site emergency status and conditions to local/state/federal emergency response agencies assigned to the State EOC. Receive status of plant and emergency and assessment of condition and inform VP or Alternate.

2.4.3 Radiation Specialist

Assist in providing substantiated data regarding site emergency status and conditions.

3.0 Responsibilities

3.1 Vice President of Governmental Affairs or the Manager of Nuclear Engineering

This individual is responsible to coordinate PSC emergency response activities with those of state/local/federal agencies.

3.2 Manager of Nuclear Engineering or Nuclear Design Manager

This individual is responsible for providing technical assistance as required, providing substantiated data regarding site emergency status and conditions, and informing the VP or alternate of plant and emergency status. The Nuclear Design Manager assists the Manager of Nuclear Engineering as required.

3.3 Media Relations Manager

This individual (Manager, Corporate Communications or Media Relations Director) is responsible for providing up-to-date site information to the Public Information Coordination Team (PICT) Chief (Governor's Office representative) and assisting the PICT in preparation of mutually acceptable news releases, fact sheets, background material media releases, and rumor control in accordance with the "PSC RERP Public Information Plan."

3.4 Radiation Specialist

The Radiation Specialist is responsible for providing assistance and substantiated data regarding the site's emergency status and plant conditions to state/local/federal emergency response agencies assigned to the State ECC.

4.0 References

4.1 FSV Radiological Emergency Response Plan

4.2 State of Colorado FSV Radiological Emergency Response Plan

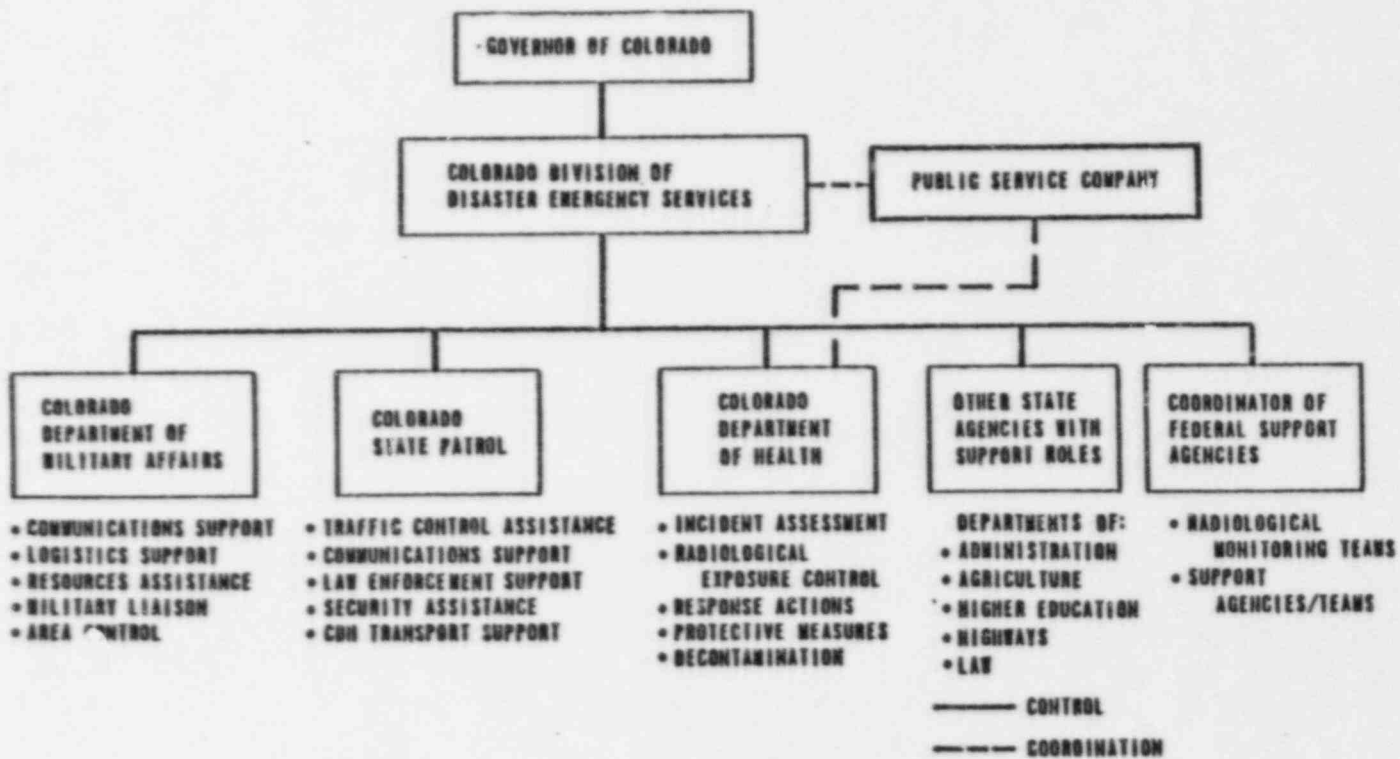
5.0 Referenced or Supporting Procedures

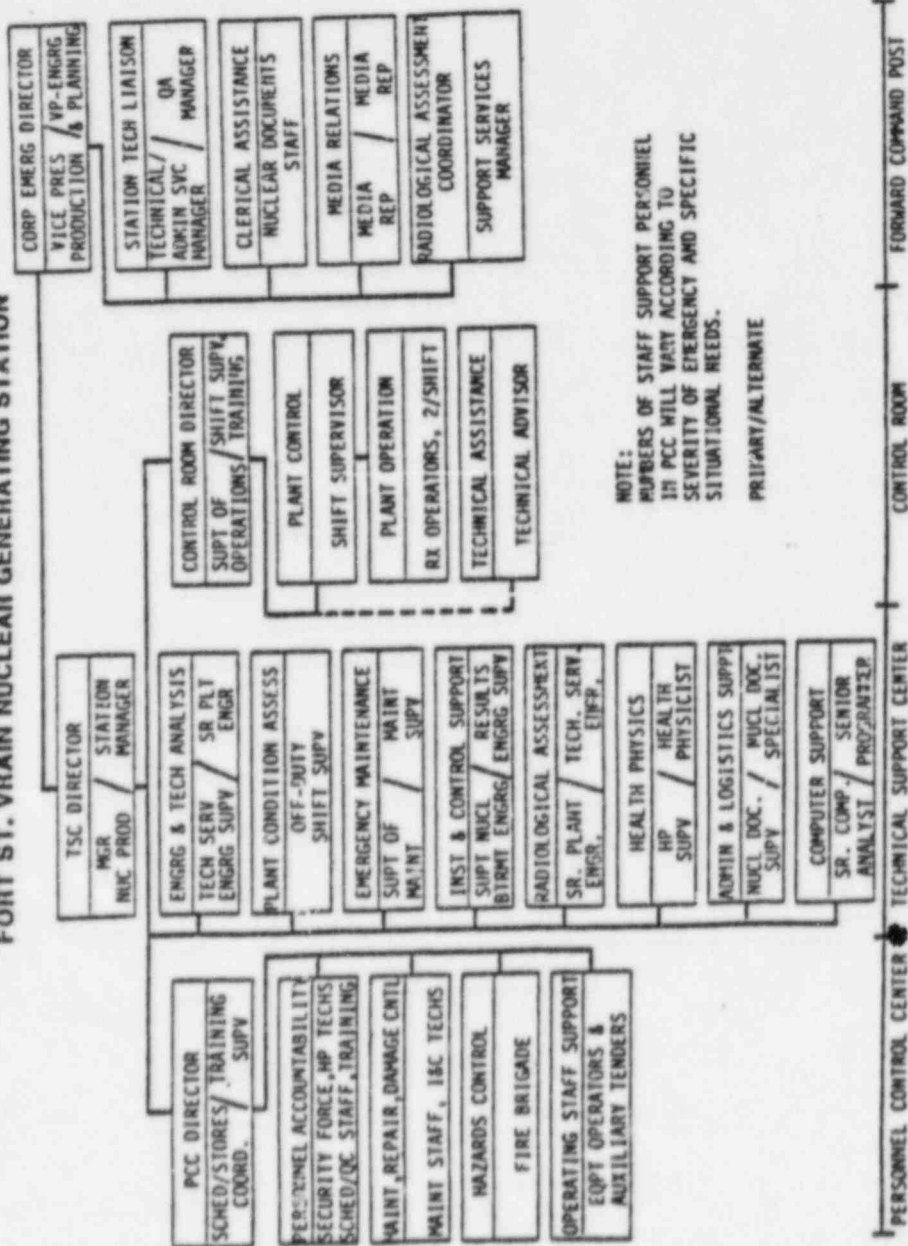
5.1 RERP-TSC, Technical Support Center Procedure

5.2 RERP-FCP, Forward Command Post Procedure

5.3 RERP-HOME, Home Packet for Off-Shift Notifications

STATE EMERGENCY OPERATIONS CENTER ORGANIZATION Fort St. Vrain Nuclear Generating Station



**EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY)
FORT ST. VRAIN NUCLEAR GENERATING STATION**


NOTE:
NUMBERS OF STAFF SUPPORT PERSONNEL
IN PCC WILL VARY ACCORDING TO
SEVERITY OF EMERGENCY AND SPECIFIC
SITUATIONAL NEEDS.
PRIMARY/ALTERNATE



ASSISTANT VP, GOVERNMENTAL AFFAIRS (OR ALTERNATE) CHECKLIST FOR STATE EOC

NOTE: All information is to be recorded by the Clerical Assistant

	<u>Time</u>
1. Personnel Accountability	_____
a. Technical Assistance	_____
b. Media Relations Manager	_____
c. Radiation Specialist	_____
d. Clerical Assistant	_____
e. Communications Support Person	_____
2. Staffing requirements met	_____
3. Communications established with FCP	_____
4. FCP informed that State EOC is manned and ready	_____
5. Status of plant emergency and assessment of conditions received from FCP	_____
6. Staff briefing conducted	_____
7. Location of PCC requested and received	_____



SUPPORT EQUIPMENT/MATERIALS

1. Communications equipment - telephones
2. Fort St. Vrain Emergency Plan
3. State Emergency Plan
4. Local government emergency plans
5. Corporate Emergency Plan
6. Maps
 - a) Fort St. Vrain
 - b) Sectors
 - c) Regional
7. Fort St. Vrain Station layout drawings
8. Office Supplies
 - a) writing tablets
 - b) pens, pencils, erasers



Work/Datasheet/Checklist Control List

Worksheet No.

Title

Number Copies

None

N/A

N/A

Datasheet No.

None

N/A

N/A

Checklist No.

1

Checklist for State EOC

2



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ASSISTANT VP, GOVERNMENTAL AFFAIRS (OR ALTERNATE) CHECKLIST FOR STATE EOC

NOTE: All information is to be recorded by the Clerical Assistant

- | | <u>Time</u> |
|---|-------------|
| 1. Personnel Accountability | _____ |
| a. Technical Assistance | _____ |
| b. Media Relations Manager | _____ |
| c. Radiation Specialist | _____ |
| d. Clerical Assistant | _____ |
| e. Communications Support Person | _____ |
| 2. Staffing requirements met | _____ |
| 3. Communications established with FCP | _____ |
| 4. FCP informed that State EOC is manned and ready | _____ |
| 5. Status of plant emergency and assessment of conditions received from FCP | _____ |
| 6. Staff briefing conducted | _____ |
| 7. Location of PCC requested and received | _____ |



ASSISTANT VP, GOVERNMENTAL AFFAIRS (OR ALTERNATE) CHECKLIST FOR STATE EOC

NOTE: All information is to be recorded by the Clerical Assistant

	<u>Time</u>
1. Personnel Accountability	_____
a. Technical Assistance	_____
b. Media Relations Manager	_____
c. Radiation Specialist	_____
d. Clerical Assistant	_____
e. Communications Support Person	_____
2. Staffing requirements met	_____
3. Communications established with FCP	_____
4. FCP informed that State EOC is manned and ready	_____
5. Status of plant emergency and assessment of conditions received from FCP	_____
6. Staff briefing conducted	_____
7. Location of PCC requested and received	_____



Work/Datasheet/Checklist Control List

Worksheet No.

None

Title

N/A

Number Copies

N/A

Datasheet No.

None

N/A

N/A

Checklist No.

1

Checklist for State EOC

2



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TITLE: INPLANT/ONSITE RADIOLOGICAL MONITORING

ISSUANCE AUTHORIZED BY	<i>7-26-84</i> <i>De Warrumbury</i>	
PORC REVIEW	EDRC 580 JUL 31 1984	EFFECTIVE DATE 8-6-84

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Datasheet 5	Floor El. 4781'0" Survey Map.....	1
Datasheet 6	Grade Floor Reactor Building El. 4791' Survey Map.....	1
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Datasheet 9	Floor El. 4829'0" Survey Map.....	1
Datasheet 10	Control Room/Health Physics Access Survey Map (EL. 4829'0")	1
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Datasheet 15	Elevation 4960'0" Survey Map.....	1
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1.0 Criteria for Implementation

This procedure provides guidelines for the activities of inplant radiological monitoring teams dispatched after the activation of the FSV Emergency Organization, as specified in RERP implementing procedure RERP-ORG.

2.0 Procedure

The purpose of this procedure is to provide generalized instructions for inplant or onsite radiological monitoring teams dispatched from the Personnel Control Center (PCC) (or, from the Health Physics Access Area) during the course of a radiological emergency at Fort St. Vrain. This procedure supplements the routine Health Physics Procedures (HPPs), and requires a working knowledge of their general content.

2.1 Monitoring Teams

Monitoring teams will be dispatched from the Personnel Control Center upon approval of the Technical Support Center (TSC) Director, and under the overall direction of the senior Health Physics representative at the TSC. The team(s) shall be comprised of, as a minimum, two (2) individuals. Under most circumstances, this would be a Health Physics Technician, who leads the team, and an assistant. Two team members are required to assure safety of the team members.

2.2 Equipment

Utilize the existing inplant instrumentation to the maximum extent possible to assess the anticipated general radiation levels and airborne contamination hazards in the area(s) to be surveyed. Utilize this data with an appropriate level of conservatism to determine the protective equipment needed, as well as to establish stay time requirements (see section 2.3). The data shall also be used by the team members to determine the equipment which shall be used for the survey.

Anticipated equipment requirements are summarized below:

- Ion chamber instrument with adequate range, as determined above

PIC-6A, 1 mR/hr - 1000 R/hr
RO2, 0.2 mR/hr - 200 mR/hr
RO5, 0.1 mR/hr - 1000 R/hr
RO7, 10 R/hr - 10⁵ R/hr

- Portable Air Sampler with sample cartridges.



- Bags for transporting samples to RC Lab or HP Office for analysis.
- Wipes and envelopes.
- Protective Equipment (as determined by senior Health Physics representative at the TSC).
- Personnel Dosimetry (as determined by senior Health Physics representative at the TSC).
- Flashlights, if required.
- Portable Radio, where practical.
- Appropriate radiation survey forms for the area to be surveyed (see HPP-1).
- Pencil or Pen.
- Stop watch, or equivalent, for timing sample collection times.
- Liquid sample containers, where called for.
- Extension cord, where need is determined.
- Other instrumentation as may be required per Health Physics Procedures.

2.2.1 Equipment shall be checked or calibrated as required, as described in Health Physics Procedures.

2.3 Protective Equipment/Dosimetry

The proper selection of dosimetry and protective equipment is the re-sponsibility of the senior Health Physics representative at the TSC (Datasheet 1), however, each member of an emergency response team should be equipped with at least a high range dosimeter. He shall utilize the available indications from implant instrumentation to assess the potential exposure and environmental hazards.

External exposure guidelines shall be utilized in accordance with RERP-EXP, "Emergency Exposure Guidelines." Inhalation protection shall be provided in accordance with the guidelines specified in RERP-THYROID, "Thyroid Blocking Agent Administration."



The senior Health Physics representative at the TSC shall also provide stay time requirements for the emergency team members, of the range of minutes to hours (provide a 25% margin of conservatism) and inform the PCC Director of the maximum radiation level anticipated and projected team exposure for use in the briefing of the survey team.

2.4 Area Approach

The Health Physics Technician leading a team shall approach any area to be surveyed with an appropriate radiation detection instrument operating. If radiation levels are significantly in excess of the expected radiation levels (+25%, or more), the Technician shall withdraw the team from the area and contact the senior Health Physics representative at the TSC for further instructions and/or stay time calculation.

2.5 Exposure Control

All inplant/onsite monitoring teams deployed shall be provided pocket dosimeters of an adequate range for the anticipated exposure. (High Range dosimetry is required, as a minimum.) The Health Physics Technician shall assure that team members check the dosimeter reading at an appropriate interval for the anticipated radiation exposure rates, and report any radiation exposures in excess of projected team exposures to the senior Health Physics representative in the TSC.

2.6 Data Collection

Data to be collected shall be specified by the senior Health Physics representative at the TSC. Generally, this shall consist of:

- General Area Radiation Levels in area where emergency maintenance is required;
- General Airborne Concentration Levels in areas where emergency maintenance is required;
- Surface Contamination Levels;
- Contact exposure rate with critical equipment; and
- Collection of any liquid effluent samples for radioisotopic analysis.

Data survey maps are provided on Datasheets 2-23. Additional copies, beyond that stored with the procedure, are available at the Health Physics Access Area on level 7 of the Turbine Building.



3.0 Responsibilities

3.1 Senior Health Physics Representative (TSC)

The senior Health Physics representative at the TSC maintains overall responsibility for the direction and control of any dispatched monitoring teams. Data shall be collected under his guidance, and transmitted to the TSC, via voice links, for his analysis. The senior Health Physics representative is responsible for evaluating the existing exposure rate/airborne concentration data prior to team deployment, and to determine maximum stay times for the job. He is also responsible for transmitting pertinent radiological information to the Radiological Assessment Coordinator at the Forward Command Post.

3.2 Team Leader (Health Physics Technician)

The HP Technician acting as team leader shall assure that all data is collected in the safest manner feasible for the situation, and shall assure that team members are made aware of radiological hazards and follow good Health Physics practices. The Team Leader shall also be responsible to assure that team radiation exposures are in accordance with the projected team exposure and as low as reasonably achievable (ALARA), and that stay times are adhered to.

3.3 Personnel Control Center Director

The PCC Director must assure the control and coordination of the dispatch of all emergency teams, including monitoring teams, through the senior Health Physics representative at the TSC. (See RERP-PCC.) He is responsible for briefing the team members prior to departure from the PCC, using information supplied by the senior Health Physics representative at the TSC.

3.4 TSC Director

The TSC Director has ultimate responsibility over site activities, and shall have the authority to determine when monitoring teams shall be dispatched, and when 10CFR20 radiation exposure limits may be exceeded (see RERP-EXP).



3.5 Radiological Assessment Coordinator (FCP)

The Radiological Assessment Coordinator is responsible for the final determination as to the need for administration of Thyroid Blocking Agent (see RERP-THYROID). The Radiological Assessment Coordinator shall also confer with the senior Health Physics representative at the TSC, with regard to the importance or need for collecting various data points, personnel exposures, plant conditions, ALARA considerations, recovery plans, and other radiological matters as appropriate.

4.0 References

4.1 FSV Radiological Emergency Response Plan

4.2 Title 10 Code of Federal Regulations, Part 20

5.0 Referenced or Supporting Procedures

5.1 RERP-TSC, Technical Support Center Procedure

5.2 RERP-PCC, Personnel Control Center Procedure

5.3 RERP-EXP, Emergency Exposure Guidelines

5.4 RERP-THYROID, Thyroid Blocking Agent Administration

5.5 RERP-ORG, FSV Emergency Organization and Responsibilities

5.6 HPP-1, Intervals of Surveys and Use of Survey Maps

5.7 HPP-8, Radiation Surveys

5.8 HPP-9, Establishing and Posting Controlled Areas

5.9 HPP-12, Portable Air Sample Collection and Analysis

5.10 HPP-16, Selection and Use of Respiratory Protection Equipment

5.11 HPP-20, Operation and Calibration of Radiation Detection Instruments

5.12 HPP-21, Surface Radioactive Contamination Surveys

5.13 HPP-27, Personnel Dosimetry

5.14 HPP-45, Air Activity Analysis Using the RM 14/15 with HP 210 Probe

5.15 HPP-53, RT 7325-1 and RT 73437 Filter and Cartridge Removal (Emergency Accident Conditions)



- 5.16 HPP-56, Reactor Building Exhaust Stack Discharge Activity Calculation
- 5.17 HPP-57, Radiation and Airborne Radioactivity Monitoring During Abnormal Releases in the Plant
- 5.18 HPP-66, Operation of Portable Survey Instrumentation
- 5.19 HPP-67, Calibration and Operation Procedure for the Eberline SAM-2 Stabilized Assay Meter



Datasheet 1

Inplant/Onsite Monitoring Team Deployment
(To be completed by senior HP representative at the TSC)

1) Area to be surveyed _____

2) Known parameters

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ ($\mu\text{Ci/cc}$)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete survey _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time (based upon 10CFR20 limits or, with the TSC
Director's Concurrence, the guidelines of RERP-EXP, Emergency
Exposure Guidelines)

_____ (hr)

* This parameter may be unknown prior to team deployment.



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY

Datasheet 1

Issue 4

Page 2 of 3

6) Team Members: _____

7) Briefing of HP Technician Team Leader By:

| _____ (PCC Director).

8) Dosimetry requirements:

Pocket Dosimeter - High Range (required)

Other dosimetry requirements (circle):

Film Badge

Pocket Dosimeter - Low Range

TLD Finger Ring

| Other: _____

9) Protective Equipment requirements

(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)

No Respiratory Protection Required



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-SURVEY
Datasheet 1
Issue 4
Page 3 of 3

10) Comments:

- | a) Save used filters and cartridges for Radiochemistry
| analysis.



FORM (A) 372-22-3643

Date _____ Time _____
 Survey By _____

Instrument Number _____
 Serial Number _____

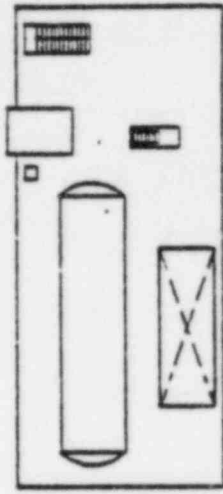
SURVEY RESULTS

No.	Filter alpha DPM/100CM ²	Filter beta DPM/100CM ²	As Sample surface	Other

COMMENTS



EL 4921'-6"



EL 4904'-6"
 TURBINE BUILDING

Type Legend
<input type="checkbox"/> Wall
<input type="checkbox"/> Equipment
<input type="checkbox"/> Floor

POWER LEVEL _____ B

ALL RADIATION READINGS IN MIN/hr.



Work/Datasheet/Checklist Control List

Worksheet No.

None

Title

N/A

Number Copies

N/A

Datasheet No.

1

Inplant/Onsite Monitoring Team
Deployment

10

2-23

Survey Maps

2 each

Checklist No.

None

N/A

N/A



FORMS USE REPORTING SHEET

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FORMS USE REPORTING SHEET(Continued)

COMMENTS

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TITLE: THYROID BLOCKING AGENT ADMINISTRATION

ISSUANCE AUTHORIZED BY	9/25/84 <i>J. J. Betst for JW GATH</i>	
PORC REVIEW	PORC 589 OCT 3- 1984	EFFECTIVE DATE 10-10-84

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2.0	<u>Procedure</u>	2
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General

The issuance of Potassium Iodide (KI) thyroid blocking agent will be performed by authorized Health Physics personnel under the direction of the Radiological Assessment Coordinator, or his designee, with consent of the Public Service Company Medical Department, where possible. Maximum benefit is realized if the initial KI administration is performed 1 day to 1/2 hour prior to exposure to radioiodine atmosphere. Total radioiodine uptake is halved if KI is administered within three to four hours after exposure. Little benefit is gained with KI administration 10 to 12 hours after exposure.

1.0 Criteria for Administration

Potassium Iodide (KI) may be administered to emergency workers at Fort St. Vrain for the following situations:

- 1.1 Whenever a worker at Fort St. Vrain is believed to have received exposure to a radioiodine atmosphere to the extent that an integrated thyroid dose of 25 rem or more is likely to occur. Little benefit will be realized 12 hours or more after exposure.
- 1.2 Whenever an emergency worker at Fort St. Vrain is anticipated to receive a dose of 25 rem or more to the thyroid as a result of exposure to a radioiodine atmosphere.

2.0 Procedure

- 2.1 Thyroid blocking agent is to be issued only by Health Physics personnel under the direction of the Radiological Assessment Coordinator at the Forward Command Post or his designee.
- 2.2 Dose criteria above are to be utilized and information regarding emergency worker projected thyroid dose communicated to the Radiological Assessment Coordinator. In order to project a worker's dose, utilize the best available information regarding radioiodine concentration in the area the worker will be. Go to Figure 1 and determine a Thyroid Inhalation Dose Rate for the respiratory protection utilized, and multiply the projected dose rate by a conservative estimate of the stay time (hours) required for the worker to perform the task assigned. It is the Personnel Control Center Director's responsibility to notify the most senior Health Physics representative at the Technical Support Center of the need to perform this evaluation.

- 2.3 If the dose projection estimated in Step 2.2 of this procedure approaches or exceeds 25 rem, the Radiological Assessment Coordinator is to be notified and consulted.
- 2.4 Records for Thyroid Blocking Agent issue are to be maintained on the attached Thyroid Blocking Agent Administration Record Sheet, and the sheets transmitted to the Public Service Company Medical Department after recovery phase (as declared by the Corporate Emergency Director) has been initiated. This is the responsibility of the Fort St. Vrain Radiological Assessment Coordinator, or his designee.
- 2.5 Dosage is one tablet, once a day, for ten days. Directions to emergency workers receiving KI are shown in Figure 2. This instruction sheet is stored with the stockpiled KI tablets maintained in the Respiratory Issue Locker (Turbine Deck), Personnel Control Center, and Technical Support Center Emergency Kits, and should be distributed to personnel receiving KI tablets.

3.0 Responsibilities

3.1 Radiological Assessment Coordinator

- 3.1.1 Direct the distribution of KI.
- 3.1.2 Consult with Public Service Company Medical Department regarding KI issue.
- 3.1.3 Assure the forwarding of all KI distribution records to the Public Service Company Medical Department.
- 3.1.4 Maintenance of fresh stockpile of KI in Respiratory Issue Lockers on Turbine Deck and in main Personnel Control Center Emergency Kits.

3.2 Personnel Control Center Director

- 3.2.1 Coordinate the access of emergency workers to areas affected by airborne contamination with the most senior Health Physics representative at the Technical Support Center.
- 3.2.2 Provide KI tablets to designated emergency team members, only as instructed by the Technical Support Center Health Physics representative.



3.3 Health Physics (Technical Support Center)

3.3.1 Confer with the Radiological Assessment Coordinator at the Forward Command Post regarding projected (or estimated) thyroid inhalation doses.

3.3.2 Perform calculations to project (or estimate) emergency worker thyroid doses.

3.3.3 Direct site Health Physics technicians or the Personnel Control Center Director in the distribution of KI tablets to specified workers.

4.0 References

4.1 NCRP 55, Protection of the Thyroid Gland in the Event of Releases of Radioiodine, National Council on Radiation Protection and Measurements, 1977.

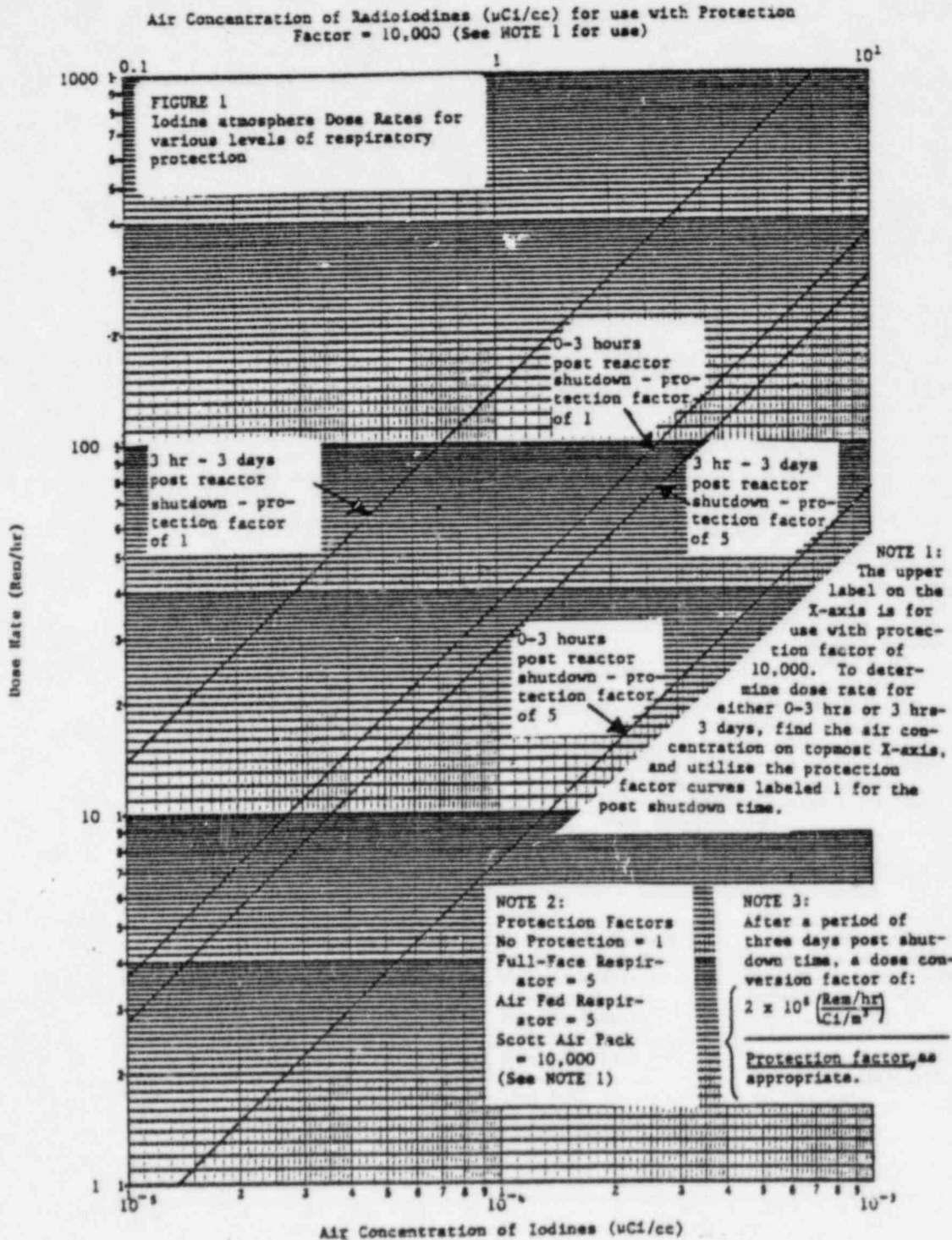
4.2 Patient Package Insert for THYROBLOCKTM, Wallace Laboratories, October 1979.

5.0 Referenced or Supporting Procedures

5.1 RERP-EXP, Emergency Exposure Guidelines

5.2 RERP-ORG, FSV Emergency Organization and Responsibilities

FIGURE 1





INSTRUCTIONS

To be used only in Radiation Emergency.

DIRECTIONS FOR USE

Use only as directed by Fort St. Vrain management in the event of a radiation emergency.

DOSE

Adults and children over one year of age. One tablet potassium iodide a day for up to ten days. You will be informed by Health Physics as to how long to take tablets depending upon the amount of radiation released.

Do not take more than one tablet a day, as it will not increase the beneficial effect and may increase danger of side effects.

HOW POTASSIUM IODIDE WORKS

Certain forms of iodine help your thyroid gland work properly. Most people get the iodine they need from foods, such as iodized salt or fish. The thyroid can "store" or hold only a certain amount of iodine.

In radiation emergency, radioactive iodine may be released into the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably not show itself for several years. Children are most likely to have thyroid damage.

If you take potassium iodide, it will fill-up your thyroid gland. This reduces the chance that harmful radioactive iodine will enter the thyroid gland.

WHO SHOULD NOT TAKE POTASSIUM IODINE

The only people who should not take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or antithyroid drug). Pregnant and nursing women, babies, and children may also take this drug.

HOW AND WHEN TO TAKE POTASSIUM IODIDE

Potassium Iodide should be taken as soon as possible after Public Service Company officials tell you. You should take one dose every 24 hours. Taking more than one tablet per day will not help you, because the thyroid can "hold" only limited amounts of iodine. Larger doses will increase the risk of side effects. You will be told how long to take the drug, which may vary from one to ten days.

SIDE EFFECTS

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful not to take more than the recommended dose, or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will be taking the drug.

Possible side effects include skin rashes, swelling of the salivary glands, and "iodism" (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhea).

WHAT TO DO IF SIDE EFFECTS OCCUR

If the side effects are severe, or if you have an allergic reaction, stop taking potassium iodide and contact the Public Service Company Medical Department or a physician for further instructions.



Work/Datasheet/Checklist Control List

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
1	Thyroid Blocking Agent Administration Record Sheet	5

<u>Datasheet No.</u>		
None	N/A	N/A

<u>Checklist No.</u>		
None	N/A	N/A



FORMS USE REPORTING SHEET

Nuclear Documents Specialist:

This sheet is being transmitted to report use of forms from a controlled copy of the Radiological Emergency Response Plan Implementing Procedures, BOOK NO. _____, located at _____ . The following forms have been utilized from this copy:

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<u>Checklist No.</u>		
None	N/A	N/A



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FORMS USE REPORTING SHEET(Continued)

COMMENTS

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Date: _____

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RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
RERP-TSC	Technical Support Center Procedure	13	08-06-84
RERP CR-UE	DELETED		04-25-84
RERP-VC	Visitors Center Procedure	3	01-03-84
RERP-PHONE LISTS		24	08-06-84



TITLE: TECHNICAL SUPPORT CENTER PROCEDURE

ISSUANCE AUTHORIZED BY	<i>Don Warembury by Milt McBride</i>	
PORC REVIEW	PORC 580 AUG 2 - 1984	EFFECTIVE DATE 8-6-84

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Attachment 1	Support Equipment/Material.....	1
Datasheet 1	Assessment Fact Sheet - TSC Director.....	1
Datasheet 2	Assessment of Plant/Core Status	1
Checklist 1	TSC Director Check List	1
Work/Datasheet/Checklist	Control List	1



Forms Use Reporting Sheet*.....2

* ANYTIME A WORKSHEET, DATASHEET, OR CHECKLIST HAS BEEN WRITTEN ON, COMPLETE THE REPORTING SHEET ATTACHED IN THE TABBED WORKSHEET SECTION AND FORWARD IT TO THE NUCLEAR DOCUMENTS SPECIALIST, FORT ST. VRAIN. DO NOT WRITE ON ANY WORKSHEETS, DATASHEETS, CHECKLISTS, OR REPORTING SHEETS IN THE PROCEDURE ITSELF. ALL WORKSHEETS/DATASHEETS/CHECKLISTS ARE TO BE TAKEN FROM THE TABBED SECTION FOLLOWING EACH PROCEDURE.



1.0 Criteria for Implementation

When the FSV Radiological Emergency Response Plan (RERP) requires augmentation of resources, generally for an ALERT or higher emergency classification, the Technical Support Center (TSC) Director shall activate the TSC.

2.0 Procedure

The TSC serves as the center for site emergency command activities and provides a central location for technical appraisal of plant conditions. The TSC operates under the direction of the Technical Support Center Director, and also serves as the focal point for onsite-offsite communications.

2.1 Personnel Activation

During non-working hours, those PSC personnel required to man the TSC are notified by telephone (see RERP-HOME). It is the responsibility of the TSC Alternate Director, or the first individual contacted by the center director, to insure those notifications are made. Refer to the RERP PHONE LIST for instructions and personnel names and numbers.

2.2 Communications

Establish communication with the Control Room and verify primary and secondary communication links are available.

Await communications to be established by the Personnel Control Center (PCC) and by the Forward Command Post (FCP).

2.3 Initial Responses

2.3.1 TSC Director (Checklist 1)

The TSC Director assumes overall responsibility for the coordination and direction of onsite emergency response centers.

Based upon the preliminary assessments provided by the TSC Staff, the TSC Director completes the "Assessment Fact Sheet" (Datasheet 1) in preparation for transmission of information to the Forward Command Post (FCP).

In addition, the TSC Director shall brief his staff to inform them of general plant conditions and inform personnel of any particular assignments of responsibility.



2.3.2 Off-Duty Shift Supervisor

On an as-required basis, the off-duty Shift Supervisor will make a preliminary assessment of the plant status, focusing on significant plant problems and trends.

If requested, he will also make a preliminary assessment of the sequence of events that led to the emergency, and report his findings to the TSC Director.

2.3.3 Technical Services Engineering Supervisor/Senior Plant Engineer

The Technical Services Engineering Supervisor/Senior Plant Engineer performs a preliminary assessment of the plant/core status by completing "Assessment of Plant/Core Status" (Datasheet 2).

He also verifies the data logger information and receives a briefing on the assessment form that the Technical Advisor in the Control Room has completed.

With the concurrence of the CR Director, he obtains the "Alarm Typer" printout, if required. An alternative to the Alarm Typer printout is to utilize the "EVENTS LOG" on the 2 on 1 console.

2.3.4 Superintendent of Maintenance/Maintenance Supervisor - Electrical

The Superintendent of Maintenance/Maintenance Supervisor - Electrical advises for the necessity of performing repair work on damaged mechanical and electrical equipment, estimates time and manpower requirements for emergency repairs, and develops emergency repair work procedures as required.

2.3.5 Superintendent of Nuclear Betterment Engineering/Results Engineering Supervisor

The Superintendent of Nuclear Betterment Engineering/Results Engineering Supervisor advises for the necessity for repair/installation/modification of instrument and control equipment.



2.3.6 TSC Radiological Assessment (Senior Plant Engineer/Technical Services Engineer)

The Radiological Assessment Individual performs offsite dose projection calculations on an as needed basis (approximately every 30 minutes) and provides the results of these calculations to the TSC Director and the Radiological Assessment Coordinator (at the FCP).

He will also confer with the Radiological Assessment Coordinator with regard to plant status and protective action recommendations.

In addition, he will relay offsite dose projections to the senior Health Physics representative at the TSC, as requested, for use in directing field monitoring teams.

2.3.7 Health Physics Supervisor/Health Physicist (Senior Health Physics representative)

- a) Directs Health Physics/Radiochemistry to remove charcoal cartridges and analyze for the I-131 release, if necessary.
- b) Obtains airborne contamination and radiation surveys in the Control Room, and informs the TSC Director of the results.
- c) Ensures personnel dosimetry is distributed and emergency worker exposure criteria is followed (see RERP-EXP).
- d) Evaluates doses of personnel from inhalation of radioiodines (projected or received) and confers with the Radiological Assessment Coordinator with regard to the need for administration of Thyroid Blocking Agent (see RERP-THYROID). Directs any such administration authorization through the PCC Director and station Health Physics staff.



2.3.8 Nuclear Documents Supervisor/Nuclear Documents Specialist

The Nuclear Documents Supervisor/Nuclear Documents Specialist provides technical documents, as required, assures that TSC personnel have obtained necessary documents and supplies for performance of their emergency assignments, and assists the TSC Director in transmission of information to other emergency response centers.

2.3.9 Senior Computer Analyst/Senior Programmer

a) The Senior Computer Analyst/Senior Programmer will assist in software/hardware problems as directed by the TSC Director, and arrange for offsite advice/assistance as directed by the TSC Director in the area of software/hardware problems.

b) The Senior Computer Analyst/Senior Programmer will also provide assistance on an as-needed, as available basis to the TSC Radiological Assessment individual in the tasks of data collection and/or data entry to the offsite dose calculation programs (RERP-DOSE).

2.4 Follow-up Responses

2.4.1 TSC Director

As soon as the Personnel Control Center has been activated and communications established, the TSC Director will:

- a) Inform the PCC Director of the preliminary assessment of the emergency.
- b) Direct the PCC Director to organize repair and damage control teams, radiological survey teams, or search and rescue teams (as required).
- c) Direct the PCC Director to assemble additional Operations personnel to assist in operating plan equipment (as required).
- d) If plant conditions warrant, direct PCC Director to evacuate non-essential personnel from the plant.



As soon as the Forward Command Post (FCP) is activated and communications established, the TSC Director will:

- e) Inform the FCP Corporate Emergency Director of the status of the emergency using the "Assessment Fact Sheets" completed by the TSC Staff as required. The TSC Director is provided Datasheet 1 to summarize the data and calculations performed at the TSC.
- f) Maintain a continuous open line to the FCP to provide prompt updating of the status of the emergency.

2.4.2 TSC Radiological Assessment Individual (Senior Plant Engineer/Technical Services Engineer)

- a) Continue making offsite dose projections at approximately thirty (30) minute intervals (see RERP-DOSE) until the release has been terminated and the situation mitigated.
- b) Confer with the Radiological Assessment Coordinator and advise him of changes in plant status, release characteristics (rate, form, point, etc.), and meteorological conditions.
- c) Advise the Senior Health Physics representative of dose projections, as requested, for use in emergency team assignments and dose projections.

2.4.3 Health Physics Supervisor/Health Physicist (senior Health Physics representative)

- a) Ensure that monitoring teams obtain in-plant radiological surveys.
- b) Depending upon the duration of the event and the exposure rate, the senior Health Physics representative will make recommendations to the TSC Director for personnel relief or stay times (see RERP-EXP).
- c) Maintain continued contact with the Radiological Assessment Coordinator and Personnel Control Center Director regarding any needs for Thyroid Blocking (see RERP-THYROID).



- d) Continue to evaluate the incoming field monitoring data (see RERP-FIELD) and prepare data sheets allowing comparison of actual data with dose projections being made by the TSC Radiological Assessment individual. Adequate supply of data sheets are provided in RERP-FIELD for this task.

In addition, the senior Health Physics representative will maintain ongoing communications with, and control over, the field monitoring teams dispatched from the PCC. He will utilize dose projection data as a basis for determining stay times and thyroid blocking need.

2.4.4 TSC Staff

- a) Continue to collect data for evaluation of the emergency.
- b) Assess trends and operating status for the purpose of providing advice to Operations personnel acting through the Control Room Director.
- c) Analyze the effects of equipment failures, temporary modifications and changes in operating status and procedures.
- d) Assess the accident potential, and the effect of such potential on the health and safety of the public.
- e) Request other technical assistance (either in-house or contract) on an as-needed basis to cope with various situations that develop or may develop.
- f) Provide periodic updates to the TSC Director who will relay this information to the FCP. Updates will be of sufficient detail and frequency so that the FCP can effectively communicate and coordinate with the state/local/federal emergency response forces.

2.5 Recovery

The decision to recommend de-escalation or initiation of post-emergency recovery efforts rests with the TSC Director.



The TSC Director will base his decision on the following guidelines:

- Radiation levels are stable or decreasing with time.
- Releases of radioactive materials to the environment have ceased or are controlled within permissible license limits.
- Fire, flooding, or similar emergency conditions no longer constitute a hazard to the plant or station personnel.
- Measures have been successfully instituted to correct or compensate for malfunctioning equipment.
- The recommendation of the CR Director.

When the TSC Director deems it advisable, he will recommend de-escalation or termination of the emergency to the Corporate Emergency Director at the FCP. The authority and responsibility to declare de-escalation to a lower emergency class or termination of the emergency response activities and conversion to a recovery phase rests solely with the Corporate Emergency Director at the FCP (see RERP-FCP).

3.0 Responsibilities

Site emergency command activities are centered in the Technical Support Center, located immediately adjacent to the Reactor Building and within short walking distance of the Control Room. The TSC also serves as the primary point for onsite-offsite communications.

3.1 TSC Director

The TSC Director is in command of onsite emergency operations. The TSC Director is authorized to initiate emergency actions, including declaration of a particular emergency class and providing protective action recommendations to offsite authorities.

The TSC Director's responsibilities are:

- Assumes overall responsibility for the coordination and direction of onsite emergency response centers;
- Transmits preliminary assessment information to the FCP;
- Directs the Personnel Control Center (PCC) actions;



- Confers, on an on-going basis, with the Corporate Emergency Director (CED) after activation of the FCP; and
- Notifies the CED of the need for additional support or assistance.

3.2 Engineering and Technical Analysis

Engineering and Technical Analysis personnel are responsible for direction of core physics analysis, electrical and mechanical engineering activities, licensing related activities, procedures development, and system analysis as required.

3.3 Plant Condition Assessment

Plant Condition Assessment personnel are responsible for the assessment of plant status, focusing on significant plant problems and trends, and for providing recommended corrective actions to the TSC Director.

3.4 Emergency Maintenance

Emergency Maintenance personnel are responsible to recommend repair/damage control and corrective actions for plant mechanical and electrical systems. This individual estimates time and manpower requirements for emergency repairs, and develops emergency repair work procedures, as required.

3.5 Instrumentation and Control Support

The Instrumentation and Control (I&C) individual determines alternative I&C capabilities or configurations, and advises for the repair/installation/modification of I&C equipment.



3.6 TSC Radiological Assessment

The TSC Radiological Assessment individual is responsible to assess offsite radiological doses and consequences, determine affected offsite areas, and confer with both the TSC Director and the Radiological Assessment Coordinator (FCP) regarding calculation results and recommended offsite protective actions. In addition, the TSC Radiological Assessment individual should confer with the Health Physics representative at the TSC regarding offsite dose projections in areas where field monitoring teams are to be deployed. The TSC Radiological Assessment individual is responsible for verification of any calculation prior to transmission to the Radiological Assessment Coordinator at the FCP.

3.7 Health Physics

The senior Health Physics representative at the TSC is responsible for the assessment of onsite radiological doses, direction of all Health Physics/Radiochemistry survey personnel or teams, ensuring that adequate personnel dosimetry measures are taken, and evaluation of doses of field and emergency team personnel (particularly with regard to a need for thyroid blocking).

3.8 Administrative and Logistics Support

The Administrative and Logistics Support individual provides technical documents, provides assistance with communications and analytical equipment, arranges required clerical support beyond the personnel directly assigned to the TSC, and makes any arrangements necessary for food/transportation/housing support as required.

3.9 Computer Support

Computer support personnel provide technical support in the areas of computer hardware and software modifications/development/or repair, as required. In addition, this individual is responsible to arrange for timely offsite advice or assistance as directed by the TSC Director.

Computer support personnel also have received training in offsite Dose Calculation methodology. This training is provided for the purpose of assisting the TSC Radiological Assessment individual in gathering data and, where requested, assist in data entry at the TSC plant computer console.



4.0 References

4.1 FSV Radiological Emergency Response Plan

5.0 Referenced or Supporting Procedures

- | 5.1 RERP-CR, Control Room Procedure
- 5.2 RERP-FCP, Forward Command Post Procedure
- 5.3 RERP-PCC, Personnel Control Center Procedure
- | 5.4 RERP-VC, Visitor's Center Procedure
- 5.5 RERP-HOME, Home Packet for Off-shift Notifications
- 5.6 RERP-DOSE, Offsite Dose Calculations
- 5.7 RERP-PAG, Protective Action Guideline Recommendations
- 5.8 RERP-EXP, Emergency Exposure Guidelines
- 5.9 RERP-THYROID, Thyroid Blocking Agent Administration
- 5.10 RERP-FIELD, Field Monitoring Procedure
- 5.11 RERP-ORG, FSV Emergency Organization and Responsibilities
- 5.12 RERP PHONE LISTS
- 5.13 RERP-SUPORG, Use and Coordination of Non-PSC Support Organizations



FIGURE 1

GEOGRAPHICAL AREA IDENTIFICATION DESIGNATIONS

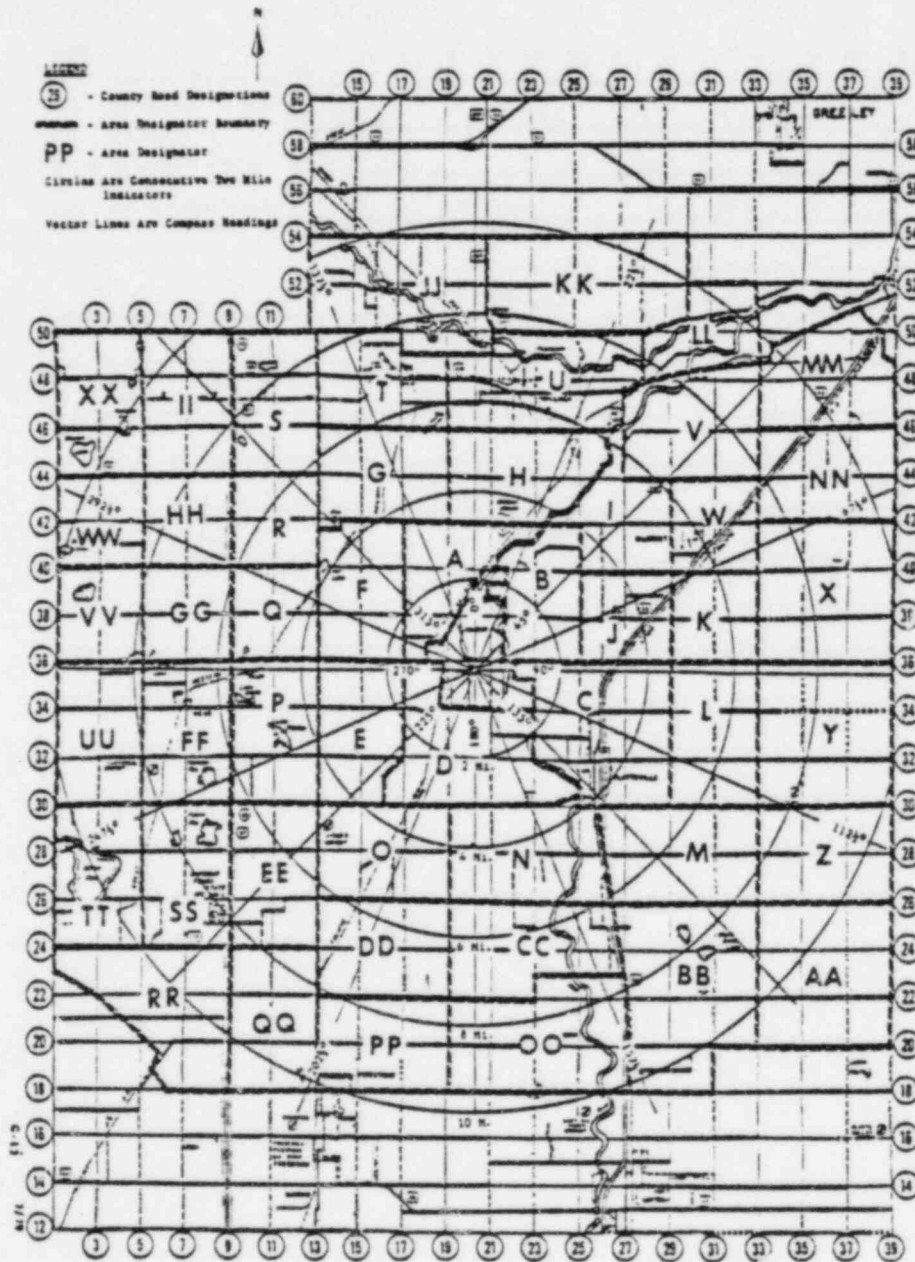
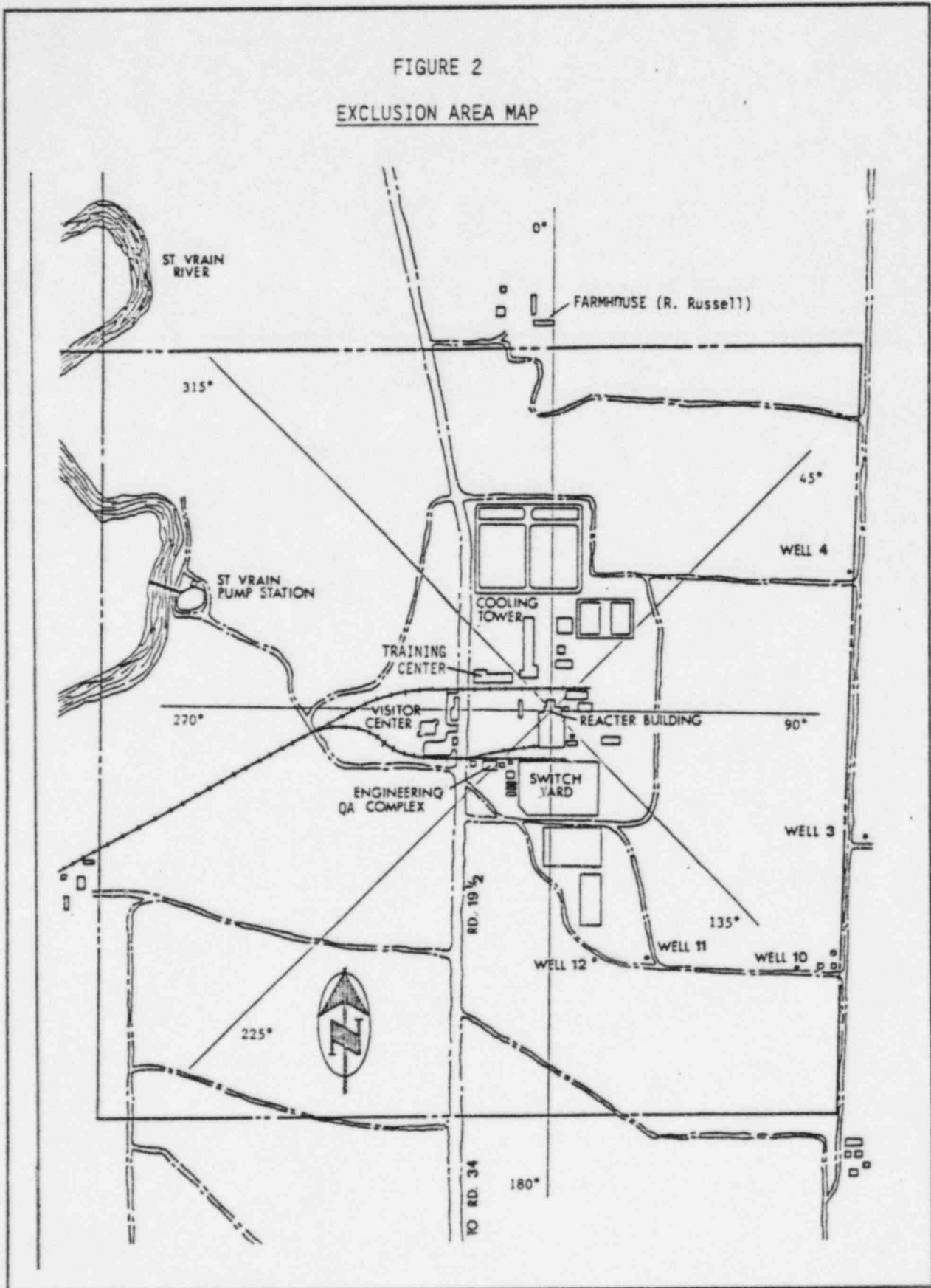
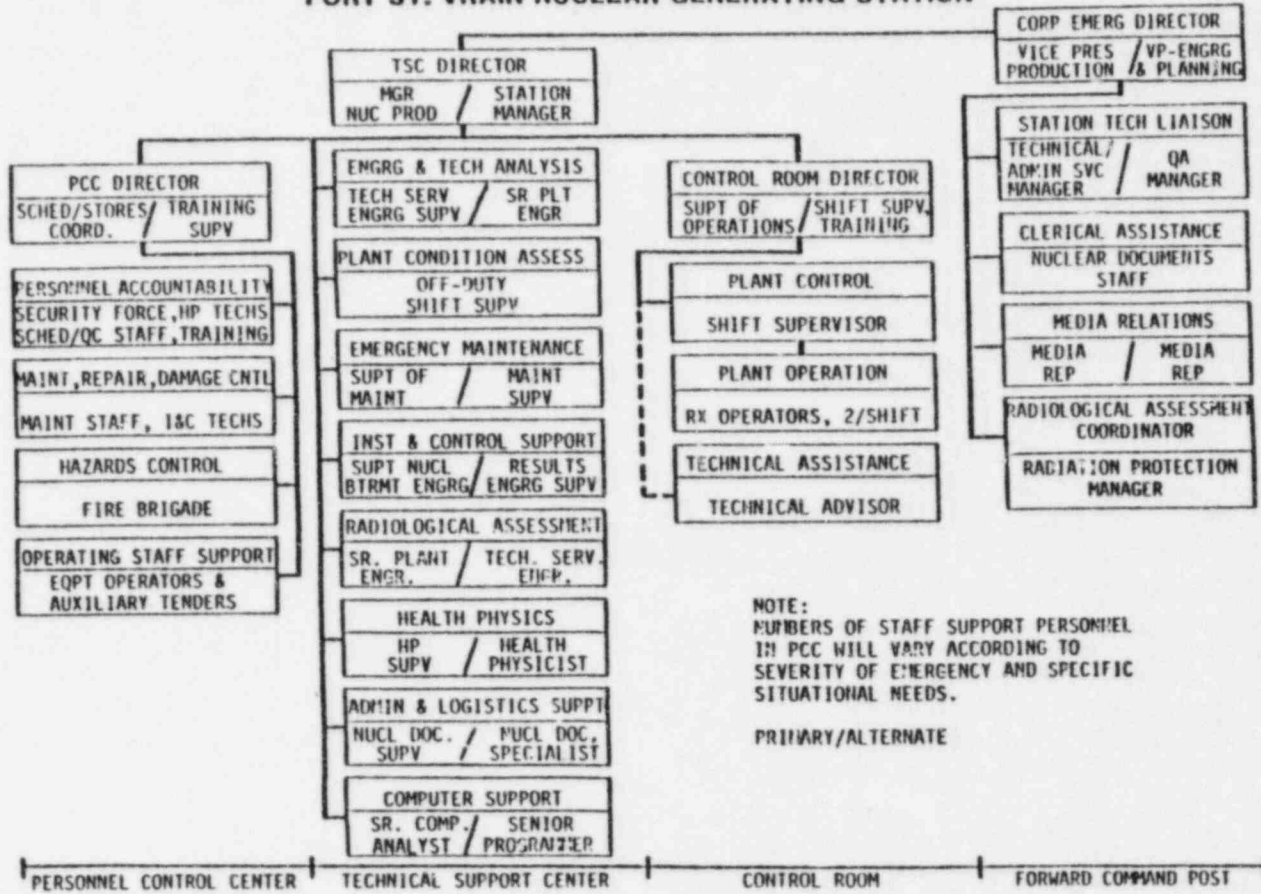




FIGURE 2
EXCLUSION AREA MAP



EMERGENCY ORGANIZATION (ALERT, SITE EMERGENCY, GENERAL EMERGENCY) FORT ST. VRAIN NUCLEAR GENERATING STATION



NOTE:
NUMBERS OF STAFF SUPPORT PERSONNEL IN PCC WILL VARY ACCORDING TO SEVERITY OF EMERGENCY AND SPECIFIC SITUATIONAL NEEDS.

PRIMARY/ALTERNATE





SUPPORT EQUIPMENT/MATERIAL

1. Communications equipment
2. P & I's (one-half size set)
3. FSAR, Reference Design Manuals, EP's, SOPs, OPOPs, RERP
4. Office supplies
 - a) pen/pencils
 - b) chalk
 - c) graph paper
 - d) calculator
5. Sector/regional maps
6. Health Physics survey maps (of FSV buildings-see HPP-1 as required)
7. Site maps
8. Dosimetry for TSC staff
9. Personnel Accountability Records
10. Scott-Air Paks
11. RM-14/15



ASSESSMENT FACT SHEET

TSC Director

1. Date of Event _____ Time of Event _____

2. "Based upon the current release and the potential for further release this emergency is classified as":

ALERT SITE AREA EMERGENCY GENERAL EMERGENCY

3. Description of Event

4. Radiological Assessment (Attach screen printout from Radiological Assessment if desired.)

Wind speed at 10 meters _____. Stability Category _____.

Location of Hazard: From ____ degrees to ____ degrees for ____ miles.

Sectors Affected: _____.

Release Rates (Ci/Sec): Noble Gas _____.

Radioiodine _____.

Total Curies Released: Noble Gas _____.

Radioiodine _____.

Dose Rates At EAB (Rem/hr): Whole Body Dose Rate _____.

Thyroid Dose Rate _____.



"Based upon the projected dose to the population the Recommended Protective Action per Table 6.2-2 of the RERP is": (Reference RERP-PAG per Radiological Assessment recommendation)

5. Current Plant and Core Status (refer to completed Datasheet 2, supplied by Senior Plant Engineer/Reactor Engineer).

6. Emergency Repairs required (per discussion with Maintenance/Results).

7. Personnel Accountability completed (Y/N) _____.

8. Personnel Injuries

a) Number of injured persons _____.

b) Description of Injuries _____

c) How many of injured persons are also contaminated? _____

d) How many have been sent to hospital? _____

Which Hospitals? _____

e) Relatives of all injured persons notified? (Y/N) _____

If not, who has not been notified? _____

9. Plant Evacuation

Non-essential plant personnel evacuated from _____

(location) at _____ (time).



ASSESSMENT OF PLANT/CORE STATUS*
TECHNICAL SERVICES ENGINEERING SUPERVISOR/SENIOR PLANT ENGINEER

*NOTE: Completion of all lines not required. The Datasheet is provided for guidance only, and should be utilized to the extent necessary, as determined by the Senior Plant Engineer/Reactor Engineer

Primary System	Date/Time
1. Date/Time of Event	_____
2. Current Reactor Power	_____ %
3. Primary Coolant Pressure	_____ psia
4. Primary Coolant Flow	_____ %
5. Operating Circulators A B C D.	
Motive Power: Steam _____ Water _____	
If water, which header? Emer. F.W. _____ Emer. Cond. _____	
6. Purification train in use A B: Storage, PCRV, or Ventilation	
7. Indication of fuel damage (Y/N)	_____
RT-9301 reading (RR 93256, pt 10)	_____ cpm
RT-9301 trend _____	
8. Is heat removal capability adequate (Y/N)	_____
9. Can cold-shutdown conditions be met (Y/N) (Refer to SOP 12-02 or SR 5.1.4-W-P)	_____
10. Obtain Technical Advisor assessment sheet data, as required (✓)	_____

Secondary System

1. Loops Operating I II	
2. Feed pumps operating A B C	
3. Feed to S/G's	
Norm F.W. _____	Emer. F.W. _____
	Emer. Cond. _____



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-TSC
Datasheet 2
Issue 13
Page 2 of 3

4. Secondary flow I _____ Klb/hr. II _____ k1b/hr.
5. Status of aux. boilers.



TSC DIRECTOR CHECKLIST

- | | <u>TIME</u> |
|--|-------------|
| 1. Communications established (primary and secondary) | |
| Control Room | _____ |
| Personnel Control Center | _____ |
| Forward Command Post | _____ |
| 2. Personnel dosimetry distributed | _____ |
| 3. Preliminary TSC Staff assessments obtained
and information transmitted | _____ |
| 4. Initial Radiological Assessment (Projected) obtained
 from the CR or FCP. | |
| Release Rate | _____ |
| Curies Release | _____ |
| Dose Rate | _____ |
| Dose Received | _____ |
| Protective Action Guide | _____ |
| 5. Radiological Assessment (Actual and Projected)
obtained. | |
| Release Rate | _____ |
| Curies Released | _____ |
| Dose Rate | _____ |
| Dose Received | _____ |
| Protective Action Guide | _____ |
| 6. PCC Evacuation Recommended | _____ |



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-TSC
Checklist 1
Issue 13
Page 2 of 2

- | 7. Personnel Accountability Status obtained
 - | Verify that Visitor's Center notified _____
 - Initial (from Shift Supervisor -
may pass through the CR Director) _____
 - Continuing (from PCC Director) _____
- | 8. Injury Reports Obtained.
 - No. of Injured _____
 - Hospital Called _____
 - Relatives _____
 - Emergency Transport _____
- 9. Estimates of emergency repairs to equipment/
instruments/systems obtained _____
- 10. Requests for Additional Personnel Made
 - Site Personnel _____
 - Other PSC _____
 - Contract _____
- | 11. In-Plant Survey Teams Status
 - Dispatched _____
 - Report Received _____
- | 12. Site Survey Teams Status
 - Dispatched _____
 - Report Received _____
- | 13. Exposure criteria for emergency workers
being followed (see RERP-EXP) _____



Work/Datasheet Checklist Control List

<u>Worksheet No.</u>	<u>Title</u>	<u>Number Copies</u>
None	N/A	N/A

<u>Datasheet No.</u>	<u>Title</u>	<u>Number Copies</u>
1	Assessment Fact Sheet - TSC Director	10
2	Assessment of Plant/Core Status	5

<u>Checklist No.</u>	<u>Title</u>	<u>Number Copies</u>
1	TSC Director Checklist	2



FORMS USE REPORTING SHEET

| Nuclear Documents Specialist:

This sheet is being transmitted to report use of forms from a controlled copy of the Radiological Emergency Response Plan Implementing Procedures, BOOK NO. _____, located at _____ . The following forms have been utilized from this copy:

Worksheet Numbers

Copies Used

Datasheet Numbers

Copies Used

Checklist Numbers

Copies Used

The procedure affected by this sheet is shown in the header to this page, unless otherwise noted below in the comments to this reporting form. When this form is received, it will be necessary to replace the noted number of forms, as well as this "Forms Use Reporting Sheet" for the affected procedure in the affected book.



FORMS USE REPORTING SHEET(Continued)

COMMENTS

Reported By: _____

Date: _____

| Nuclear Documents Specialist _____ *

... Date Received _____

Date Replaced _____

| * Nuclear Documents Specialist will transmit this form to the originating individual/department upon completion of this form to notify users that the procedure has been updated and that all worksheets, checklists, and datasheets are present in the required number of copies.



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

CR-UE

Issue 23

Page 1 of 9

TITLE: CONTROL ROOM UNUSUAL EVENT PROCEDURE

ISSUANCE
AUTHORIZED
BY

4-18-84
De Warrumbury

PORC
REVIEW

PORC 565 APR 18 1984

EFFECTIVE
DATE

4-25-84

DELETED WITH ISSUE 23



TITLE: VISITOR'S CENTER PROCEDURE

ISSUANCE AUTHORIZED BY	<i>Dr. Masenberg</i>		
PORC REVIEW	PORC 549	DEC 27 1983	EFFECTIVE DATE 1-3-84

<u>Sections</u>	<u>Description</u>	<u>Page</u>
1.0	<u>Criteria for Implementation</u>	1
2.0	<u>Procedure</u>	1
3.0	<u>Responsibilities</u>	3
4.0	<u>References</u>	3
5.0	<u>Referenced or Supporting Procedures</u>	3
Figure 1	Visitor's Center Evacuation Routes	1



1.0 Criteria for Implementation

The purpose of this procedure is to provide guidance to the PSC Visitor's Center representative in the event of a radiological emergency at Fort St. Vrain requiring activation of the FSV Radiological Emergency Response Plan (RERP). The RERP is generally activated for an ALERT, or higher, emergency classification.

2.0 Procedure

This procedure will be initiated by notification via the plant public address system or by telephone call to the PSC representative at the Visitor's Center.

2.1 When notified that the Radiological Emergency Response Plan (RERP) is being activated, instruct all non-station occupants to proceed to the Fort Lupton Fire Station using the route specified. The Personnel Control Center (PCC) will inform the Fort Lupton Fire Station to anticipate persons arriving.

2.1.1 Load occupants into buses and cars, and transport to the fire station in caravan style.

- Route #1 - through Platteville to U.S. 85 to Fort Lupton, 1 on attached map (Figure 1).
- Route #2 - South to Colorado 66 West to I-25 east, Colorado 52 to Fort Lupton, 2 on attached map (Figure 1).
- Route #3 - North to Johnstown to Colorado 60 east to U.S. 85 south to Fort Lupton, 3 on attached map (Figure 1).

2.1.2 Do not attempt to detain any visitors who will not cooperate in the evacuation of the Visitor's Center. If a visitor will not cooperate in the evacuation, obtain whatever identifying information that is possible (name, description, vehicle license plate, etc.), and notify the Central Alarm Station (Extension 300 or page) of the situation.

2.1.3 Attempt to obtain names and applicable information from visitors prior to their departure to the Evacuation Center. This information should be available from the guest log.

2.1.4 Take the Visitor's Center Log Book and any applicable notes when leaving.



2.2 When the evacuation of visitors from the Visitor's Center has been completed, the PSC Visitor's Center representative shall contact either the Shift Supervisor (Extension 219 or page) or the Central Alarm Station (Extension 300 or page).

2.3 Upon arrival at the Fort Lupton Fire Station, evacuees will be monitored for contamination by State Department of Health officials.

Evacuees shall then be directed home via recommended routes or detained at the Fire Station if routes may be unsafe, or if means of transportation is not immediately available.

2.3.1 Account for occupants of Visitor's Center by checking names against the Log Book or name list.

2.3.2 Call the Personnel Control Center (303-785-2223) and report accountability for Fort St. Vrain employees only (if required).

2.3.3 Notify the State Health Department of any visitors who did not cooperate in the evacuation, and furnish any applicable information available regarding their identity.

3.0 Responsibilities

The PSC representative at the Visitor's Center is responsible to notify visitors and building occupants of the situation and any instructions received from the Lead Security Officer or Shift Supervisor. The PSC representative shall attempt to evacuate the building, as directed, but is not responsible for the actions of uncooperative visitors. In the event of an uncooperative visitor, the PSC representative shall notify FSV security of the situation. Upon completion of the Visitor's Center evacuation of visitors, the PSC representative shall notify the Shift Supervisor or Central Alarm Station of evacuation completion.

4.0 References

4.1 FSV Radiological Emergency Response Plan (RERP)

5.0 Referenced or Supporting Procedures

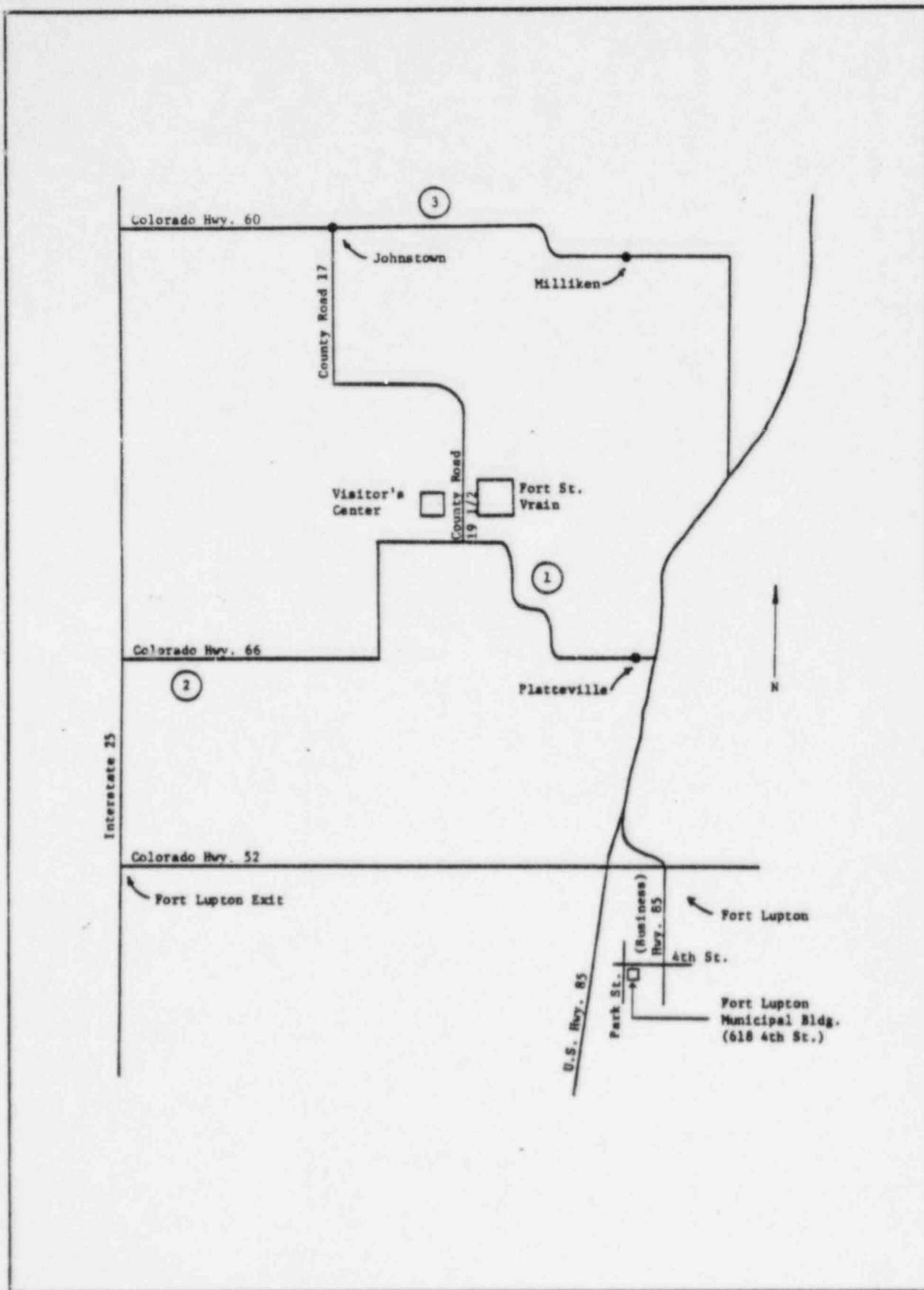
5.1 RERP-PCC, Personnel Control Center Procedure

5.2 APM G-5, Personnel Emergency Response



PUBLIC SERVICE COMPANY OF COLORADO
FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-VC
Figure 1
Issue 3
Page 1 of 1



TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN (RERP) PHONE LISTS

ISSUANCE AUTHORIZED BY	<i>Don Waverburg by</i>		
	<i>Milt McBride</i>		
PORC REVIEW	EOC 580 AUG 2 - 1984	EFFECTIVE DATE	8-6-84

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FORT ST. VRAIN PHONE SYSTEM

DIMENSION SYSTEM DIALING INSTRUCTIONS

From Fort St. Vrain:

<u>Area to be Called</u>	<u>Proper Dialing Prefix</u>
Denver Exchange PSCo number Outside PSCo	8 + Number 8 + 303 + Number
Longmont Exchange	78 + Number
Greeley Exchange	9 + Number
All other areas <u>in</u> Colorado	8 + 303 + Number
Outside the State of Colorado (unless a toll free number)	8 + Area Code + Number

Paging Using Phone System:

To Page: Dial 60-@ (all areas) or 62-@ (in plant only)
@ = (1, 2, 3, 4, 5, 6, or 7)
whichever "@" is used, announce "CODE @" after
page is complete, depress switch once, wait
for answer.

To Answer: Dial #7-@ @ = (1,2,3,4,5,6, or 7)
in place of "@", use whichever code number
was announced.



RERP PHONE LIST INDEX

- A - Deleted
- B - Deleted
- C - Significant Event Notification to American Nuclear Insurers
- D - Control Room Procedure
- E - Control Room Procedure, Attachment #1
- F - Control Room Procedure, Attachment #3
- G - Control Room Procedure, Attachment #4
- H - Control Room Procedure, Checklist #2
- I - Personnel Control Center Procedure, Attachment #2
- J - PSC Company Operator Call List
- K - ECP Director's Call List*
- L - Corporate Emergency Director's Call List*
- M - PCC Director's Call List*
- N - State EOC Call List*
- O - TSC Director's Call List*
- P - Centers/Posts Phone Numbers
- Q - Outside Assistance Phone Numbers
- R - Visitor Center Phone Numbers
- S - Fort St. Vrain Medical Emergency Plan
- T - Notification Procedure - Emergency Spills (G-5A)
- U - Automatic Dialing System (Shift Supervisor's Office and Control Room)

* These call lists are found in both RERP-PHONE LISTS and RERP-HOME.



- V - Home Packet For Off-Shift Notifications (RERP-HOME), Table #1
- W - Home Packet For Off-Shift Notifications (RERP-HOME)
Attachment #3
- X - Home Packet For Off-Shift Notifications (RERP-HOME),
Attachment #4
- Y - Home Packet For Off-Shift Notifications (RERP-HOME),
Attachment #10
- Z - Home Packet for Off-Shift Notifications (RERP-HOME),
Checklist #1



RADIOLOGICAL EMERGENCY RESPONSE PLAN

PSC COMPANY OPERATOR CALL LIST

A. Obtain the following information from your contact at Fort St. Vrain.

a. Name and identity of caller: _____

b. Date/Time of event: _____

c. Classification of event (circle one):

Radiological Alert

Site Emergency

General Emergency

d. At the present time, a radiological release (circle one) IS/IS NOT occurring.

e. Location of the Personnel Control Center _____

B. Your Name: _____

Date/Time call was received: _____



PSC COMPANY OPERATOR CALL LIST (continued)

- C. Fill in the blanks of the following statement which will be read verbatim to the individuals on your call list using the above information.

READ SLOWLY

At approximately (b) _____ this date at the Fort St. Vrain Nuclear Generating Station near Platteville, Colorado, an event believed to involve a potential radiological hazard occurred. This event has been classified as a (c) _____. At the present time, a radiological release (circle one) IS/IS NOT occurring. The Personnel Control Center is to be established at (e) _____.

- D. IMMEDIATELY, (day or night) contact the following individuals and read them your prepared statement verbatim. Log the time each is reached.

1. Call Fort St. Vrain and verify the report:
 - a. Call 5-785-1220. Read your prepared statement VERBATIM. _____

2. Colorado State Health Department:
 - a. Duty Hours: 320-8333, Ext. 6246. _____



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP Phone Lists

Issue 24

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- b. After duty hours: 320-1465 (this is an answering service and they will contact the on-duty person at the State Health Department).

PSC COMPANY OPERATOR CALL LIST (Continued)

D. (Continued)

3. Contact one of each of the following pairs of primaries/alternates.

	<u>Extension</u>	<u>City</u>	<u>Home</u>	<u>Time</u>
a. Primary: D. W. Warembourg Alternate: L. M. McBride	5-785-1200 5-785-1201	Frederick Boulder	5-303-833-4092 5-303-442-3829	_____
b. Primary: W. J. Franek Alternate: D. P. Hood	5-785-1218 5-785-1347	Berthoud Longmont	5-303-532-3489 5-303-776-1843	_____
c. Primary: J. Glass Alternate: S. R. Williford	5-785-1253 5-785-1450	Brighton Brighton	5-303-659-4118 5-303-659-5258	_____
d. Primary: C. H. Fuller Alternate: J. W. Gahm	5-785-1202 5-785-1350	Loveland Northglenn	5-303-663-2363 5-303-452-0507	_____
e. Primary: O. R. Lee Alternate: J. K. Fuller	797-4122, 571-7305 329-1104	Brighton Denver	9-659-1180 9-779-1109	_____
f. Primary: R. F. Walker Alternate: B. O'Donnell	571-7333 571-7381	Denver Denver	9-234-9298 9-388-0211	_____
g. Primary: D. McNellis Alternate: H. L. Brey	571-7254 571-8404	Denver Broomfield	9-985-3197 9-469-4238	_____

4. Contact American Nuclear Insurers 1-800-243-3172 or (203) 677-7305 (Day or Night)

5. Contact General Atomic Technologies, Inc. (619) 455-2010

6. Contact one of the following at the Colorado State University Radiation Biology Department.

	<u>Work</u>	<u>City</u>	<u>Home</u>	<u>Time</u>
a. Dr. James E. Johnson	5-303-491-5380	Ft. Collins	5-303-482-3029	_____
b. Marion McDonald	5-303-491-5094	Ft. Collins	5-303-484-0084	_____
c. Department Office	5-303-491-5222	Ft. Collins		_____

7. Contact American Nuclear Society (312) 352-6611

8. NRC Resident Inspector - Office 5-785-1490 or 5-303-785-2282
 G. L. Plumlee, III - 5-303-776-9541 or 890-2225 (Page Number)

9. Contact Institute of Nuclear Power Operations (INPO) (404) 953-0904, 953-0922, or 953-3600, extension 239, Repicon (404) 953-9208 or 952-6728.

10. Contact PSC Fort St. Vrain Shift Supervisor at 5-785-1219 to report results of telephone contacts above.



ECP DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director (and the alternate will complete the calls on the attached list).
 - b. If you cannot contact your Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the Director:
 - a. Complete the attached call list.
3. If you are the response center/post Alternate Director and are contacted by the PSC Operator:
 - a. Call the first person on the attached list and inform him to complete the call list.



ECP DIRECTOR'S CALL LIST

First call all primaries, then call all alternates.

	<u>PSC</u> <u>Extension</u>	<u>Home</u>	<u>Time</u>
<u>Manager - Technical Support</u>			
Primary - M. E. Niehoff	785-1403	690-3879	_____
Alternate - Mike Holmes	571-8409	988-4522	_____
<u>Manager - Media Relations</u>			
Primary - R. T. Person, Jr.	571-7323	753-9292	_____
Alt. - W. D. Fitzmaurice	571-7158	424-8053	_____
<u>Manager - Resources</u>			
Primary - D. D. Hock	571-7211	394-3063	_____
Alternate - J. Bumpus	571-7821	388-7645	_____
<u>Manager - Security</u>			
Primary - E. O'Neal	571-7709	757-0038	_____
Alternate - E. Lane	571-8533	321-4016	_____

Note: Any change to this call list requires a change be made to RERP-HOME, Attachment #5.



CORPORATE EMERGENCY DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director.
 - b. If you cannot contact your Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the PSC Operator or the center/post Director:
 - a. Call the first person on the attached list and inform him to complete the call list.
3. If you are the first person on the attached list and are contacted by the Alternate Director or the Director:
 - a. Complete the attached list.



CORPORATE EMERGENCY DIRECTOR'S CALL LIST (FCP)

First contact all primaries, then call all alternates.

	<u>Extension</u>	<u>Home</u>	<u>Time</u>
<u>Station Technical Liaison</u>			
(One of the Station Technical Liaisons is also contacted by the PSC Operator.)			
Primary - C. H. Fuller	785-1202	663-2363	_____
Alternate - J. W. Gahm	785-1350	452-0507	_____
<u>Radiological Assessment</u>			
Primary - T. Borst	785-1203 (Pager)	663-1230 890-1775	_____ _____
<u>Clerical Assistance</u>			
Primary - D. Merritt	785-1271	737-2339	_____
Primary - D. Heath	785-1272	223-5121	_____
Alternate - S. Katcher	785-1212	356-0351	_____
<u>Media Relations</u>			
Primary - M. Mora	571-8462	694-2369	_____
Alternate - S. Volsted *	571-7242	755-5164	_____

Note: Any change to this call list requires a change be made to RERP-HOME, Attachment #6.



PCC DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director (the alternate will complete the calls on the attached list).
 - b. If you cannot contact your Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the Director:
 - a. Contact persons to set up the facility by calling those individuals denoted by asterisks (*) after their names and four (4) Health Physics Technicians listed. Inform all persons of the location of the PCC. Notify the remainder of personnel upon your arrival at the PCC. (This responsibility may be delegated.)
3. If you are the response center/post Alternate Director and are contacted by the PSC Operator:
 - a. Call the first person on the attached list and inform him to complete the call list as specified in 2.a. above.



PCC DIRECTOR'S CALL LIST

	<u>Plant Extension</u>	<u>Home</u>	<u>Time</u>
<u>Personnel Accountability and I & C Technicians</u>			
G. Redmond*	251	9-339-3152	_____
T. Bashline	262	8-303-686-9763	_____
P. Bearly	455	8-303-669-6636	_____
M. Benedict	313	9-353-7209	_____
M. Blossom*	297	9-785-6302	_____
R. Dickerson	273	8-303-287-6089	_____
T. Dillen	262	9-356-3370	_____
R. Erwin	321	9-330-7178	_____
D. Frye	276	9-587-4768	_____
R. Hamblin	254	8-303-667-1703	_____
C. Harding	311	9-785-2398	_____
K. Hays	319	8-303-778-7702	_____
J. Hohn	260	9-785-6322	_____
W. Holcomb	312	9-330-2068	_____
R. Hooper	458	8-303-452-3614	_____
D. Horihan	250	78-776-7976	_____
S. Lehr*	451	8-303-422-1280	_____
G. McAfee	260	8-303-857-6498	_____
R. Moler	456	78-772-9357	_____
G. Murphy*	254	9-785-2542	_____
M. Murphy	454	8-303-279-6762	_____
G. Powers	252	8-303-426-1623	_____
D. Reed*	314	9-785-2159	_____
R. Rivera	453	8-303-667-1906	_____
T. Shafer*	457	9-587-4061	_____
C. Stieff*	209	9-587-2500	_____
J. Switzer	452	9-587-4134	_____
R. Teel	261	8-303-288-1959	_____
R. Wyatt	262	8-303-493-3649	_____

Maintenance, Repair, and Damage Control

R. Webb*	229	78-776-8219	_____
	(Pager)	855-7257	_____
R. Lamb*	336	78-772-0757	_____
D. Nelson*	246	9-587-4189	_____



Monitoring Teams - Health Physics (Notify four of the following initially.)

J. Brown	245	9-339-3972	_____
P. Glahn	245	8-303-450-5292	_____
L. Hutchins	245	9-330-7187	_____
G. Madison	245	8-303-833-2278	_____
K. Morse	245	9-353-6163	_____
K. Nasveschuk	245	78-651-6254	_____
E. J. O'Donoghue	245	8-303-452-3514	_____
S. Sherrow	245	9-353-1338	_____
S. Sieg	245	8-303-663-3468	_____
G. Valentine	245	8-303-532-4861	_____

Radiochemistry

V. McGaffic (P)*	278	9-587-2752	_____
D. Miller(A)*	279	8-303-663-3595	_____
S. Poet (A)	279	78-652-2297	_____
M. Prochownik (A)	279	9-785-6010	_____
S. Rima (A)	279	78-772-4068	_____

Operating Staff Support

As Required - See RERP Phone Lists.

Maintenance (Electrical, Mechanical)

As required at the discretion of the PCC Director - Refer to RERP Phone Lists.

Hazards Control Team

Fire Brigade Members

Note: Any change to this call list requires a change be made to RERP-HOME, Attachment #7.



STATE EOC CALL LIST INSTRUCTIONS
(For Contacts by PSC)

In the event you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the PSC primary contact:
 - a. Call the PSC alternate contact and instruct him to complete the call list.
 - b. If you cannot reach the PSC alternate contact, call the first person on the attached list and inform him to complete the call list.
2. If you are the PSC alternate contact and are notified by the PSC primary contact:
 - a. Complete the attached call list.
3. If you are the PSC alternate contact and are notified by the PSC operator:
 - a. Call the first person on the attached list and inform him to complete the call list.



STATE EOC CALL LIST
(For Contacts by PSC)

	<u>Extension</u>	<u>Home</u>	<u>Time</u>
<u>Technical Assistance</u>			
H. L. Brey (Primary)	571-8404	469-4238	_____
J. R. Reesy (Alt.)	571-8406	755-1720	_____
<u>Radiological Consultant</u>			
Janet Johnson	491-5930	482-3029	_____
<u>Media Relations</u>			
R. A. Burns (Primary)	571-8481	759-9740	_____
G. Reeves (Alt.)	571-8479	424-4958	_____

Note: Any change to this call list requires a change be made to RERP-HOME, Attachment #8.



TSC DIRECTOR'S CALL LIST INSTRUCTIONS

In the event that you are notified by the PSC operator that a Radiological ALERT or higher classification event has occurred at Fort St. Vrain, complete the following telephone calls:

1. If you are the response center/post Director:
 - a. Call your response center/post Alternate Director (the alternate will complete the calls on the attached list).
 - b. If you cannot contact your Alternate Director, call the first person on the attached list and inform him to complete the call list.
2. If you are the response center/post Alternate Director and are contacted by the Director:
 - a. Complete the attached call list.
3. If you are the response center/post Alternate Director and are contacted by the PSC Operator:
 - a. Call the first person on the attached list and inform him to complete the call list.

TSC DIRECTOR'S CALL LIST

First call all primaries, then call all alternates.

<u>Reactor Physics</u>	<u>Plant Extension</u>	<u>Home</u>	<u>Time</u>
Primary - F. Novachek	270	457-8034	_____
	(Pager)	890-1941	_____
Alternate - R. Heller	284	772-1093	_____

Radiological Assessment

Primary - J. Sills	265	221-5059	_____
	(Pager)	890-2223	_____
Alternate - S. Johnson	267	663-1431	_____

Plant Condition Assessment

Call two off-duty Shift Supervisors

M. Deniston	219	776-3776	_____
D. Evans	219	776-9672	_____
J. Hak	219	776-1904	_____
D. Hood*	219 or 347	776-1843	_____
J. Hunter	219	330-1411	_____
H. O'Hagan	219	776-8232	_____
G. Reigel	219	330-4235	_____
J. VanDyke	219 or 346	772-2476	_____

Emergency Maintenance

Primary - W. Craine	222	667-5427	_____
Alternate - J. Petera	233	427-6273	_____

Instrument and Control

Primary - B. Burchfield	249	351-0373	_____
Alternate - J. McCauley	248	667-0635	_____

Health Physics/Health Physicist

Primary - T. Schleiger	242	785-6314	_____
Alternate - B. Woodard	244	678-0818	_____

* Also contacted as alternate to Control Room Director by PSC operator.



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FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP Phone Lists

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Administration/Logistics

Primary - A. Kitzman	206	737-2578	_____
Alternate - P. Collins	207	587-2172	_____
Alternate - P. Bollig	204	339-3972	_____
Alternate - D. Connelly	210	353-4575	_____

Telephone Console Operators

Primary - D. Edwards	214	669-1680	_____
Alternate - D. Libal	213	651-1404	_____

Computer Support

*Primary - D. Klaus	437	466-5046	_____
*Alternate - D. Bilstein	333	532-2546	_____
*Alternate - D. Haloin	376	353-1993	_____

*Computer Services Page Number: 855-3234

Note: Any changes made to this call list requires a change be made to RERP-HOME, Attachment #9.



CENTERS/POSTS PHONE NUMBERS *

<u>Control Room (CR)</u>			<u>Phone Lists Affected</u>
Denver Line	571-7436		P
Greeley Line	785-2223		P
Longmont Line	776-6710		P
Site Extension	220		P
Site Extension	221		P
<u>Executive Command Post (ECP)</u>			
<u>Headquarters Building - Room 620</u>			
Denver Line	571-8459		P
Denver Line	571-8460		P
Denver Line	571-8461**		P
<u>Lookout Center - Golden</u>			
Denver Line	278-2222		P
Denver Line	278-0287		P
<u>Emergency Operations Center - State (SEOC)</u>			
<u>Camp George West</u>			
Denver Line	279-2511		P
Denver Line	279-8855		D,P,U,W
<u>Forward Command Post (FCP)</u>			
<u>Fort Lupton</u>			
Denver Line	571-7053	571-7070	
	571-7096	571-7061	P
	571-7062		
Ft. Lupton Line	857-6238	857-6246	
	857-6239	857-6022	P
	857-6247	857-6248	
	857-6249	857-6001	
	857-6230		

* For any call into FSV from another PSC dimension phone, dial 8-785-1xxx, where xxx is the three digit FSV extension.

** This line reserved for conferencing between the FCP AND ECP.



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP Phone Lists

Issue 24

Page 22 of 74

Governor

Office
Mansion

866-2471
837-8350

F,P,W
F,P,U,W

CENTERS/POSTS PHONE NUMBERSPersonnel Control Centers Phone Lists AffectedOnsiteTraining Center

Site Extension 450 P

Engineering/OA Complex

Site Extension 362 P

Warehouse

Site Extension 311 P

Site Extension 312 P

Craft Shops

Site Extension 433 P

OffsiteJohnstown County Shop

Greeley Line 587-4508 P

County Engineer, Drew Scheltinga 356-4000 P

Ext. 4750

Maintenance Supervisor, Bud Schmuhl 587-2431 P

(Home)

Production Manager, Dave Becker 356-0177 P

(Home)

Maintenance Support Supervisor, 284-5451 P

Jack Slife (Home)

Longmont PSC Service Center

Denver Line (Louisville) 665-5511 P

Longmont Line 776-0933 P

Platteville Fire Department

Greeley Line 785-2232 P,Q

Contact Cliff Wright, Greeley Line 785-2835 P,Q

Weld County, Maintenance

356-4000

ext. 777 P



CENTERS/POSTS PHONE NUMBERS

Technical Support Center

Phone
Lists Affected

Site Extension	290	P
Site Extension	291	E,P
Site Extension	292	D,E,H,P
Site Extension	293	P
Site Extension	294	E,P
Site Extension	295	P

OUTSIDE ASSISTANCE PHONE NUMBERS

<u>Ambulance Services</u>		<u>Phone Lists Affected</u>
Platteville Fire Department (Platteville)	785-2232	Q
(Greeley Line)	911	Q
Professional Ambulance Service (Longmont)	776-1211	Q
Weld County Ambulance Service (Greeley)	353-5700	Q
St. Lukes Helicopter (ask for Admitting)	869-2012	Q
	869-2013	Q
	or 869-2014	
Emergency:	869-2111	Q
<u>Fire Departments</u>		
Fort Lupton	857-6619	P,Q
Johnstown	587-4477	Q
Platteville	785-2232	P,Q
<u>Medical Facilities</u>		
St. Luke's Hospital (Denver)	839-1000	Q,S
	869-2111	Q,S
	869-2112	Q,S
North Colorado Medical Center (Greeley)	352-4121	Q,S
Memorial Hospital (Greeley)	352-3123	Q,S
Longmont United Hospital (Longmont)	651-5111	Q,S
Emergency:	651-5000	Q,S
<u>National Weather Service</u>		
Ask for LEAD Forecaster	837-4207	Q
	or 837-3611	Q
<u>Institute of Nuclear Power Operations (INPO)</u>		
	(404) 953-0904	Q,J
	(404) 953-0922	Q,J
	(404) 953-3600,	
	Extension 239	Q,J
Rapicon:	(404) 953-9208	Q,J
	(404) 952-6728	Q,J
<u>NRC Operations Center</u>		
	(202) 951-0550	E,F,G, Q,U,W,X
	(301) 427-4056	E,Q
	(301) 427-4259	E,Q
	(301) 492-8893	E,Q
	(301) 492-7000	E,Q

OUTSIDE ASSISTANCE PHONE NUMBERS

		<u>Phone Lists Affected</u>
<u>Backup Meteorological Tower Data (NOAA)</u>		
Bob Clark	497-6987	Q
Dick Garrelts	497-6972	Q
Audrene Brown	497-6159	Q
Silent 700-300 Baud Modem *	447-0992	Q
Laboratory	497-6792	Q
Administrative Office	497-6116	Q
* To have line cleared when busy, call Mr. Val Swarcz (SERI) at 231-1816. <u>County Sheriff</u>		
	356-4000	Q
<u>City Police</u>		
Johnstown	587-4664	Q
Platteville	785-2215	Q
<u>State Patrol</u>		
	353-1151	Q
	or 9-911	Q
<u>Coast Guard</u>		
	1-800-424-8802	Q,T
<u>Colorado State Health Department</u>		
	320-8333	J,Q,T
<u>Environmental Protection Agency</u>		
	234-2259	Q,T
	or 234-6069	Q,T
<u>American Nuclear Insurers (ANI)</u>		
	1-800-243-3172	C,J,Q,U
	(203) 677-7305, ext. 245	C,Q,U,J
<u>American Nuclear Society</u>		
	(312) 352-6611	J,Q



VISITOR CENTER PHONE NUMBERS

			<u>Phone Lists Affected</u>
Site Extension	475		R
	476	785-1475	R

Persons Living Within Property Boundary*

1.	Ben Houston	785-2408	R,I
2.	Randy Russell	785-6326	R,I
3.	Bill Pitt	785-6274	R,I
4.	Raymond Marin	785-2862	R,I
5.	Vacant	No Phone	
6.	Scott Houston	785-2358	R,I
7.	Keith Russell	785-2589	R,I
8.	Dave LaChance	785-6303	R,I

* When these telephone numbers are verified, updates must be reflected in the PCC Procedure, Attachment 2.

ADMINISTRATIVE *Phone
Lists Affected

BORST, F.J.

C,E,L,
S,U,V,Z*

Loveland
663-1230 (Home)
203 (Work)
890-1775 (Page Number)
Assigned To: FCP

BREY, H.L.

J,Y

Broomfield
469-4238 (Home)
* 571-8404 (Work)
Assigned To: SEOC

BUMPUS, J.N.

K

Denver
388-7645 (Home)
571-7821 (Work)
Assigned To: ECP

BURNS, R.A.

N,S,Z

Denver
759-9740 (Home)
571-8481 (Work)
Assigned To: SEOC

FITZMAURICE, W.

K,S

Denver
424-8053 (Home)
571-7158 (Work)
Assigned To: ECP

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ADMINISTRATIVE *

Phone
Lists Affected

FULLER, C. H.

C,E,J,
L,S,U,
V,Y,Z

Loveland

663-2363

(Home)

* 202

(Work)

890-0810

(Page Number)

Assigned To: FCP

FULLER, J. K.

J,Y

Denver

779-1109

(Home)

329-1104

(Work)

Assigned To: FCP

HOCK, D.D.

K

Denver

394-3063

(Home)

571-7211

(Work)

Assigned To: ECP

HOLMES, M.H.

K

Lakewood

988-4522 (Home)

571-8409 (Work)

Assigned to: ECP

GAHM, J. W.

J,L,U,Y

Northglenn

452-0507

(Home)

350

(Work)

Assigned To: FCP

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ADMINISTRATIVE *

	<u>Phone Lists Affected</u>
LANE, E. Denver 321-4016 (Home) 571-8533 (Work) Assigned To: ECP	K,S
LEE, O.R. Brighton 659-1180 (Home) 797-4122 (Work) 571-7305 (Alternate) Assigned To: FCP	C,E,J, S,T,V, Y,Z
McBRIDE, L.M. Boulder 442-3829 (Home) * 201 (Work) 890-0698 (Page Number) Assigned To: TSC	C,E,J, S,T,U, V,Y,Z
McNELLIS, D. Denver 321-3142 (Home) 571-7254 (Work) Assigned To: SEOC	J,Y
MORA, MARILY Denver 694-2369 (Home) 571-8462 (Work) Assigned To: FCP	L,S,Z

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ADMINISTRATIVE *Phone
Lists Affected

NIEHOFF, M. E. Aurora 690-3879 (Home) 403 (Work) Assigned to: ECP	K
O'DONNELL, B. Denver 388-0211 (Home) 571-7381 (Work) Assigned To: ECP	J,Y
O'NEAL, E. E. Denver 757-0038 (Home) 571-7709 (Work) Assigned To: ECP	K,S
PERSON, R.T., JR. Englewood 753-9292 (Home) 571-7323 (Work) Assigned To: ECP	K
REESY, JACK R. Denver 755-1720 (Home) 571-8406 (Work) Assigned To: ECP	K
REEVES, G.D. Arvada 424-4958 (Home) 571-8479 (Work) Assigned To: SEOC	N,S,Z

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ADMINISTRATIVE *Phone
Lists Affected

VOLSTAD, STEPHEN A.

Denver

755-5164 (Home)

571-7242 (Work)

Assigned To: FCP

L

WALKER, R.F.

Denver

234-9298 (Home)

571-7333 (Work)

Assigned To: ECP

J,Y

WAREMBOURG, D.W.

Frederick

833-4092 (Home)

* 200 (Work)

890-0699 (Page Number)

Assigned To: TSC

C,E,J,
S,T,U,
V,Y,Z

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CHEMISTRYPhone
Lists Affected

ADAMSKI, HANK

Boulder

444-3533

(Home)

226

(Work)

Assigned To: NONE

BRUNGARDT, JESSE

Loveland

667-2540

(Home)

226

(Work)

Assigned To: NONE

FETTEROLF, DAVE L.

Greeley

330-6073

(Home)

225

(Work)

Assigned To: NONE

LUCERO, VICTOR A.

Greeley

352-0705

(Home)

225

(Work)

855-5504

(Page Number)

Assigned To: NONE

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COMPUTER SERVICES

	<u>Phone Lists Affected</u>
BILSTEIN, DON Berthoud 532-2546 (Home) 333 (Work) Assigned To: TSC	0
HALOIN, DON Greeley 353-1993 (Home) 376 (Work) Assigned To: TSC	0
KLAUS, DON L. Broomfield 466-5046 (Home) 437 (Work) Assigned To: TSC	0
METCALFE, DOUG Westminster 425-1695 (Home) 344 (Work) Assigned To: NONE	

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ELECTRICPhone
Lists Affected

BRUXVOORT, MARVIN J.

Loveland

669-7175 (Home)

233 (Work)

Assigned To: NONE

CRUZ, DAN

Westminster

428-0157 (Home)

233 (Work)

Assigned To: NONE

HARTSOUGH, PATRICK J.

Fort Lupton

785-2463 (Home)

233 (Work)

Assigned to: NONE

LAMB, ROBERT E.

Longmont

772-0757 (Home)

336 (Work)

Assigned To: PCC

U,M

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MAINTENANCEPhone
Lists Affected

ADAMS, DENNIS R.
Longmont
772-7759 (Home)
232 (Work)
Assigned To: NONE

AMEN, TOM
Greeley
330-9868 (Home)
232 (Work)
Assigned To: NONE

BASS, ROY J., JR.
Northglenn
452-2716 (Home)
232 (Work)
Assigned To: NONE

BATES, G. DEXTER
Greeley
356-1894 (Home)
244 (Work)
Assigned To: NONE

BISHARD, LEVI V.
Brighton
452-7245 (Home)
343 (Work)
855-7257 (Page Number)
Assigned To: NONE

BURNETT, RANDALL
Brighton
659-0787 (Home)
228 (Work)
Assigned To: NONE

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MAINTENANCEPhone
Lists Affected

BURTIS, JOHN R.
Fort Lupton
857-2816 (Home)
340 (Work)
Assigned To: NONE

CLARK, ARTHUR L.
Berthoud
532-4081 (Home)
228 (Work)
Assigned To: NONE

CLAYTON, DWIGHT
Johnstown
587-4700 (Home)
232 (Work)
Assigned To: NONE

COGDILL, LARRY
Johnstown
587-4825 (Home)
232 (Work)
Assigned To: NONE

CRAINE, WARD A. O,U
Loveland
667-5427 (Home)
222 (Work)
890-0804 (Page Number)
Assigned To: TSC

DAVIS, JENNIFER
Evans
330-7076 (Home)
231 (Work)
Assigned To: NONE

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MAINTENANCEPhone
Lists Affected

DESANTI, ROCKY

Brighton

659-3942

(Home)

232

(Work)

Assigned to: NONE

DIXON, GEORGE D.

Longmont

776-2634

(Home)

228

(Work)

855-7257

(Page Number)

Assigned To: NONE

FORREST, DEAN

Firestone

833-2199

(Home)

232

(Work)

Assigned To: NONE

GOODMAN, MICHAEL J.

Platteville

785-2185

(Home)

340

(Work)

Assigned To: NONE

GUILLEN, ANTHONY

Longmont

772-3191

(Home)

232

(Work)

Assigned To: NONE

HALVORSON, JOHN

Johnstown

587-2226

(Home)

232

(Work)

Assigned To: NONE

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MAINTENANCEPhone
Lists Affected

HOOD, GREG

| Longmont

| 776-9804

(Home)

232

(Work)

Assigned To: NONE

HORIHAN, DEVIN P.

Longmont

776-5308

(Home)

232

(Work)

Assigned To: NONE

JUDSON, RICK

Johnstown

587-4120

(Home)

232

(Work)

Assigned To: NONE

KARICH, JACK

Platteville

785-2959

(Home)

232

(Work)

Assigned To: NONE

KRUSE, QUENTIN L.

Brighton

451-1901

(Home)

232

(Work)

Assigned To: NONE

LEWIS, ORVAL A.

Commerce City

288-4370

(Home)

232

(Work)

Assigned To: NONE

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MAINTENANCEPhone
Lists Affected

LLANAS, FRANK

Fort Lupton

857-2583 (Home)

232 (Work)

Assigned To: NONE

MANENTI, THOMAS

Greeley

330-0978 (Home)

228 (Work)

Assigned To: NONE

MEDBERY, GERALD D.

Greeley

330-6119 (Home)

232 (Work)

Assigned To: NONE

MEIER, EDWARD J.

Denver

355-2988 (Home)

230 (Work)

Assigned To: NONE

MONTOYA, JOHN P.

Platteville

785-2961 (Home)

228 (Work)

Assigned To: NONE

MORGAN, GREGORY R.

Greeley

353-2693 (Home)

389 (Work)

Assigned To: NONE

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MAINTENANCE

Phone
Lists Affected

OWEN, JON E.
Johnstown
587-2385 (Home)
340 (Work)
855-7257 (Page Number)
Assigned To: NONE

PETERA, JAMES
Westminster
427-6273 (Home)
233 (Work)
890-0832 (Page Number)
Assigned To: TSC

U,0

RHOTON, MICHAEL A.
Longmont
833-4074 (Home)
232 (Work)
Assigned To: NONE

ROWELL, ROBERT L.
Platteville
785-6268 (Home)
232 (Work)
Assigned to: NONE

SCHUYLER, TIMOTHY LEE
Brighton
659-1183 (Home)
235 or 232 (Work)
Assigned To: NONE

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MAINTENANCEPhone
Lists Affected

SKAGGS, EDWARD ROY

Greeley

352-6334 (Home)

232 (Work)

Assigned To: NONE

SKELLY, GREGORY J.

Arvada

426-5661 (Home)

232 (Work)

Assigned To: NONE

SLABY, RICKY H.

Denver

287-0675 (Home)

232 (Work)

Assigned To: NONE

SMOOT, GREGORY ALAN

Longmont

776-0338 (Home)

232 (Work)

Assigned To: NONE

SNYDER, JERRY

Greeley

352-3032 (Home)

232 (Work)

Assigned To: NONE

STEPHENS, DEAN

Denver

296-4073 (Home)

232 (Work)

Assigned To: NONE

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MAINTENANCEPhone
Lists Affected

TREGONING, WILLIAM E.

Johnstown

587-2133 (Home)

232 (Work)

Assigned To: NONE

WEBB, RONALD W.

Longmont

776-8219 (Home)

229 (Work)

855-7257 (Page Number)

Assigned To: PCC

U,M,

WEILNAU, LARRY L.

Platteville

785-6050 (Home)

232 (Work)

Assigned To: NONE

WERNESS, STEPHEN J.

Berthoud

532-2577 (Home)

232 (Work)

Assigned To: NONE

WIDOWS, RICH

Loveland

663-1080 (Home)

232 (Work)

Assigned To: NONE

WINDHORST, WILLIAM

Platteville

785-2194 (Home)

232 (Work)

Assigned To: NONE

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MAINTENANCE

Phone
Lists Affected

YODER, FRED
Johnstown
587-4335 (Home)
232 (Work)
Assigned To: NONE

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MAINTENANCE Q.C.

Phone
Lists Affected

BASHLINE, TERRILL G. Windsor 686-9763 (Home) 262 (Work) Assigned To: PCC	M
DILLEN, TANDY Greeley 356-3370 (Home) 262 (Work) Assigned To: PCC	M
HOHN, JOHN Platteville 785-6322 (Home) 260 (Work) Assigned To: PCC	M
MCAFFEE, GEORGE K. Fort Lupton 857-6498 (Home) 260 (Work) Assigned To: PCC	M
MURPHY, GERALD J. Platteville 785-2542 (Home) 262 (Work) Assigned To: PCC	M
REDMOND, GEORGE Evans 339-3152 (Home) 251 (Work) 890-1940 (Page Number) Assigned To: PCC	M

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MAINTENANCE Q.C.

Phone
Lists Affected

WYATT, RONALD
Fort Collins
493-3649 (Home)
262 (Work)
Assigned To: PCC

M

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MISCELLANEOUSPhone
Lists Affected

JOHNSON, JAMES E. J
Ft. Collins
482-3029 (Home)
491-5380 (Work)
Assigned To: NONE

JOHNSON, JANET N
Ft. Collins
482-3029 (Home)
491-5930 (Work)
Assigned To: SEOC

OLSON, HILDING G.
Fort Collins
493-8797 (Home)
491-6558 (Work)
491-5450 (Work)
Assigned To: NONE

McDONALD, MARION J
Ft. Collins
484-0084 (Home)
491-5094 (Work)
Assigned To: NONE

PLUMLEE, G.L., III E,J,Z
Longmont
776-9541 (Home)
490 (Work)
890-2225 (Page Number)
Assigned To: NONE

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NUCLEAR DOCUMENTS

	<u>Phone Lists Affected</u>
BOLLIG, PATRICIA L. Evans 339-3972 (Home) 204 (Work) Assigned To: TSC	0
CONNELLY, DANA Evans 353-4575 (Home) 210 (Work) Assigned To: TSC	0
COLLINS, MARGARET O. Johnstown 587-2172 (Home) 207 (Work) Assigned to: TSC	0
EDWARDS, DONNA Loveland 669-1680 (Home) 214 (Work) Assigned To: TSC	0
FLORES, ABBY Greeley 356-0038 (Home) 208 (Work) Assigned To: NONE	
FOSTER, BARB Longmont 772-5552 (Home) 205 (Work) Assigned To: NONE	

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NUCLEAR DOCUMENTS

Phone
Lists Affected

KATCHER, SUE M.
Greeley
356-0351 (Home)
212 (Work)
Assigned To: FCP

L

KITZMAN, AUDREY L.
Platteville
737-2578 (Home)
206 (Work)
Assigned To: TSC

O

LEHR, SUSAN
Westminster
422-1280 (Home)
451 (Work)
Assigned To: PCC

M

LIBAL, DEBBIE
Longmont
651-1404 (Home)
213 (Work)
Assigned To: TSC

O

MAROSTICA, CHRIS
Johnstown
587-2104 (Home)
217 (Work)
Assigned To: NONE

RENVILLE, SCOTT
Thornton
427-2432 (Home)
216 (Work)
Assigned To: NONE

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NUCLEAR DOCUMENTS

Phone
Lists Affected

SHAFER, TERRI
Johnstown
587-4061 (Home)
457 (Work)
Assigned To: PCC

M

STIEFF, CAROLE
Platteville
587-2500 (Home)
209 (Work)
Assigned To: PCC

M

STROH, CARLENE
Johnstown
587-2150 (Home)
338 (Work)
Assigned To: SAS

TAYLOR, MICHELLE
Fort Collins
484-6705 (Home)
337 (Work)
Assigned To: CAS

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OPERATIONS

Phone
Lists Affected

ASHMORE, WILLARD J.
Platteville
785-6344 (Home)
221 (Work)
Assigned To: NONE

DAHLSTROM, JOHN
Greeley
353-6536 (Home)
221 (Work)
Assigned To: NONE

DECATOIRE, DAVID A.
Johnstown
587-4038 (Home)
221 (Work)
Assigned To: NONE

DENISTON, MARTIN E.
Longmont
776-3776 (Home)
219 (Work)
Assigned To: TSC

O,U

DICE, THOMAS J.
Loveland
669-6950 (Home)
327 (Work)
Assigned To: NONE

EINIG, KENNETH J.
Longmont
651-1279 (Home)
221 (Work)
Assigned To: NONE

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OPERATIONS

Phone
Lists Affected

EVANS, CHRISTOPHER J.
Milliken
587-2418 (Home)
221 (Work)
Assigned To: NONE

EVANS, DENNIS W.
Longmont
776-9672 (Home)
219 (Work)
Assigned To: TSC

O,U

FIELDS, M.D.
Greeley
352-6976 (Home)
221 (Work)
Assigned To: NONE

FISHER, JEFFREY
Greeley
330-6130 (Home)
221 (Work)
Assigned To: NONE

FOSTER, KENT E.
Longmont
772-5552 (Home)
221 (Work)
Assigned To: NONE

FRANEK, WILLIAM J.
Berthoud
532-3489 (Home)
218 (Work)
890-0558 (Page Number)
Assigned To: CR

C,E,J,
T,U,V,
Y,Z

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OPERATIONS

Phone
Lists Affected

FRAZIER, MICHAEL S.
Northglenn
457-3719 (Home)
221 (Work)
Assigned To: NONE

FROST, BRIAN C.
Greeley
351-7430 (Home)
221 (Work)
Assigned To: NONE

HACKETT, LANE L., JR.
Greeley
330-1063 (Home)
221 (Work)
Assigned To: NONE

HAK, JOHN P.
Longmont
776-1904 (Home)
219 (Work)
Assigned To: TSC

O,U

HANLON, JOSEPH E.
Windsor
686-9169 (Home)
221 (Work)
Assigned To: NONE

HANSEN, ERIC
Greeley
356-3539 (Home)
220 (Work)
Assigned To: NONE

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OPERATIONS

Phone
Lists Affected

HAWKINS, RUSSELL

Greeley
| 356-1326 (Home)
221 (Work)
Assigned To: NONE

HOCKENSMITH, DAN

Loveland
None (Home)
221 (Work)
Assigned To: NONE

HOLMES, DAVID B.

Greeley
330-0757 (Home)
327 (Work)
Assigned To: NONE

| HOOD, DONALD P.

| Longmont
| 776-1843 (Home)
219 or 347 (Work)
Assigned To: TSC

E,J,
O,U,
Y

HOOVER, JAMES A.

Loveland
663-1835 (Home)
221 (Work)
Assigned To: NONE

| HUNTER, JOE J.

Greeley
330-1411 (Home)
| 219 (Work)
Assigned To: NONE

O,U

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OPERATIONS

Phone
Lists Affected

JOHNSON, DARRELL E.
Platteville
785-6089 (Home)
221 (Work)
Assigned To: NONE

KASTEN, MICHAEL D.
Platteville
785-2377 (Home)
221 (Work)
Assigned To: NONE

KEVAN, ROBERT L.
Longmont
772-3922 (Home)
221 (Work)
Assigned To: NONE

KOLESKI, STANLEY V.
Northglenn
457-3572 (Home)
221 (Work)
Assigned To: NONE

LAWLOR, BRUCE
Evans
330-3312 (Home)
221 (Work)
Assigned To: NONE

LOPKOFF, WILLIAM W.
Greeley
356-7677 (Home)
221 (Work)
Assigned To: NONE

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OPERATIONS

Phone
Lists Affected

MAGNINIE, WAYNE H.

Frederick
833-4224 (Home)
221 (Work)
Assigned To: NONE

MAYNARD, JOHN H.

Longmont
772-3634 (Home)
221 (Work)
Assigned To: NONE

MOORE, GAROLD E.

Greeley
356-5378 (Home)
220 (Work)
Assigned To: NONE

MORGAN, PHILIP C.

Greeley
330-5269 (Home)
221 (Work)
Assigned To: NONE

MURPHY, SHAWN

Thorton
427-7510 (Home)
221 (Work)
Assigned To: NONE

NETZEL, KEN

Longmont
772-4618 (Home)
220 (Work)
Assigned To: NONE

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OPERATIONS

Phone
Lists Affected

O'HAGAN, HUGH J. Longmont 776-8232 (Home) 219 (Work) Assigned To: TSC	O,U
REIGEL, GLEN V. Greeley 330-4235 (Home) 219 (Work) Assigned To: TSC	O,U
SHAFER, STEVEN Platteville 785-6042 (Home) 220 (Work) Assigned To: NONE	
TRUMBLEE, DENNIS Platteville 785-2593 (Home) 221 (Work) Assigned To: NONE	
VANDENBOOGAARD, W. J. Longmont 651-3732 (Home) 221 (Work) Assigned To: NONE	
VAN DYKE, JEROME G. Longmont 772-2476 (Home) 219 or 346 (Work) Assigned To: TSC or CR	O,U

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OPERATIONS

Phone
Lists Affected

VIGIL, ANTHONY L.
Gilcrest
737-2753 (Home)
221 (Work)
Assigned To: NONE

| WEIDERSPON, GARY L.
| Greeley
| 356-7038 (Home)
| 221 (Work)
| Assigned to: NONE

WELLER, JACK R.
Johnstown
587-2984 (Home)
221 (Work)
Assigned To: NONE

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RADIATION PROTECTION

Phone
Lists Affected

BROWN, JAMES V. Evans 339-3972 (Home) 245 (Work) Assigned To: PCC	M
GLAHN, PAUL R. Northglenn 450-5292 (Home) 245 (Work) Assigned To: PCC	M
HUTCHINS, LESTER C. Greeley 330-7187 (Home) 245 (Work) Assigned To: PCC	M
MADISON, GORDON S. Firestone 833-2278 (Home) 245 (Work) Assigned to PCC	M
McGAFFIC, VERNON J. Johnstown 587-2752 (Home) 278 (Work) Assigned To: TSC	M
MILLER, DONALD Loveland 663-3595 (Home) 279 (Work) Assigned To: TSC	M

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RADIATION PROTECTIONPhone
Lists Affected

MORSE, KEITH Greeley 353-6163 (Home) 245 (Work) Assigned To: PCC	M
NASVESCHUK, KENT L. Longmont 651-6254 (Home) 245 (Work) Assigned To: PCC	M
O'DONOGHUE, E. JOHN Northglenn 452-3514 (Home) 245 (Work) Assigned To: PCC	M
POET, STEWART Longmont 652-2297 (Home) 279 (Work) Assigned To: TSC	M
PROCHOWNIK, MICHAEL R. Platteville 785-6010 (Home) 279 (Work) Assigned To: TSC	M
RIMA, STEVEN D. Longmont 772-4068 (Home) 279 (Work) Assigned To: TSC	M

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RADIATION PROTECTION

	<u>Phone Lists Affected</u>
SCHLEIGER, TIMOTHY E. Platteville 785-6314 (Home) 242 (Work) Assigned To: TSC	O,S
SHERROW, STEVEN S. Greeley 353-1338 (Home) 245 (Work) Assigned To: PCC	M
SIEG, STEVEN E. Loveland 663-3468 (Home) 245 (Work) Assigned To: PCC	M
VALENTINE, GRANT D. Berthoud 532-4861 (Home) 245 (Work) Assigned To: PCC	M
WOODARD, WILLIAM E. Longmont 678-0818 (Home) 244 (Work) Assigned To: TSC	O

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RESULTSPhone
Lists Affected

ANDERSON, BARNEY J.

Greeley

351-0722 (Home)

286 (Work)

Assigned To: NONE

BALL, JOSEPH W.

Denver

477-6013 (Home)

286 (Work)

Assigned To: NONE

BARTA, BRADLEY G.

Denver

426-1832 (Home)

256 (Work)

Assigned To: NONE

BROWN, DANIEL J.

Lyons

823-6127 (Home)

286 (Work)

Assigned To: NONE

BURCHFIELD, ROBERT S.

Greeley

351-0373 (Home)

249 (Work)

Assigned To: TSC

0

BURGESS, CHARLES R.

Platteville

785-2154 (Home)

286 (Work)

Assigned To: NONE

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RESULTSPhone
Lists Affected

COLE, JAMES W.
Johnstown
587-2989 (Home)
286 (Work)
Assigned To: NONE

CROWE, CURTIS W.
Lafayette
665-7997 (Home)
247 (Work)
Assigned To: NONE

DUNHAM, DARYL
Keensburg
732-4342 (Home)
288 (Work)
Assigned To: NONE

GALE, MIKE
Gilcrest
737-2521 (Home)
286 (Work)
Assigned To: NONE

GOFF, ALAN
Westminster
428-4421 (Home)
255 (Work)
Assigned To: NONE

JOHNSON, THOMAS
Lafayette
665-9507 (Home)
258 (Work)
Assigned To: NONE

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RESULTSPhone
Lists Affected

JOHNSON, TINA

Denver

452-5436 (Home)

257 (Work)

Assigned To: NONE

KENNEDY, THOMAS

Broomfield

469-3531 (Home)

286 (Work)

Assigned To: NONE

McCAULEY, JERRY

Loveland

667-0635 (Home)

248 (Work)

Assigned To: TSC

O

NELSON, DON M.

Johnstown

587-4189 (Home)

246 (Work)

Assigned To: PCC

M

O'CONNOR, JAMES P.

Denver

457-4882 (Home)

259 (Work)

Assigned To: NONE

ODENBAUGH, KATHY

Platteville

737-2306 (Home)

286 (Work)

Assigned To: NONE

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RESULTS

Phone
Lists Affected

PETTINGER, ALBERT J.

Brighton
536-4333 (Home)
288 (Work)

Assigned To: NONE

PINNER, R.S. JOE

Greeley
330-9075 (Home)
286 (Work)

Assigned To: NONE

SCHMIDT, A.C.

Louisville
666-6955 (Home)
286 (Work)

Assigned To: NONE

SHIBATA, BRAD

Denver
388-2160 (Home)
286 (Work)

Assigned To: NONE

TELAROLI, JOHN

Loveland
669-0267 (Home)
282 (Work)

Assigned To: NONE

WEBER, DAVID LEE

Johnstown
587-4186 (Home)
286 (Work)

Assigned To: NONE

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SCHEDULING/STORESPhone
Lists Affected

BENEDICT, MARGIE M.

M

Greeley
353-7209 (Home)
313 (Work)
Assigned To: PCC

BLOSSOM, MIKE

M

Platteville
785-6302 (Home)
297 (Work)
Assigned To: PCC

ERWIN, RICHARD W.

M

Greeley
330-7178 (Home)
321 (Work)
Assigned To: PCC

GLASS, GERALD L.

J,Y

Brighton
659-4118 (Home)
253 (Work)
Assigned To: PCC

HAMBLIN, RICHARD D.

M

Loveland
667-1703 (Home)
254 (Work)
Assigned To: PCC

HARDING, CLIFF

M

Platteville
785-2398 (Home)
311 (Work)
Assigned To: PCC

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SCHEDULING/STORESPhone
Lists Affected

HAYS, KAREN	M
Denver	
778-7702 (Home)	
319 (Work)	
Assigned To: PCC	
HOLCOMB, WALTER E.	M
Greeley	
330-2068 (Home)	
312 (Work)	
Assigned To: PCC	
HORIHAN, DARLENE	M
Longmont	
776-7976 (Home)	
250 (Work)	
Assigned To: PCC	
POWERS, G.	M
Westminster	
426-1623 (Home)	
252 (Work)	
Assigned To: PCC	
REED, DALE L.	M
Platteville	
785-2159 (Home)	
314 (Work)	
Assigned To: PCC	
TEEL, RICHARD	M
Henderson	
288-1959 (Home)	
261 (Work)	
Assigned To: PCC	

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SECURITYPhone
Lists Affected

ALPS, DONALD R.

Longmont
772-9075 (Home)
298 (Work)

Assigned To: NONE

U

AMICK, DAVID B.

Longmont
772-9378 (Home)
299 (Work)

Assigned To: NONE

BATES, WILLIAM S.

Ft. Collins
484-2966 (Home)
299 (Work)

Assigned To: NONE

BENNETT, MICHAEL B.

Longmont
776-8311 (Home)
299 (Work)

Assigned To: NONE

HART, W. DARRIEL

Denver
371-6745 (Home)
299 (Work)
855-1744 (Page Number)

Assigned To: NONE

HOLLAND, CHARLES C.

Aurora
344-1327 (Home)
299 (Work)

Assigned To: NONE

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TECHNICAL SERVICES

Phone
Lists Affected

BANAGAS, LAURIE
Loveland
663-4434 (Home)
273 (Work)
Assigned To: NONE

BURROWS, RICHARD
Fort Collins
493-4258 (Home)
265 (Work)
Assigned To: NONE

CLAYTON, OWEN J.
Loveland
663-3939 (Home)
277 (Work)
Assigned To: NONE

DAUM, MICHAEL J.
Aurora
690-9652 (Home)
269 (Work)
Assigned To: NONE

DICKERSON, ROBERT A.
Thornton
287-6089 (Home)
273 (Work)
Assigned To: PCC

M

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TECHNICAL SERVICES

	<u>Phone Lists Affected</u>
EGGEBROTEN, JAMES Longmont 651-1523 (Home) 285 (Work) 890-2220 (Page Number) Assigned To: TSC	E,U
FRYE, DUANE L. Johnstown 587-4768 (Home) 276 (Work) Assigned To: PCC	M
GAPPA, ROBERT Fort Collins 482-6551 (Home) 283 (Work) Assigned To: NONE	
HEATH, DAWN Fort Collins 223-5121 (Home) 272 (Work) Assigned To: FCP	L
HELLER, ROGER A. Longmont 772-1093 (Home) 284 (Work) Assigned To: TSC	O
HILL, JIM F. Johnstown 587-2553 (Home) 276 (Work) Assigned To: NONE	

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TECHNICAL SERVICESPhone
Lists Affected

JOHNSON, SHARILYN

Loveland

663-1431

(Home)

267

(Work)

Assigned To: TSC

0

JOSEPH, MARK

Westminster

465-1248

(Home)

275

(Work)

Assigned To: NONE

MERRITT, DARLA

Gilcrest

737-2339

(Home)

271

(Work)

Assigned To: FCP

L

NOVACHEK, FRANK J.

Thornton

457-8034

(Home)

270

(Work)

890-1941

(Page Number)

Assigned To: TSC

0

REED, ASA B.

Longmont

772-5312

(Home)

325

(Work)

890-1942

(Page Number)

Assigned To: TSC

E,U

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TECHNICAL SERVICESPhone
Lists Affected

SHERMAN, RUSSELL

Lafayette

666-9836 (Home)

268 (Work)

Assigned To: NONE

SILLS, JUDD M.

Fort Collins

221-5059 (Home)

265 (Work)

890-2223 (Page Number)

Assigned To: TSC

E,O,U

STUART, DAVE

Longmont

651-1927 (Home)

274 (Work)

Assigned To: NONE

* NOTE: Calls to PSC phones from outside of the PSC telephone system may require use of a different telephone exchange. For those cases, the exchange for direct dial from any outside line is given in parentheses to the left of the PSC system exchange. Telephone calls to FSV personnel from other PSC telephones is by dialing 785-1xxx, where xxx is the three digit work extension, or by dialing 735-2223, and using the switchboard operator.

TRAININGPhone
Lists Affected

BEARLY, PHILIP B. Loveland 669-6636 (Home) 455 (Work) Assigned To: PCC	M
HOOPER, RON O. Northglenn 452-3614 (Home) 458 (Work) Assigned To: PCC	M
MOLER, ROBERT Longmont 772-9357 (Home) 456 (Work) Assigned To: PCC	M
MURPHY, MIKE Golden 279-6762 (Home) 454 (Work) Assigned To: PCC	M
RIVERA, RICHARD Loveland 667-1906 (Home) 453 (Work) Assigned To: PCC	M
SWITZER, JOSEPH R. Johnstown 587-4134 (Home) 452 (Work) Assigned To: PCC	M

* NOTE: Calls to PSC phones from outside of the PSC telephone system may require use of a different telephone exchange. For those cases, the exchange for direct dial from any outside line is given in parentheses to the left of the PSC system exchange. Telephone calls to FSV personnel from other PSC telephones is by dialing 785-1xxx, where xxx is the three digit work extension, or by dialing 785-2223, and using the switchboard operator.

TRAININGPhone
Lists Affected

WILLFORD, STEVE R.

J,Y

Brighton

659-5258

(Home)

450

(Work)

Assigned To: PCC

* NOTE: Calls to PSC phones from outside of the PSC telephone system may require use of a different telephone exchange. For those cases, the exchange for direct dial from any outside line is given in parentheses to the left of the PSC system exchange. Telephone calls to FSV personnel from other PSC telephones is by dialing 785-1xxx, where xxx is the three digit work extension, or by dialing 785-2223, and using the switchboard operator.



RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
RERP-MET	Meteorological Data Acquisition	4	08-06-84
RERP-TEAMS	Emergency Team Formation and Direction	3	08-06-84
RERP-SUPORG	Use and Coordination of Non-PSC Support Organizations	2	08-06-84
RERP-CORE	Core Damage Evaluation	1	06-01-84



TITLE: <u>METEOROLOGICAL DATA ACQUISITION</u>																																																		
ISSUANCE AUTHORIZED BY	<i>Don Warembourg by Milt McBride</i>																																																	
PORC REVIEW	PORC 580 AUG 2 - 1984	EFFECTIVE DATE 8-6-84																																																
<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><u>Sections</u></th> <th style="text-align: left; border-bottom: 1px solid black;"><u>Description</u></th> <th style="text-align: right; border-bottom: 1px solid black;"><u>Page</u></th> </tr> </thead> <tbody> <tr> <td>General</td> <td></td> <td style="text-align: right;">3</td> </tr> <tr> <td>1.0 <u>Criteria</u></td> <td></td> <td style="text-align: right;">3</td> </tr> <tr> <td>2.0 <u>Procedure</u>.....</td> <td></td> <td style="text-align: right;">3</td> </tr> <tr> <td> 2.1 Primary Meteorological System Data Acquisition</td> <td></td> <td style="text-align: right;">3</td> </tr> <tr> <td> 2.2 Back-up Meteorological Data.....</td> <td></td> <td style="text-align: right;">5</td> </tr> <tr> <td>3.0 <u>Responsibilities</u></td> <td></td> <td style="text-align: right;">9</td> </tr> <tr> <td>4.0 <u>References</u></td> <td></td> <td style="text-align: right;">9</td> </tr> <tr> <td>5.0 <u>Referenced Procedures</u>.....</td> <td></td> <td style="text-align: right;">9</td> </tr> <tr> <td>Figure 1, Sample PROFS MESONET Output</td> <td></td> <td style="text-align: right;">1</td> </tr> <tr> <td>Figure 2, PROFS MESONET System Station Locations and Identifiers</td> <td></td> <td style="text-align: right;">1</td> </tr> <tr> <td>Figure 3, Conversion Plots for Temperature and Dewpoint Temperature.....</td> <td></td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 1, Legend of Symbols for Figure 1</td> <td></td> <td style="text-align: right;">1</td> </tr> <tr> <td>Table 2, Stability Classification Criteria.....</td> <td></td> <td style="text-align: right;">1</td> </tr> <tr> <td>Datasheet 1, Back-up Meteorological Data.....</td> <td></td> <td style="text-align: right;">1</td> </tr> <tr> <td>Datasheet 2, Collection of Data Utilizing Raw Voltages.....</td> <td></td> <td style="text-align: right;">1</td> </tr> </tbody> </table>			<u>Sections</u>	<u>Description</u>	<u>Page</u>	General		3	1.0 <u>Criteria</u>		3	2.0 <u>Procedure</u>		3	2.1 Primary Meteorological System Data Acquisition		3	2.2 Back-up Meteorological Data.....		5	3.0 <u>Responsibilities</u>		9	4.0 <u>References</u>		9	5.0 <u>Referenced Procedures</u>		9	Figure 1, Sample PROFS MESONET Output		1	Figure 2, PROFS MESONET System Station Locations and Identifiers		1	Figure 3, Conversion Plots for Temperature and Dewpoint Temperature.....		1	Table 1, Legend of Symbols for Figure 1		1	Table 2, Stability Classification Criteria.....		1	Datasheet 1, Back-up Meteorological Data.....		1	Datasheet 2, Collection of Data Utilizing Raw Voltages.....		1
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Worksheet/Datasheet/Checklist Control Sheet1

Form Use Reporting Sheet *2

* ANY TIME A WORKSHEET, DATASHEET, OR CHECKLIST HAS BEEN WRITTEN ON,
| COMPLETE THE REPORTING SHEET ATTACHED AND FORWARD IT TO THE NUCLEAR
| DOCUMENTS SPECIALIST, FORT ST. VRAIN.



General

This procedure provides guidance for the acquisition of meteorological data from the existing meteorological instrumentation and displays at FSV, as well as from the backup 10 meter tower operated by the National Oceanic and Atmospheric Administration (NOAA). Display of parameters from these systems is available at several locations: chart recorders in the Control Room, chart recorders in the meteorological equipment shack adjacent to the 60 meter tower directly north of the plant, on the data logger computer displays in the TSC and CR, and for the 10 meter tower NOAA instrumentation, by telephone dial-up utilizing the Silent 700 in Radiochemistry. This procedure will discuss, in general, the means for obtaining meteorological data from displays and various alternative sources of back-up data.

1.0 Criteria

This procedure is valid for use under any conditions and is not solely provided for use during a radiological emergency. The main purpose for placing this procedure in the RERP implementing procedures is to assure the rapid access to meteorological data during an emergency, should that information be needed.

2.0 Procedure

2.1 Primary Meteorological System Data Acquisition (60 meter tower)

Data from the primary meteorological system is available from four (4) locations: chart recorders in the control room on I-09; chart recorders in the meteorological equipment shack adjacent to the sixty meter tower, directly north of the plant; from the data logger displays in the control room; and from the data logger display in the Technical Support Center.

2.1.1 Chart Recorders

(1) The following parameters are displayed on the chart recorders on I-09 in the Control Room:

- Wind Speed and Direction at the fifty-eight (58) meter elevation on the 60 meter tower;
- Wind Speed and Direction at the ten (10) meter elevation on the 60 meter tower;
- Differential Temperature between 58 meters and 10 meters on the sixty meter tower (°C);



- Ambient Temperature at 10 meters;
- Dew point temperature; and
- Rain guage level (inches).

(2) The following parameters are displayed on the chart recorders in the meteorological equipment shack:

- Wind Speed and Direction at the fifty-eight (58) meter elevation on the 60 meter tower;
- Wind Speed and Direction at the ten (10) meter elevation on the 60 meter tower;
- Differential Temperature between 58 meters and 10 meters on the sixty meter tower ($^{\circ}\text{C}$);
- Ambient Temperature at 10 meters;
- Dew point temperature; and
- Rain guage level (inches).

2.1.2 Data Logger Display

The following data is telemetered into, or calculated by, the plant data logger system, and is available for use in both the TSC and the Control Room.

- Differential Temperature (58m-10m) ($^{\circ}\text{F}$);
- Dew Point Temperature ($^{\circ}\text{F}$);
- Rain Guage depth (inches);
- Fifteen (15) minute average wind direction at both 10 meters and 58 meters;
- 15 minute average wind speed at both 10 meters and 58 meters;
- Standard deviation of the wind direction (15 minutes worth of data at five second intervals) at both 10 meters and 58 meters (σ);
- Ambient temperature at 10 meters ($^{\circ}\text{F}$);



- Calculated Pasquill category by (ΔT);
- Calculated Pasquill category by sigma theta ($\sigma\theta$);
- Wind Speed and Wind Direction at both the 58 meter and 10 meter elevation.

The data from the primary meteorological system (60 meter tower) is available on several data logger displays. The knowledge of how to obtain displays by number is implicit in obtaining data from the data logger (Press "HOME", type the given four digit display number, press "DISPLAY", and the requested display will be shown on the selected CRT). The data discussed in this procedure may be displayed on the following data logger displays: 8029, 0666, and 0667.

2.2 Back-up Meteorological Data (10 meter tower)

2.2.1 Data Logger Display

Certain key parameters from the back-up (10 meter tower) are telemetered into the plant data logger. Of the back-up meteorological parameters available from the data logger (display 8029), wind speed and wind direction are the essential parameters for performing offsite dose computations. Parameters available are:

- Wind Speed (PSC Instrument);
- Wind Direction (PSC Instrument);
- Ambient Temperature (NOAA Instrument);
- Dew Point Temperature (NOAA Instrument);
- Rain Guage Depth (NOAA Instrument-005);
- Standard Deviation of Wind Direction- $\sigma\theta$ (Calculated)
- Stability Classification by $\sigma\theta$ from 10 meter tower (see display 0667)

2.2.2 Modem Data Acquisition (Personal Computer)

The entire spectrum of data from the back-up meteorological tower is available via the use of any Personal Computer with a modem attached. The parameters available, and their identifiers on the



MESONET output, are shown on Table 1. The Fort St. Vrain back-up tower is represented by the identifier "PTL" on the printout (see Figure 1 for a sample printout). Representation of the locations of the stations participating in the MESONET system is shown on Figure 2. Instructions for the use of a Personal Computer for data acquisition follow:

- (1) Turn on printer and computer. (The modem switch should be in the "voice" position, set up for 300 BAUD, and no disk need be inserted in the drive.)
- 2) When "C>" is seen on the terminal, type in "pc-talk". Press enter where prompted.
- 3) Press the "Ctrl" key simultaneously with the "prtsc" key to print all screens.
- 4) Dial 8-303-447-9179. When the high pitched carrier tone is received, place the modem switch in the "data" position and place the phone in its receiver.

8-303-447-9179, is provided by NOAA to provide a listing of the last three available 5 minute updates of the MESONET system, and then drop the user automatically off the telephone line at the end of the transmission.

8-303-447-0992 is generally used by the Solar Energy Research Institute (SERI), and provides an update every 5 minutes. If possible, use of this line should be limited to the hours 0000 to 0800 to avoid conflicts with SERI. In an emergency, 8-303-447-0992 could be made available on a continual basis, by contacting Mr. Val Swarcz (Office, 8-303-231-1816; Home, 8-303-494-1578)

NOTE: The PROFS MESONET network issues weather updates every five (5) minutes on the 8-303-447-0992 line. Since the network is likely to be either between updates or in the process of transmitting an update, it may be necessary to wait for up to 5 minutes for the first complete printout to begin to be received (see Figure 1 for sample PROFS MESONET printout and Table 1 for an explanation and legend of symbols).



- 5) When prompted to enter a password, enter "SURF". The shift key must be depressed for the proper password to be received.

NOTE: This password has been issued to authorized users only, and should be kept confidential.

- 6) Turn off unit and printer when all data is received.

Record the data, as appropriate to needs, on Datasheet 1, and perform stability classification calculations (see Table 2).

2.2.3 Remote Data Readout at Back-up Tower

Remote determination of key back-up meteorological parameters is possible via two (2) methods. Wind speed, wind direction, ambient temperature, and dewpoint temperature may be readily determined from read-out of post-conditioner voltages utilizing a permanently installed switching box and performing linear conversion calculations. In addition, should read-out of data from the back-up tower become necessary for a prolonged time, NOAA has available for PSC use, data conversion and display units that will continuously display the current back-up meteorological parameters.

2.2.3.1 Use of Post-Conditioner Voltages

Utilizing the installed switching box at the meteorological equipment shack, enter on Datasheet 2 the displayed voltages for channels 1, 3, 5, and 8. Datasheet 2 provides for recording the wind speed, wind direction, ambient temperature, and dewpoint temperature, as well as for performing data conversion calculations and stability classification calculations.

2.2.3.2 NOAA Conversion/Display Unit

Install the NOAA scanning conversion/display unit in accordance with NOAA instructions. Record data, as appropriate, and perform stability classification calculations as shown on Datasheet 1.



2.2.4 Telephone Voice Transfer

Data from any of the MESONET system towers is generally available direct from NOAA personnel weekdays between 0800 hours and 2400 hours by calling any of the following telephone numbers, identifying yourself (PSC/FSV), and requesting data for station "PTL":

- Call the U.S. Department of Commerce in Boulder, Colorado by dialing 8-303-497-6987* (0800-2400 hours, Monday through Friday).

*Backup phone numbers are 8-303-497-6895, 8-303-497-6964, 8-303-497-6116.

Record data received on Datasheet 1 and determine stability classification as shown.

3.0 Responsibilities

Data collection, calculations, and meteorological parameter determinations utilizing this procedure under emergency conditions shall be performed by the following RERP assigned individuals, or their designees:

- Radiological Assessment Coordinator
- Radiological Assessment Individual at the TSC
- Shift Supervisor

Use of this procedure under non-RERP conditions is at the discretion of the user.

4.0 References

- 4.1 Surface MESONET Manual, U. S. Department of Commerce (Internal Document)

5.0 Referenced Procedures

- 5.1 SR-TE-3-M, Back-up Meteorological Data Collection
- 5.2 RERP-DOSE, Offsite Dose Calculations
- 5.3 RERP-CR, Control Room Procedure



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

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FIGURE 1

Sample PROFS Mesonet Output

ENTER PASSWORD -
PROFS EXPERIMENTAL MESONET 26-JUL-84 16:05Z 5 MINUTE AVERAGES

STATION	T	TD	S	AZ	PK-GUST	PCP	SR	ZEN	SR	40DEG	PRES
ARV	71	61	6	34	10	22	0.00	692		640	844.7
RBC	74	56	7	62	10	68	0.00	686		647	847.6
BRI	70	59	4	35	7	27	0.00	522		443	646.2
LGM	74	55	7	60	12	71	0.00	663		672	854.7
KNB	70	60	6	41	10	71	0.00	540		502	856.4
ROL	50	49	6	254	8	254	0.00	209		0	805.3
EPK	64	48	3	101	6	91	0.00	748		674	773.3
LAK	67	39	7	15	10	30	0.00	393		351	825.7
LTN	68	57	4	1	7	356	0.00	389		340	834.3
ISG	43	52	8	15	11	23	0.00	194		167	677.8
PTL	72	57	5	9	9	351	0.00	510		464	860.4
LVE	73	56	6	347	8	345	0.00	339		353	857.7
BYE	74	59	5	352	10	13	0.00	636		586	852.1
FOR	72	54	2	342	3	336	0.00	572		566	848.6
AUR	71	59	6	339	9	355	0.00	0		0	847.2
NUN	72	52	6	57	8	58	0.00	824		791	846.2
GLY	74	57	5	38	8	35	0.00	710		698	867.3
FTM	67	59	14	52	17	51	0.00	525		458	871.6
ELB	58	53	11	324	14	319	0.00	31		74	797.4
WRD	50	47	2	46	5	34	0.00	141		121	717.4
BGD	72	35	8	22	11	22	0.00	653		611	861.0
ERI	70	59	6	18	10	8	0.00	0		0	850.8



FIGURE 2

PROFS MESONET System Station Locations and Identifiers

PROFS Surface Mesonetwork 1981

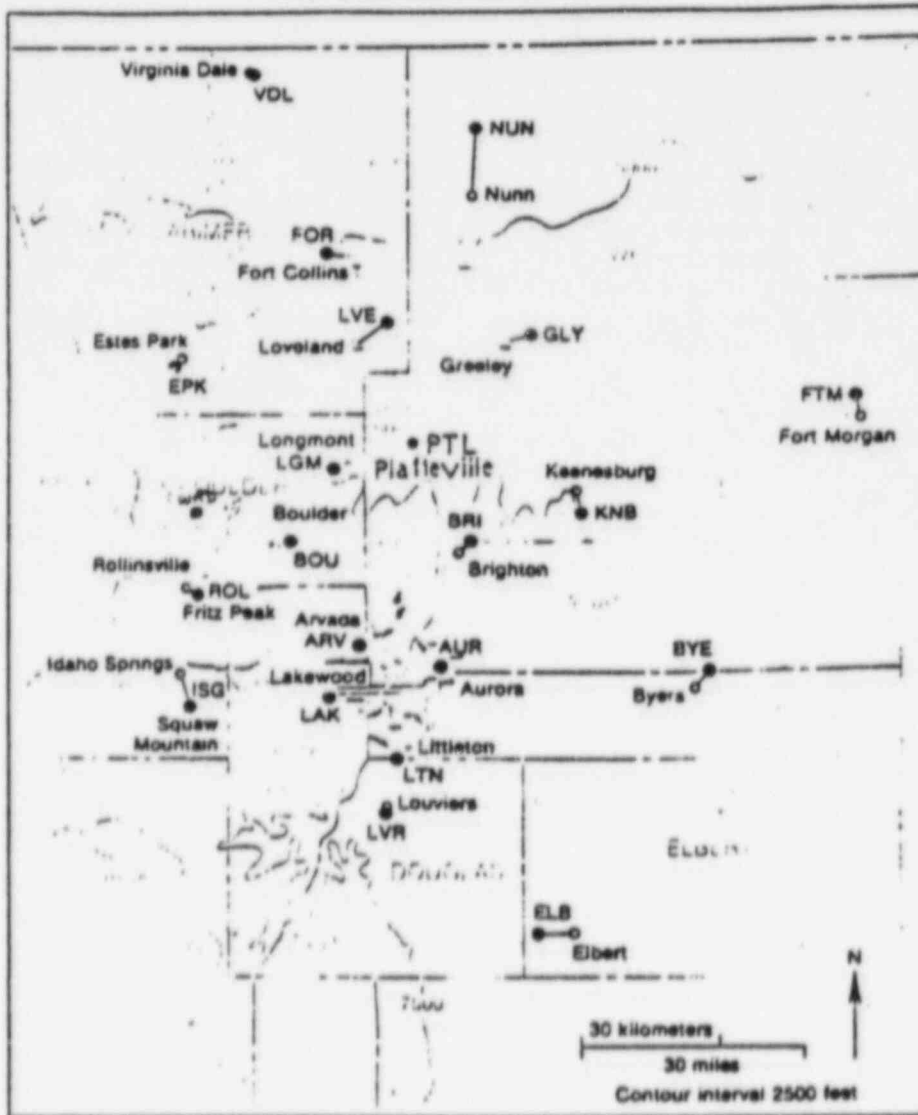




FIGURE 3

Conversion Plots for Temperature and Dewpoint Temperature

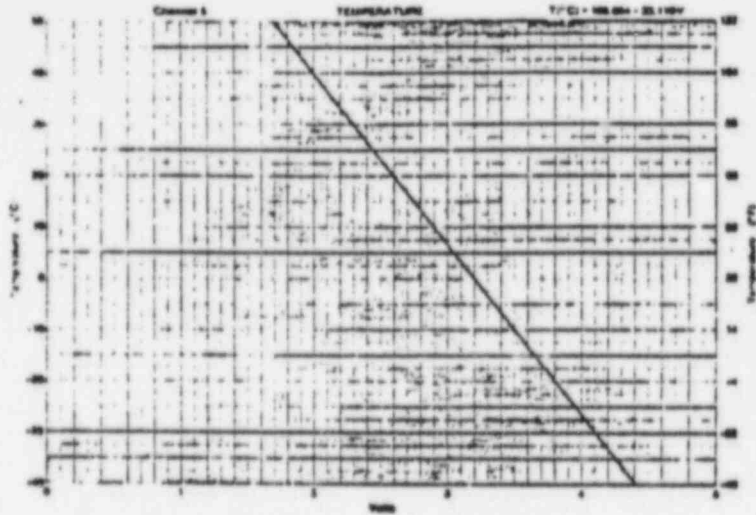


Fig. 19c. Calibration conversion graph for temperature

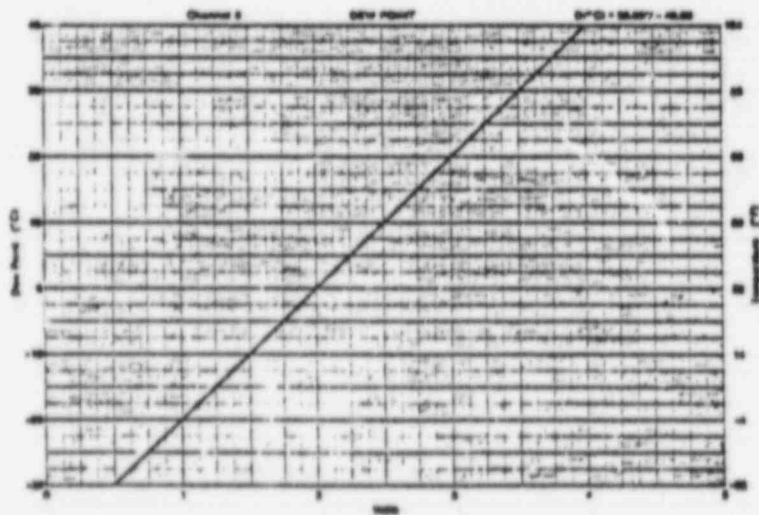


Fig. 19d. Calibration conversion graph for dew point



TABLE 1

Legend of Symbols for Figure 1

<u>SYMBOL</u>	<u>MEANING</u>
T	Temperature (°F) @ 10m Elevation
TD	Dew Point (°F)
S	Windspeed - Average (knots)
AZ	Wind direction - Average (degrees)
PK-GUST	Windspeed - Peak (knots) and Peak Wind Direction (degrees)
PCP	Precipitation (inches)
VIS	Visibility (miles)
SR ZEN	Solar Radiation - Zenith (watts/m ²)
SR 40 DEG	Solar Radiation - 40° above horizon (watts/m ²)
P	Atmospheric Pressure

Explanation of Printout:

The backup meteorological tower is identified as station "PTL" on the printout. A sample output is shown on Figure 1, and a legend defining the symbols on the printout is listed above. It must be noted that the time shown on the PROFS output is in Coordinated Universal Time (UTC) which is seven (7) hours later than Mountain Standard Time (MST) or six (6) hours later than Mountain Daylight Time (MDT).



TABLE 2

Stability Classification Criteria*

ΔT ($^{\circ}F$) from 60m Tower	Pasquill Categories	Stability Classification	σ_{θ}^{**} (Degrees)
≤ -1.7	A	Extremely Unstable	≥ 22.5
> -1.7 to ≤ -1.5	B	Moderately Unstable	< 22.5 to ≥ 17.5
> -1.5 to ≤ -1.3	C	Slightly Unstable	< 17.5 to ≥ 12.5
> -1.3 to ≤ -0.4	D	Neutral	< 12.5 to ≥ 7.5
> -0.4 to ≤ 1.3	E	Slightly Stable	< 7.5 to ≥ 3.8
> 1.3 to ≤ 3.5	F	Moderately Stable	< 3.8 to ≥ 2.1
> 3.5	G	Extremely Stable	< 2.1

* Per proposed Revision 1 to Regulatory Guide 1.23, September 1980.

** Standard Deviation of horizontal wind direction fluctuation (plume meander) over a period of 15 minutes to 1 hour.



DATASHEET 1
Backup Meteorological Data

- PROFS Network data via Personal Computer
 "NOAA Staff"
 "Locally at 10 meter tower"

	<u>TIME/DATE</u>	<u>TIME/DATE</u>	<u>TIME/DATE</u>
	<u> / </u>	<u> / </u>	<u> / </u>
[AZ] Wind Direction*- Average (degrees)	_____	_____	_____
[S] Wind Speed- Average (knots)	_____	_____	_____
[-GUST] Wind Direction- Peak (degrees)	_____	_____	_____
[PK-] Wind Speed- Peak (knots)	_____	_____	_____
[T] Temperature (°F)	_____	_____	_____
[TD] Dew Point (°F)	_____	_____	_____
[VIS] Visibility (Miles)	_____	_____	_____
[PCP] Precipitation- (inches)	_____	_____	_____
[SR ZEN] Solar Radiation- Zenith (watts/m ²)	_____	_____	_____
[SR 40 DEG] Solar Radiation-40° above Horizon (watts/m ²)	_____	_____	_____
[P] Atmospheric Pressure	_____	_____	_____

* $\sigma\theta$ = Square root of maximum difference in wind direction noted over the three 5 minute updates.



DATA SHEET 2

Collection of Data Utilizing Raw Voltages

	TIME/DATE	TIME/DATE	TIME/DATE
	___/___	___/___	___/___
Wind Direction Position No. 1	_____ (V)	_____ (V)	_____ (V)
Wind Direction, degrees (°) = (1) 1.25volts-5.0volts : 450.0 - [72.0 x output voltage] (2) 0.00volts-1.25volts : 90.0 - [72.0 x output voltage]			
Wind Direction Degrees	_____	_____	_____
Wind Speed Position No. 3	_____ (V)	_____ (V)	_____ (V)
Wind Speed = Output voltage/0.05			
Wind Speed (mph)	_____	_____	_____
Ambient Temperature, Position No. 5	_____ (V)	_____ (V)	_____ (V)
Ambient Temperature (see Figure 3 for data conversion)			
Ambient Temperature	_____	_____	_____ °F
Dewpoint Temperature Position No. 8	_____ (V)	_____ (V)	_____ (V)
Dewpoint Temperature (see Figure 3 for data conversion)			
Dewpoint Temperature	_____	_____	_____ °F
Stability Classification: $\sigma\theta$ = Square root(maximum difference in wind direction over three 5 minute updates)			
* The preferred sampling frequency for these purposes is to collect three sets of data five (5) minutes apart.			
Refer to RERP-DOSE for use of this data for dose calculations			



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Worksheet/Datasheet/Checklist Control Sheet

<u>Datasheet No.</u>	<u>Title</u>	<u>Copies</u>
1	Back-up Meteorological Data	2
2	Collection of Data Utilizing Raw Voltages	2



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Checklist Numbers

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FORMS USE REPORTING SHEET(Continued)

COMMENTS

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DATASHEET 1
Backup Meteorological Data

- PROFS Network data via Personal Computer
- "NOAA Staff"
- "Locally at 10 meter tower"

	<u>TIME/DATE</u>	<u>TIME/DATE</u>	<u>TIME/DATE</u>
	___/___	___/___	___/___
[AZ] Wind Direction*- Average (degrees)	_____	_____	_____
[S] Wind Speed- Average (knots)	_____	_____	_____
[-GUST] Wind Direction- Peak (degrees)	_____	_____	_____
[PK-] Wind Speed- Peak (knots)	_____	_____	_____
[T] Temperature (°F)	_____	_____	_____
[TD] Dew Point (°F)	_____	_____	_____
[VIS] Visibility (Miles)	_____	_____	_____
[PCP] Precipitation- (inches)	_____	_____	_____
[SR ZEN] Solar Radiation- Zenith (watts/m ²)	_____	_____	_____
[SR 40 DEG] Solar Radiation-40° above Horizon (watts/m ²)	_____	_____	_____
[P] Atmospheric **Pressure	_____	_____	_____

* $\sigma\theta$ = Square root of maximum difference in wind direction noted over the three 5 minute updates.



DATASHEET 1
Backup Meteorological Data

PROFS Network data via Personal Computer
 "NOAA Staff"
 "Locally at 10 meter tower"

	<u>TIME/DATE</u>	<u>TIME/DATE</u>	<u>TIME/DATE</u>
	<u> / </u>	<u> / </u>	<u> / </u>
[AZ] Wind Direction*- Average (degrees)	_____	_____	_____
[S] Wind Speed- Average (knots)	_____	_____	_____
[-GUST] Wind Direction- Peak (degrees)	_____	_____	_____
[PK-] Wind Speed- Peak (knots)	_____	_____	_____
[T] Temperature (°F)	_____	_____	_____
[TD] Dew Point (°F)	_____	_____	_____
[VIS] Visibility (Miles)	_____	_____	_____
[PCP] Precipitation- (inches)	_____	_____	_____
[SR ZEN] Solar Radiation- Zenith (watts/m ²)	_____	_____	_____
[SR 40 DEG] Solar Radiation-40° above Horizon (watts/m ²)	_____	_____	_____
[P] Atmospheric **Pressure	_____	_____	_____

* σ_8 = Square root of maximum difference in wind direction
noted over the three 5 minute updates.



DATA SHEET 2

Collection of Data Utilizing Raw Voltages

	TIME/DATE	TIME/DATE	TIME/DATE
	___/___	___/___	___/___
Wind Direction Position No. 1	_____ (V)	_____ (V)	_____ (V)
Wind Direction, degrees (°) = (1) 1.25volts-5.0volts : 450.0 - [72.0 x output voltage] (2) 0.00volts-1.25volts : 90.0 - [72.0 x output voltage]			
Wind Direction Degrees	_____	_____	_____
Wind Speed Position No. 3	_____ (V)	_____ (V)	_____ (V)
Wind Speed = Output voltage/0.05			
Wind Speed (mph)	_____	_____	_____
Ambient Temperature, Position No. 5	_____ (V)	_____ (V)	_____ (V)
Ambient Temperature (see Figure 3 for data conversion)			
Ambient Temperature	_____	_____	_____ °F
Dewpoint Temperature Position No. 8	_____ (V)	_____ (V)	_____ (V)
Dewpoint Temperature (see Figure 3 for data conversion)			
Dewpoint Temperature	_____	_____	_____ °F
Stability Classification: $\sigma\theta$ = Square root(maximum difference in wind direction over three 5 minute updates)			
* The preferred sampling frequency for these purposes is to collect three sets of data five (5) minutes apart.			
Refer to RERP-DOSE for use of this data for dose calculations			



DATA SHEET 2

Collection of Data Utilizing Raw Voltages

	TIME/DATE ____/____	TIME/DATE ____/____	TIME/DATE ____/____
Wind Direction Position No. 1	_____ (V)	_____ (V)	_____ (V)
Wind Direction, degrees (°) = (1) 1.25volts-5.0volts : 450.0 - [72.0 x output voltage] (2) 0.00volts-1.25volts : 90.0 - [72.0 x output voltage]			
Wind Direction Degrees	_____	_____	_____
Wind Speed Position No. 3	_____ (V)	_____ (V)	_____ (V)
Wind Speed = Output voltage/0.05			
Wind Speed (mph)	_____	_____	_____
Ambient Temperature, Position No. 5	_____ (V)	_____ (V)	_____ (V)
Ambient Temperature (see Figure 3 for data conversion)			
Ambient Temperature	_____	_____	_____ °F
Dewpoint Temperature Position No. 8	_____ (V)	_____ (V)	_____ (V)
Dewpoint Temperature (see Figure 3 for data conversion)			
Dewpoint Temperature	_____	_____	_____ °F
Stability Classification: $\sigma\theta$ = Square root(maximum difference in wind direction over three 5 minute updates)			
* The preferred sampling frequency for these purposes is to collect three sets of data five (5) minutes apart.			
Refer to RERP-DOSE for use of this data for dose calculations			



Worksheet/Datasheet/Checklist Control Sheet

<u>Datasheet No.</u>	<u>Title</u>	<u>Copies</u>
1	Back-up Meteorological Data	2
2	Collection of Data Utilizing Raw Voltages	2



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TITLE: EMERGENCY TEAM FORMATION AND DIRECTION

ISSUANCE
AUTHORIZED
BY

7-25-84
Don Marumby

PORC
REVIEW

PORC 580 JUL 31 1984

EFFECTIVE
DATE

8-6-84

<u>Sections</u>	<u>Description</u>	<u>Page</u>
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General

This procedure provides guidance for formation and direction of emergency teams during a radiological emergency at Fort St. Vrain. The formation of radiological monitoring teams is not discussed in this procedure, as it is discussed in detail in RERP-FIELD and RERP-SURVEY. The purpose of this procedure is to provide guidance in forming search and rescue/corrective action teams and to assure that all adequate controls for team members' safety are followed. The dispatch of all field teams is subject to the determination of the Technical Support Center Director, or prior to emergency organization activation, the determination of the Shift Supervisor, that the team's dispatch is warranted. All emergency teams shall be composed of at least two individuals.

1.0 Criteria

This procedure is valid for use during any radiological emergency event that is an ALERT or higher emergency classification, or at the discretion of the duty Shift Supervisor. This procedure is not to be utilized during the recovery phase following a radiological emergency. The recovery phase is subject to normal station and corporate procedures.

2.0 Procedure

2.1 Search and Rescue Teams

Search and Rescue Teams may be dispatched from the Personnel Control Center (PCC) following activation of the FSV emergency organization. Prior to the activation of the FSV emergency organization, search and rescue teams shall be comprised of fire brigade members and/or health physics personnel. For incidents where radiation levels are unknown and/or suspected to be greater than routine radiation levels, the search and rescue team shall be composed of at least one health physics technician with survey instrument.

2.1.1 Exposure Control

Emergency exposure guidelines for search and rescue of station personnel during a radiological emergency are described in detail in RERP-EXP, Emergency Exposure Guidelines. RERP-EXP requires that a need to exceed established radiation exposure guidelines be established (i.e., life saving actions or accident mitigation actions) and that dose projections and stay times be established prior to exceeding the occupational exposure guidelines in existence at FSV. It is



mandatory that prior to the dispatch of a search and rescue team, all available area and airborne radiological information be considered, even for the situation where exposure levels are expected to be within occupational limits. Datasheet 1, Pre-dispatch Requirements, is provided herein to assist in determinations of the protective equipment, dosimetric equipment, and stay-time requirements for the Search and Rescue Team prior to its dispatch. This form should be completed for cases where radiological hazards or greater than occupational personnel exposures are anticipated. Datasheet 1 may also be utilized as a guide in performing the pre-dispatch job briefing described below in section 2.1.4. A Health Physics representative shall be consulted, as appropriate, to assist in the completion of Datasheet 1.

2.1.2 Field Communications

Communications for the search and rescue team shall be channeled to the attention of the duty Shift Supervisor, who is responsible for the initial personnel accountability. Communications equipment may be comprised of Gai-tronics, plant radio, or telephone, as deemed appropriate by the Shift Supervisor at the time of team dispatch.

2.1.3 Team Accountability

The team accountability status is maintained by the Shift Supervisor, or for the case of dispatch from the Personnel Control Center, by the Personnel Accountability and Exposure Controller.

2.1.4 Team Briefing

A pre-dispatch briefing shall be conducted prior to the dispatch of the search and rescue team. As a minimum, the briefing shall consist of the following information:

- Description of the areas to be searched;
- Identities of the individual(s) to be searched for;
- Areas that the individual(s) was last known to be working in;



- Description of radiological, physical, or chemical hazards which may be anticipated in the search areas;
- Protective equipment, dosimetric equipment, and stay-time limitations;
- Designation of a team leader to assume responsibility for team accountability in the field, communications with the Shift Supervisor, and leading the search.

2.2 Corrective Actions Team

Corrective Actions Teams shall be formed in the event that emergency repairs or corrective actions are necessary to mitigate the consequences of a radiological accident. These teams shall be dispatched from the Personnel Control Center at the direction of the TSC Director, and are under the control of the Emergency Maintenance individual at the TSC. A Corrective Actions Team may also be dispatched by the Shift Supervisor prior to the activation of the FSV emergency organization.

2.2.1 Exposure Control

The emergency exposure limits for the Corrective Action Team(s) shall be dictated by the guidance given in RERP-EXP, Emergency Exposure Guidelines. Pre-dispatch calculations of stay-time, determinations of dosimetric requirements, and protective clothing/equipment shall be made by the senior Health Physics representative at the Technical Support Center utilizing Datasheet 1, provided herein. If team dispatch is required prior to the activation of the FSV emergency organization, and available radiological information leads the Shift Supervisor to the conclusion that occupational radiation exposure limits could be exceeded, the duty Shift Supervisor shall complete Datasheet 1 with the assistance of the most senior Health Physics representative available for consultation.

2.2.2 Communications

Communications with the Corrective Actions Team(s) shall be made utilizing Gai-Tronics, plant radio, or telephone, as deemed appropriate by the PCC Director or Emergency Maintenance individual at the TSC. The team leader shall be responsible for maintaining adequate communications with the Emergency Maintenance individual at the TSC (prior



to FSV emergency organization activation, communication shall be with the duty Shift Supervisor or his designee).

2.2.3 Pre-dispatch Briefing

It is the responsibility of the PCC Director to assure that a pre-dispatch briefing is given to the Corrective Actions Team prior to its dispatch. If the team is dispatched prior to emergency organization activation, and radiological, chemical, or physical hazards exist, a pre-dispatch briefing shall be given to the Corrective Actions Team by the duty Shift Supervisor. The pre-dispatch briefing shall cover the following topics:

- Description of the work that must be accomplished, special precautions associated with performance of the task, and any special equipment required to perform the job;
- Description of radiological, physical, or chemical hazards which may be anticipated in the work or access areas;
- Protective equipment, dosimetric equipment, and stay-time limitations;
- Designation of a team leader to assume responsibility for team accountability in the work area, communications, and leading the search.

2.2.4 Team Accountability

The personnel accountability of the Corrective Actions Team(s) shall be the ultimate responsibility of the PCC Director when the team has been dispatched from the Personnel Control Center, and the Shift Supervisor when the team has been dispatched from within the plant prior to activation of the FSV emergency organization.

3.0 Responsibilities

3.1 Technical Support Center Director

The TSC Director has ultimate responsibility over site activities after the activation of the FSV emergency organization, and shall have the ultimate authority to determine when emergency teams of any nature shall be



dispatched, and when the 10CFR20 radiation exposure limits may be exceeded (see RERP-EXP).

3.2 Emergency Coordinator (duty Shift Supervisor)

The duty Shift Supervisor, in the role of Emergency Coordinator, has the responsibility and authority to determine when emergency teams shall be dispatched, and when the 10CFR20 radiation exposure limits may be exceeded (see RERP-EXP). Prior to activation of the FSV emergency organization, the Emergency Coordinator shall be responsible for assessing, with Health Physics assistance, the existing radiological conditions and for determining if stay-time limits are necessary for emergency teams.

3.3 Senior Health Physics Representative (TSC)

The senior Health Physics representative at the TSC is responsible for evaluating the existing exposure rate/airborne concentration data prior to team deployment and for the determination of maximum stay-times. Prior to the activation of the FSV emergency organization, the most senior Health Physics representative onsite shall be available to assist the Shift Supervisor in assessing the existing radiological conditions, and the need for protective equipment, dosimetric requirements, and stay-time limitations.

3.4 Personnel Control Center Director

After the activation of the FSV emergency organization, emergency teams shall be assembled by the Personnel Control Center Director at the direction of the TSC Director. The PCC Director shall assume responsibility for personnel accountability of emergency teams after dispatch of the teams.

3.5 Team Leader

The Team Leader of an emergency team is responsible to maintain communications during the time that the team is dispatched into the field, and is responsible to assure the maintenance of personnel accountability for team members while the team is dispatched.



4.0 References

4.1 10CFR20, Code of Federal Regulations

4.2 Health Physics Manual

5.0 Referenced Procedures

5.1 RERP-EXP, Emergency Exposure Guidelines

5.2 RERP-PCC, Personnel Control Center Procedure

5.3 RERP-SURVEY, Inplant/Onsite Radiological Monitoring

5.4 RERP-TSC, Technical Support Center Procedure

5.5 APM G-5, Personnel Emergency



DATASHEET 1

Pre-dispatch Requirements

1) Area(s) to be entered _____

2) Known parameters:

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete task _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time

- Based upon 10CFR20 limits (3 rem/quarter whole body with completed NRC Form 4, 3 E-09 μ ci/cc unidentified airborne contamination) or, with the TSC Director's Concurrence (NOTE: Prior to activation of emergency organization, the Shift Supervisor may authorize exposures in excess of 10CFR20 limits), the guidelines of RERP-EXP, Emergency Exposure Guidelines

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of Team By: _____

8) Dosimetry requirements:

Pocket Dosimeter - High Range (required)

Other required dosimetry (circle):

Film Badge

Pocket Dosimeter - Low Range

TLD Finger Ring

9) Protective Equipment requirements

(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)



No Respiratory Protection Required

10) Comments:



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-TEAMS
WS/DS/CL
Issue 3
Page 1 of 3

Worksheet/Datasheet/Checklist Control Sheet

<u>Datasheet No.</u>	<u>Title</u>	<u>Copies</u>
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DATASHEET 1

Pre-dispatch Requirements

1) Area(s) to be entered _____

2) Known parameters:

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (µci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete task _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time

- Based upon 10CFR20 limits (3 rem/quarter whole body with completed NRC Form 4, 3 E-09µci/cc unidentified airborne contamination) or, with the TSC Director's Concurrence (NOTE: Prior to activation of emergency organization, the Shift Supervisor may authorize exposures in excess of 10CFR20 limits), the guidelines of RERP-EXP, Emergency Exposure Guidelines

_____ (hr)

* This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of Team By: _____

8) Dosimetry requirements:

Pocket Dosimeter - High Range (required)

Other required dosimetry (circle):

Film Badge

Pocket Dosimeter - Low Range

TLD Finger Ring

9) Protective Equipment requirements

(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)



No Respiratory Protection Required

10) Comments:



DATASHEET 1

Pre-dispatch Requirements

1) Area(s) to be entered _____

2) Known parameters:

a) General Radiation Level _____ (mrem/hr)
Detector RIS- _____

b) Airborne Activity Level _____ (μ ci/hr)
Detector _____

c) Surface Contamination Levels* _____ DPM/100cm²

3) Projected Time to complete task _____ (hr)

4) Projected Exposure

2)a) x 3) x 1.25 = _____ (mrem)

5) Maximum Stay Time

- Based upon 10CFR20 limits (3 rem/quarter whole body with completed NRC Form 4, 3 E-09 μ ci/cc unidentified airborne contamination) or, with the TSC Director's Concurrence (NOTE: Prior to activation of emergency organization, the Shift Supervisor may authorize exposures in excess of 10CFR20 limits), the guidelines of RERP-EXP, Emergency Exposure Guidelines

_____ (hr)

- * This parameter may be unknown prior to team deployment.



6) Team Members: _____

7) Briefing of Team By: _____

8) Dosimetry requirements:

Pocket Dosimeter - High Range (required)

Other required dosimetry (circle):

Film Badge

Pocket Dosimeter - Low Range

TLD Finger Ring

9) Protective Equipment requirements

(Circle required equipment):

Full Anti-C's

Shoe Covers and Gloves

No Protective Clothing Required

Full-Face Respirator

Scott Air Pack

Thyroid Blocking Agent (see RERP-THYROID)



No Respiratory Protection Required

10) Comments:



Worksheet/Datasheet/Checklist Control Sheet

<u>Datasheet No.</u>	<u>Title</u>	<u>Copies</u>
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TITLE: USE AND COORDINATION OF NON-PSC SUPPORT ORGANIZATIONS

ISSUANCE AUTHORIZED BY	<i>Matt M... Don W...</i>	
PORC REVIEW	PORC 580 AUG 2 - 1984	EFFECTIVE DATE 8-6-84

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Figure 1	Support Organizations' Services and Capabilities Matrix.....	1



1.0 Criteria for Implementation

This procedure governs the use of non-PSC support organizations and consultants during a radiological emergency, and should be implemented if the need for outside assistance is identified.

2.0 Procedure

- 2.1 Any emergency center individual may initiate a request for offsite/support assistance. All requests must be channeled through the appropriate emergency center director.
- 2.2 The PCC director shall transmit any requests for support assistance to the TSC director.
- 2.3 The TSC director shall consider the request for assistance. If he determines that the request is valid, he shall transmit appropriate information to the Corporate Emergency Director (CED) at the Forward Command Post.
- 2.4 The CED shall, upon concurrence, relay the request for assistance to the Manager of Resources or the Manager of Technical Support at the Executive Command Post.
- 2.5 The Manager of Resources or the Manager of Technical Support shall assess the need for assistance. If it is determined that support cannot be supplied from within PSC, the appropriate ECP manager shall initiate contact with non-PSC support organizations as required.

Figure 1, Support Organizations' Services and Capabilities Matrix, should be used as a guide when determining the organization(s) to be contacted. Addresses and phone numbers of the organizations, as well as more detailed documentation of services available, are found in RERP-PLANT, Section 10A.



3.0 Responsibilities

3.1 Corporate Emergency Director (CED)

The CED is ultimately responsible for the decision to utilize outside assistance and for the direction and coordination of such use.

3.2 Manager of Resources

Provides requested technical and craft manpower; purchasing, financial, legal, general office, and logistics support; and assistance for engineering/design and construction reviews from available personnel or consultants as appropriate.

3.3 Manager of Technical Support

Provides engineering support, technical experts, and consultants as requested.

3.4 TSC Director

Coordinates requests for outside assistance with the CED.

3.5 PCC Director

Directs any requests for outside assistance to the TSC Director.

4.0 References

- 4.1 FSV Radiological Emergency Response Plan, Section 10A, Agreement Letters and Summary of Referenced Interfacing Emergency Plans

5.0 Referenced or Supporting Procedures

- 5.1 RERP-ORG, FSV Emergency Organization and Responsibilities
- 5.2 RERP-FCP, Forward Command Post Procedure
- 5.3 RERP-ECP, Executive Command Post Procedure
- 5.4 RERP-PCC, Personnel Control Center Procedure
- 5.5 RERP-TSC, Technical Support Center Procedure



SUPPORT ORGANIZATIONS' SERVICES AND CAPABILITIES MATRIX

Organization*	1	2	3	4	5	6	7	8	9	10	11
engineering	X	X	X	X						X	
operations	X	X	X								
maintenance	X	X									
construction	X									X	
start up	X										
system design/ modification		X	X								
component design/ modification			X								
instrumentation & control			X								
procurement	X									X	X
planning & scheduling	X										
procedural modification			X								
QA	X	X									
inspections/auditing			X			X					X
fire protection			X								
radiation protection	X		X	X	X				X		
temporary shielding	X										
environmental monitoring			X	X	X			X			
sampling					X						
dosimetry processing								X			
dose assessment/ calculations	X			X		X					
metallurgical consulting							X				

*Organizations:

1. Stone & Webster Engineering Corporation
2. Nuclear Power Consultants
3. Proto-Power Management Corporation
4. NUS
5. Controls for Environmental Pollution, Inc.
6. Dr. H. G. Olson
7. Donald T. Klodt, PhD, Consulting Metallurgist
8. R. S. Landauer, Jr. & Co.
9. Western Radiation Consultants, Inc.
10. EBASCO Services Incorporated
11. INPO



TITLE: CORE DAMAGE EVALUATION

ISSUANCE AUTHORIZED BY	<i>Milt McBride for Don Waremburg</i>	
PORC REVIEW	PORC 571 MAY 30 1984	EFFECTIVE DATE 6-1-84

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GENERAL

This procedure provides guidance for estimating core damage (failed fuel fraction) following a LOFC accident. The procedure utilizes the results of a PCRV volume calculation and radiochemical analyses of primary coolant. The following assumptions are made:

- 1.) The PCRV is depressurized to 5 PSIG within 7 hours after a LOFC event, and there is no failed fuel during this time period;
- 2.) Previous reactor power history is used to establish the quantities of radionuclides available for release from the fuel;
- 3.) The expected R/B values for noble gases in primary coolant are in the range of $1E-6$; therefore the initial PCRV inventory of noble gases during reactor depressurization is ignored;
- 4.) The purification system is not operating during the LOFC condition; and
- 5.) The release fraction of noble gases is directly proportional to the failed fuel fraction.

1.0 Criteria for Implementation

This procedure is intended to be used following a LOFC accident; however the basic methodology may be applied in other cases where fuel failure is suspected. Other cases of this sort will be handled on a case by case basis.

2.0 Procedure

Worksheet 1 is utilized to calculate the failed fuel fraction. The failed fuel fraction is simply the ratio of the observed (circulating) activity of ^{133}Xe to the total (available for release from the fuel) activity of ^{133}Xe .

- 2.1 In order to perform a core damage evaluation, primary coolant analyses must be obtained in units of $\mu\text{Ci}/\text{scc}$. The PCRV volume must also be calculated. Using this information, the circulating activity of ^{133}Xe is obtained.
- 2.2 The total quantity of ^{133}Xe present in the fuel prior to shutdown, including the ^{133}I precursor, is calculated.
- 2.3 Utilizing the results of steps 2.1 and 2.2, Worksheet 1 is completed.



3.0 Responsibilities

3.1 Health Physics Supervisor or Designee

The Health Physics Supervisor or his designee is responsible for ensuring that primary coolant samples are collected as required for analysis.

3.2 Radiochemistry Supervisor or Designee

The Radiochemistry Supervisor or his designee is responsible for ensuring that primary coolant samples are analyzed in accordance with procedures. The Radiochemistry Supervisor or his designee is also responsible for calculating PCRV volume.

3.3 Radiological Assessment Coordinator

The Radiological Assessment Coordinator is responsible for completing Worksheet 1 and reporting the results of the failed fuel evaluation to the Corporate Emergency Director and, as directed, to the TSC Director.

4.0 References

4.1 HPP-14, Analytical Instrumentation Room

4.2 RCP-22, Primary Coolant Radioactivity Surveillance for Technical Specification SR 5.2.11W

4.3 R. D. Burnette, "Measurement of Fuel Failed in FSV During LOFC"

4.4 "VOLUME" Computer Program



WORKSHEET 1

FAILED FUEL EVALUATION

1. Primary Coolant ¹³³Xe inventory (curies) _____ (Xe_1)
2. Reactor Power at shutdown, MW(th) _____
3. Time since Reactor shutdown, hours _____
4. Failed Fraction = _____ Xe_1

$$I_0 \left(\frac{e^{-\lambda_1 t} - e^{-\lambda_2 t}}{\lambda_2 - \lambda_1} \right) + Xe_0 (e^{-\lambda_2 t})$$

where

Xe_1 = total curies of ¹³³Xe in helium (PCRV) at sample isolation time (1 above)

I_0 = total curies of ¹³³I at shutdown (fuel)
MW(th) * FY_{133I} * $3.15E16$ f/s/MW * $1/3.7E10$ dps/Ci

λ_1 = decay constant for ¹³³I, $3.41E-02$ hr⁻¹

λ_2 = decay constant for ¹³³Xe, $5.46E-03$ hr⁻¹

t = time since reactor shutdown, hours (3 above)

Xe_0 = total curies of ¹³³Xe at shutdown, (fuel)
MW(th) * FY_{133Xe} * $3.15E16$ f/s/MW * $1/3.7E10$ dps/Ci

MW(th) = reactor power at shutdown, MW(th) (2 above)

FY_{133I} = $6.69E-02$

FY_{133Xe} = $6.69E-02$

FAILED FRACTION = _____



Work/Datasheet/Checklist Control List

NOTE: Extra attachments as listed are found in the working copy of this procedure in the Forward Command Post and the Technical Support Center.

<u>Worksheet No.</u>	<u>Title</u>	<u>Number of Copies</u>
1	Failed Fuel Evaluation	10

<u>Datasheet No.</u>		
None	N/A	N/A

<u>Checklist No.</u>		
None	N/A	N/A

<u>Attachment No.</u>		
None	N/A	N/A



FORMS USE REPORTING SHEET

Nuclear Documents Specialist:

This sheet is being transmitted to report use of forms from a controlled copy of the Radiological Emergency Response Plan Implementing Procedures, BOOK NO. _____, located at _____ . The following forms have been utilized from this copy:

Worksheet Numbers Copies Used

Datasheet Numbers Copies Used

Checklist Numbers Copies Used

The procedure affected by this sheet is shown in the header to this page, unless otherwise noted below in the comments to this reporting form. When this form is received, it will be necessary to replace the noted number of forms, as well as this "Forms Use Reporting Sheet" for the affected procedure in the affected book.



FORMS USE REPORTING SHEET (Continued)

COMMENTS

Reported By: _____

Date: _____

Nuclear Documents Specialist _____ *

Date Received _____

Date Replaced _____

- * Nuclear Documents Specialist will transmit this form to the originating individual/department upon completion of this form to notify users that the procedure has been updated and that all worksheets, checklists, and datasheets are present in the required number of copies.