NRC
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PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

BOOK 1

1/3/83

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RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
RERP CR-ALERT	Control Room Alert, Site Emergency, General Emergency Procedure	16	01-03-83
RERP-DOSE	Offsite Dose Calculations Methodology	2	10-08-82

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

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
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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 TECHNICAL CLERK AND RECORDER, 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 as an ALERT, or higher, FSV Radiological Emergency Response Plan (RERP) event, as defined in Tables 1 through 4 of this procedure. 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 1 through 4 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 Checklist 1 is for use by the CR Director and/or the Emergency Coordinator. This check list is a brief summary of actions, and is to be used for guidance purposes to assist in verifying execution of required responses.

2.1.4 During non-working hours, PSC personnel required to man the response centers (Figure 1) are notified by telephone. It is the responsiblity 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 the RERP PHONE LIST for instructions and personnel names and telephone numbers.

2.2 Initial Required Responses for ALERT, SITE EMERGENCY, GENERAL EMERGENCY

In the event of an occurrence believed to be defined by any of the events listed in Table 4.1-2 through 4.1-4 of the RERP (included as Tables 2 through 4 of this procedure), the following actions shall be taken: (If event is an escalation of a NOTIFICATION OF UNUSUAL EVENT, begin with Step 2.2.7)

2.2.1 On-Shift Control Room Personnel

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

2.2.1.2 If a radiological release is involved, make a preliminary assessment of the release. Actions to perform offsite dose calculations are described in implementing procedure RERP-DOSE. RERP-DOSE should be utilized as a reference in any cases where questions as to the specifics of dose calculation procedures arise. Worksheets, Datasheets, and Checklists for dose calculations are contained herein, 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 2 Monitored Datalogger.

Datalogger calculation is the most rapid means of assessing offsite consequences, provided the user is familiar with the programs proper utilization. It is the Shift supervisor's responsbility to assure that the offsite consequence assessments are performed as required. This activity will become the responsibility of the Technical Support Center after full facility activation.

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

2.2.2 Shift Supervisor (CR Director Checklist - Checklist 1)

2.2.2.1 Assume the position of the Emergency Coordinator until relieved by the Control Room Director (Primary: Station Manager; Alternate: Superintendent of Operations), or the TSC Director.

2.2.2.2 As Emergency Coordinator, direct onsite emergency responses and initiate any required corrective actions.

2.2.2.3 Notify the on-duty Technical Advisor.

	Page Phone	Plant Ext.	Home Phone
J. Eggebroten			
J. Sills			
F. Novachek			

2.2.2.4 If a radiological release or potential radiological release is involved delegate the preliminary assessment of the release to a Reactor Operator and obtain preliminary assessment results. This calculation should be performed at an average rate of approximately once every 15 minutes until relieved of this responsibility by the TSC or until offsite release is terminated.

2.2.2.5 Initiate radiological protective actions for station personnel.

2.2.2.6 Contact one member of plant management listed below in order of preference:

	Page Phone	Plant Ext.	Home Phone
Supt. of Operations			
Station Manger			
Admin./Tech. Serv. Manager			
Mgr. Nuclear Prod.			
Rad. Protection Manager			
Vice Pres., Prod.			

2.2.2.7 Based on preliminary plant and radiological assessments, the Shift Supervisor (Emergency Coordinator) shall confirm the classification of the emergency (Radiological ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY) with the first management contact.

2.2.2.8 Radiological ALERT, SITE EMERGENCY, GENERAL EMERGENCY

If the emergency is determined to be a Radiological ALERT, SITE AREA EMERGENCY, or GENERAL EMERGENCY:

a) Sound the Plant Emergency Alarm and announce the nature of the emergency (NOTE: this step need not be repeated if it was performed as part of the applicable Emergency Procedure).

b) All onsite personnel will first report to their Emergency Stations (refer to Administrative Procedure G-5, Personnel Emergency Response) for initial personnel accountability. Personnel assigned to Emergency Response Centers will report to their Emergency Response Center when directed to do so.

c) In cooperation with the first management contact, the Shift Supervisor (Emergency Coordinator) will complete the "Notification to Activate State Emergency Response Centers" from (Attachment 1).

d) The Shift Supervisor (Emergency Coordinator) will then make the following notifications (these numbers are on the auto-dialer telephone in both the Control Room and Shift Supervisor's office):

(1) PSC Company Operator

(2) Weld County Communications Center (Using Greeley Line)

*(3) NRC Operations Center "Hot Line" or

*Back-up Emergency Numbers for NRC Notification:

or on HPN system (located in Control Room and the TSC).

(4) Duty Technical Advisor (see Step 2.2.2.3 for telephone numbers).

The information on the "Notification to Activate State Emergency Response Centers" Form (Attachment 1) will be read to the above contacts, except the TA, who will be directed to report to the plant site.

e) The management contact will contact his Emergency Response Center alternate. The Response Center alternate (or the first individual contacted for each response facility) is responsible for notifying the remaining people for that response center.

f) 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

g) Notify Security of the impending arrival of emergency personnel and provide adequate clearance for Protected Area access, where required.

2.2.2.9 After the TSC is activated, establish communications.

2.2.2.10 Receive initial personnel accountability report from Security. Utilize the Fire Brigade to locate and/or rescue any unaccounted-for personnel if required. Plant rosters are provided at emergency assembly areas to assist in rapid evaluation of departmental accountability.

2.2.3 Technical Advisor

2.2.3.1 When the Plant Emergency Alarm sounds or whenever directed by the Shift Supervisor (Emergency Coordinator), immediately report to the Control Room.

2.2.3.2 Make initial assessment of plant status by completing "Preliminary Assessment of Plant Conditions" for (Datasheet 3).

2.3 Follow-up Responses

2.3.1 CR Director

2.3.1.1 Direct the control of plant operations.

2.3.1.2 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).

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

2.3.2 Control Room Personnel

2.3.2.1 Maintain the plant in a safe and stable condition.

2.3.2.2 Implement corrective actions as directed by the CR Director.

2.3.3 Technical Advisor

Provide technical analysis and advise as requested by the Control Room Director or TSC Director. Wherever possible, assist TSC personnel in collection and assessment of plant status data.

2.4 Recovery

The CR Director is responsible for recommending a termination 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.
- 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 (NOTE: This responsibility may not be delegated);
- Initiating emergency actions to mitigate the accident;
- Notifying offsite authorities (NOTE: The responsibility for making the decision to notify offsite authorities may not be delegated);
- 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.

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 CR-UE, Control Room Unusual Event Procedure

5.3 EP-CLASS, Event and Emergency Classification Overview

5.4 RERP-DOSE, Offsite Dose Calculation Methodology

5.5 RERP-PAG, Protective Action Guideline Recommendations

5.6 RERP-PCC, Personnel Control Center Procedure

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

5.8 HPP-56, Manual Release Rate Determination

5.9 Station Security Plan and Procedures

5.10 RERP Phone Lists

FORM 372 - 22 - 3643

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

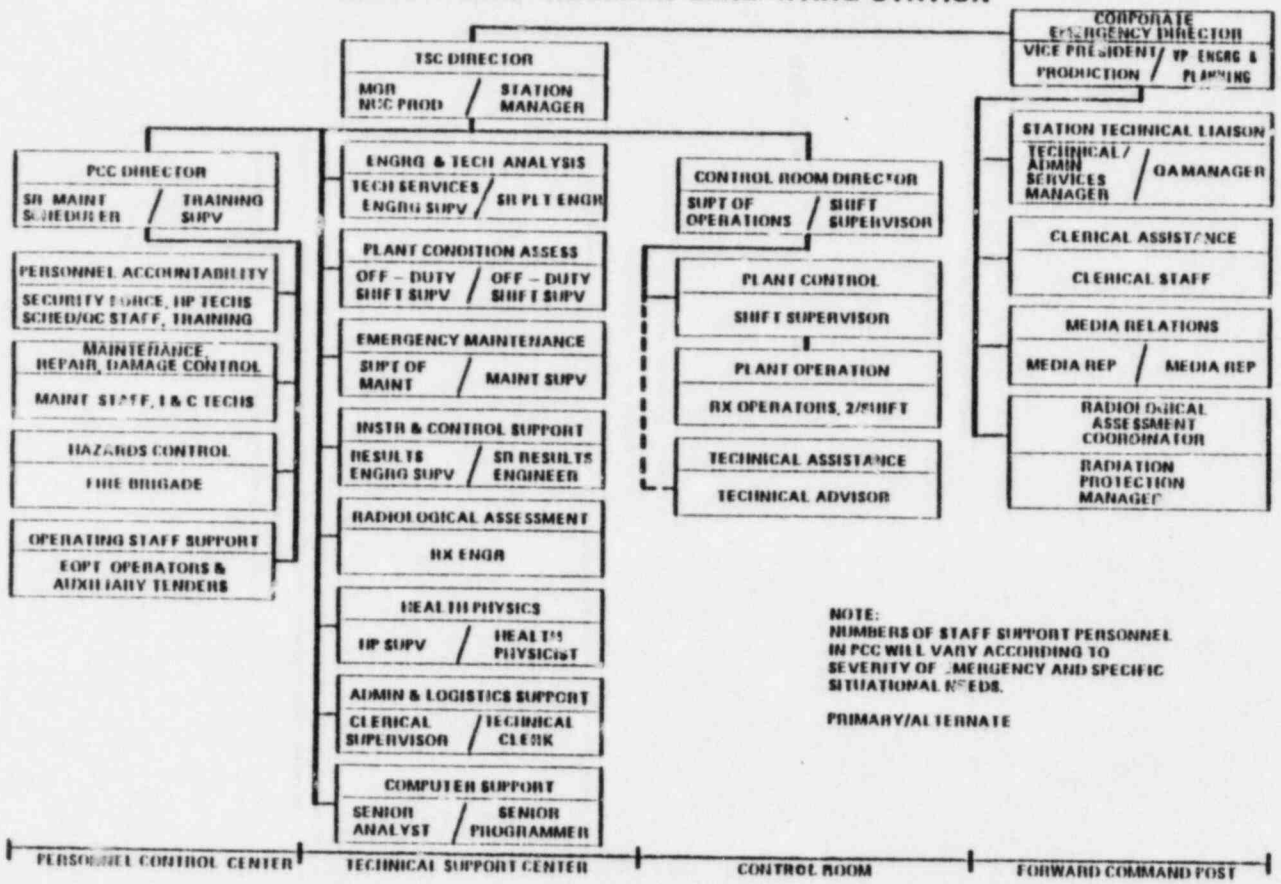


FIGURE 1

RESPONSE CENTER MANNING REQUIREMENTS

VISITOR'S CENTER EVACUATION ROUTES

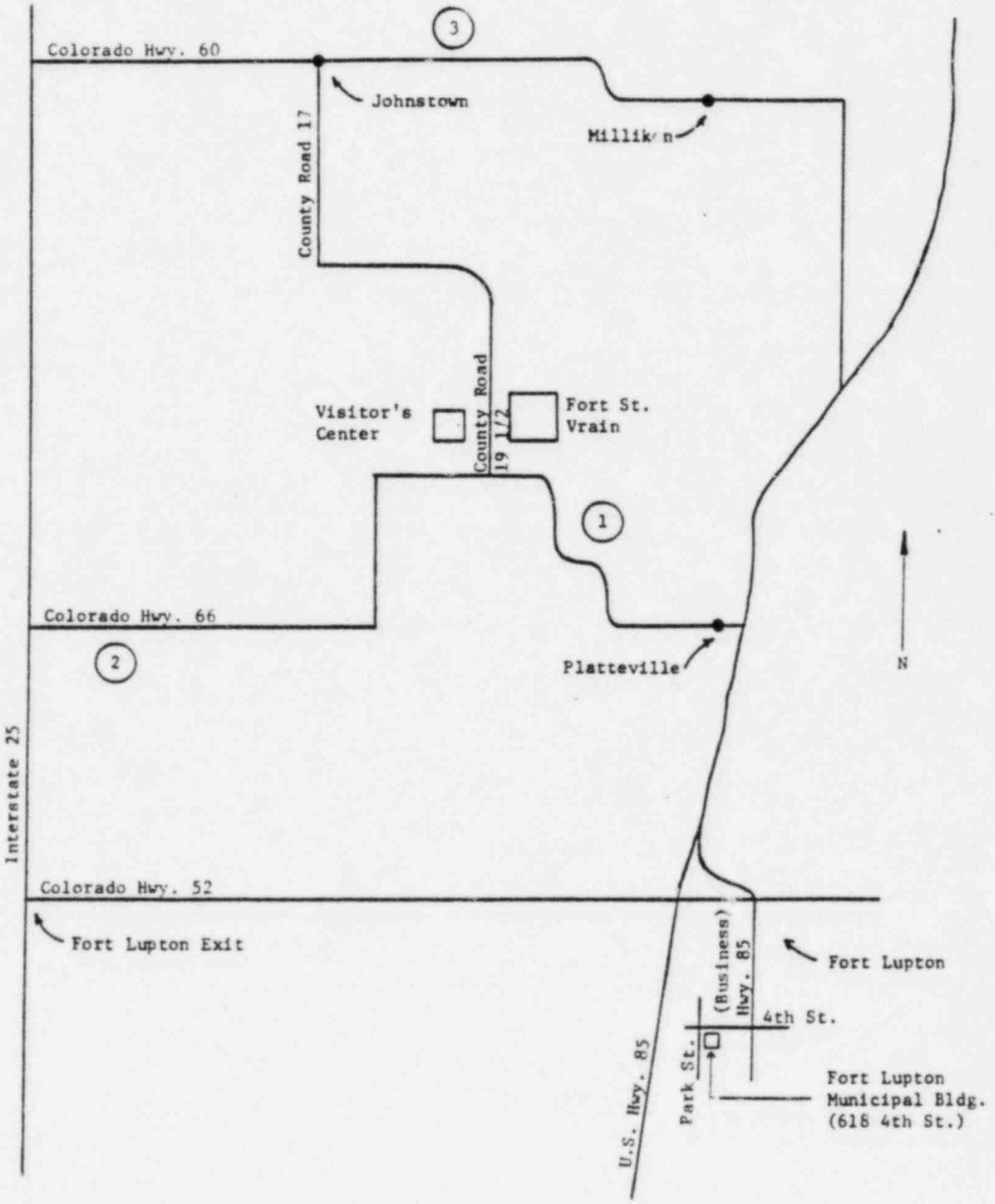


Figure 3

SITE SECTOR MAP

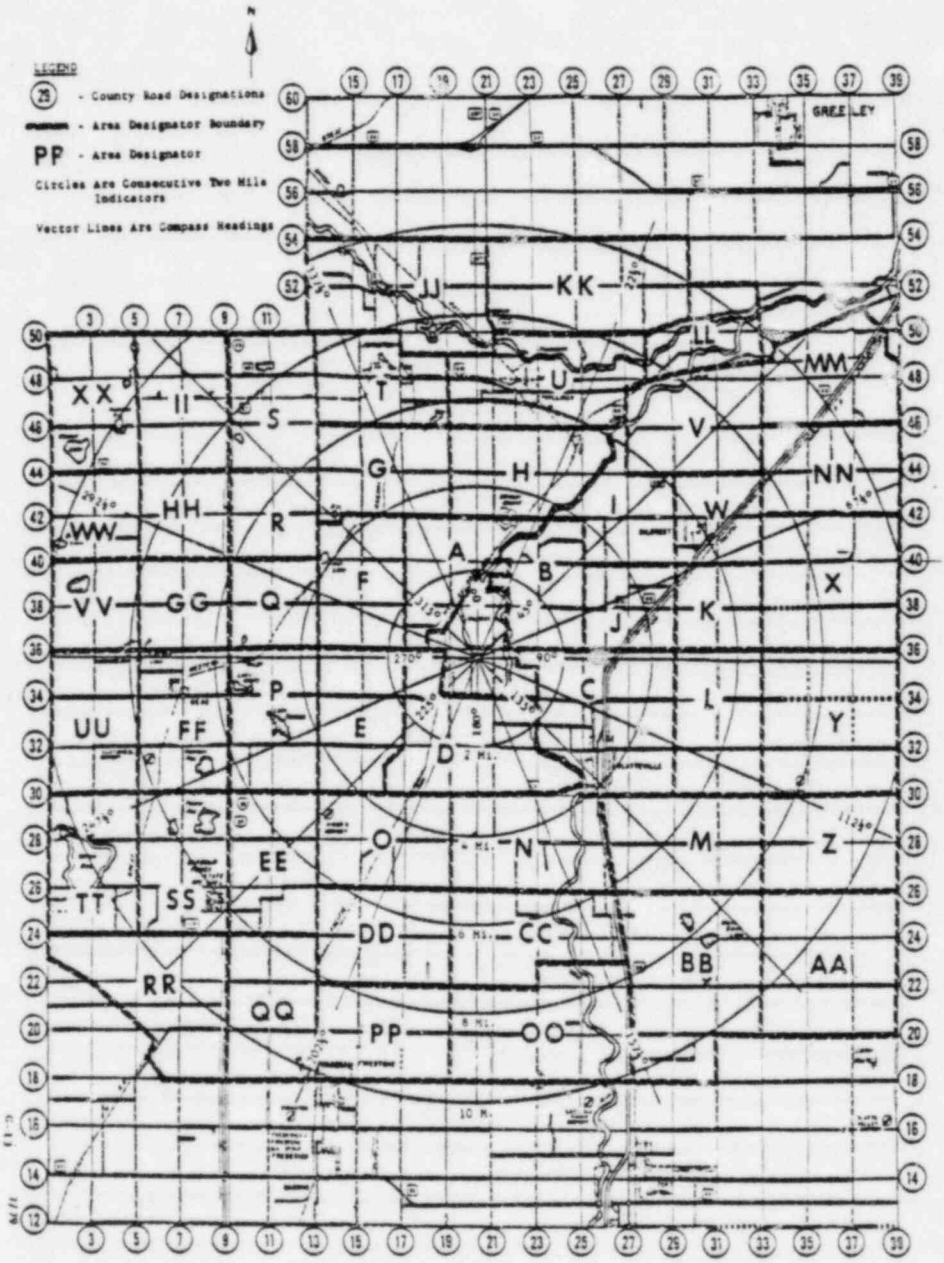


TABLE 1

NOTIFICATION OF UNUSUAL EVENT

Event	Indication
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 radiologial or toxic materials.	4. a) any of various alarms on Fire Control Alarm Panel; b) Fire Pump 1A auto start; c) verbal reports.

TABLE 1

NOTIFICATION OF UNUSUAL EVENT

Event	Indication
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-C4).
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 1

NOTIFICATION OF UNUSUAL EVENT

Event	Indication
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 1

NOTIFICATION OF UNUSUAL EVENT

Event	Indication
10. (Cont).	3) PCRV penetration flow restriction devices - LCO 4.2.7 and LCO 4.2.9 4) PCRV penetration secondary closures - LCO 4.2.7 and LCO 4.2.9 5) PCRV Safety Valves - LCO 4.2.8 SL 3.2 LSSS 3.3.2.c b) Fire Protection System - LCO 4.2.6, LCO 4.10.1- LCO 4.10.5
11. Indication or alarms on radiological effluent monitors not functional.	11. Data Logger Alarm/Alarm Summary indication of non-operational alarm or indication on: a) RT 7324-1, 2 and RT 4803; or b) RT 7325-1, 2, RT 4802, and RT 73437-1; or c) RT 73437-2 and RT 4801; or d) RT 6212 and RT 6213. NOTE: Use LCO 4.8.1 Technical Specification Limits as basis.

TABLE 2

ALERT

Event	Indication
1. Rapid, severe fuel particle coating failure.	1. Coolant Inventory of a) >2.4 $\frac{(Ci)\ (Mev)}{lb}$ Beta-Gamma b) circulating I-131 activity equivalent >24Ci c) plate out I-131 >1×10^4 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 2

ALERT

Event	Indication
5. Loss of offsite power and vital onsite AC power for up to 30 minutes.	5. 230 KV OCB trips and RAT undervoltage/loss of power alarm accompanied by 4 KV bus undervoltage 480V bus undervoltage, and Diesel Trouble alarms.
6. Loss of all vital DC power for up to 30 minutes.	6. DC bus 1 < 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 (CMG-4).

TABLE 2

ALERT

Event	Indication
11. Radiological effluents exceed 10 times technical specifications instantenous limits.	11. a) RT 7324-1 indicating $\geq 2.5 \times 10^{-2}$ µCi/cc b) RT 7324-2 indicating $\geq 2.5 \times 10^{-2}$ µCi/cc c) RT 7325-1 indicating $\geq 7.0 \times 10^{-8}$ µCi/cc d) RT 7325-2 indicating $\geq 7.0 \times 10^{-8}$ µCi/cc e) RT 73437-1 indicating $\geq 7.0 \times 10^{-8}$ µCi/cc I-131. f) RT 4802 indicating $\geq 7.0 \times 10^{-8}$ µCi/cc I-131. g) RT 4803 indicating $\geq 2.5 \times 10^{-2}$ µCi/cc Utilize reading from above instruments and calculate dose rate per procedures
12. Ongoing security compromise.	12. a) As observed or reported; b) Guard Station Trouble alarm; or, c) Guard Station Acknowledge alarm.
13. Severe natural phenomenon being experienced or or projected, such as: a) earthquake exceeding Operating Basis Earthquake level; b) flood near design level; or, c) tornado striking facility.	13. a) Seismic recorder operate (≥.05 g) b) As Reported c) As Reported

TABLE 2

ALERT

Event	Indication
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 3

SITE AREA EMERGENCY

Event	Indication
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 CMG-4.)	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 - .01$\Delta\rho$ 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 3

SITE AREA EMERGENCY

Event	Indication
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 $\geq 6.7 \times 10^{-5}$ µCi/cc I-131; or, b) RT 7324-1, 2, and RT 4803 $>6.6 \times 10^{-2}$ uCi/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 3

SITE AREA EMERGENCY

Event	Indication
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 3

SITE AREA EMERGENCY

Event	Indication
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 4

GENERAL EMERGENCY

Event			Indication
1.	a)	Effluent monitors detect levels corresponding to 1 rem/hr. whole body (or 5 rem/hr thyroid) at the exclusion area boundary under actual meteorological conditions.	1. Stack monitor RT-7324-1, 2 alarm, or Corresponding dose rates determined with E-500 or cutie-pie detector per procedure HPP-56 and associated graphs.
	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 5

FORT ST. VRAIN ATMOSPHERIC STABILITY CATEGORIES*

ΔT (°F) from 60m tower	ΔT (°F) from Reactor Building	Pasquill Categories	Stability Classification	σθ** (Degrees)
≤-1.7	≤-1.5	A	Extremely Unstable	≥22.5
>-1.7 to ≤-1.5	>-1.5 to ≤-1.3	B	Moderately Unstable	<22.5 to ≥17.5
>-1.5 to ≤-1.3	>-1.3 to ≤-1.2	C	Slightly Unstable	<17.5 to ≥12.5
>-1.3 to ≤-0.4	>-1.2 to ≤-0.4	D	Neutral	<12.5 to ≥7.5
>-0.4 to ≤+1.3	>-0.4 to ≤+1.2	E	Slightly Stable	<7.5 to ≥3.8
>+1.3 to ≤+3.5	>+1.2 to ≤+3.1	F	Moderately Stable	<3.8 to ≥2.1
>+3.5	>+3.1	G	Extremely Stable	<2.1

* per Proposed Revision 1 to Regulatory Guide 1.23, September 1980. For utilizing other than Reactor Building Instruments (ΔT) utilize NRC Regulatory Guide 1.23, Proposed Revision 1 as a reference for stability classification.

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

TABLE 6

DOSE CONVERSION FACTORS (DCF'S)

Radionuclide	rem/hr DCF(Ci/m³)*
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
Noble gas weighted average total body DCF (based on 879 Mw(t) design inventory)	7.5E+2
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
Radioiodine weighted average thyroid DCF (based on 879 Mw(t) design inventory)	5.3E+4

*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.

NOTIFICATION TO ACTIVATE STATE EMERGENCY RESPONSE CENTERS

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

   OR

   c) 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.

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 Section 2.2.1.2 of this procedure.

1. Date and Time of Incident _____

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

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

4. Current release rate:
Noble Gas _____Ci/sec Iodine _____Ci/sec

5. Estimated curies released Noble Gas _____Ci Iodine _____Ci

6 Wind Velocity ____MPH, from ____degrees. Air Temp. ____° F.

7. Stability Category _____, Form of Precip. _____

8. Dose rate at EAB - WB _____rem/hr Thyroid _____rem/hr

9. Projected dose at EAB - WB _____rem Thyroid _____rem

10. Estimated accumulated dose at EAB-WB ____rem Thyroid ____rem

11. Estimate of any surface radioactive contamination _____

_____

12. On-site response actions under way _____

_____

13. Recommended Protective Action based on the projected dose at the EAB (NOTE: Refer to RERP-PAG):

Circle Appropriate Protective Actions and Read Aloud

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

14. Prognosis for worsening of event _____

15. Date and time of report _____

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

PSC Company Operator
or

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 (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 _____

NRC OPERATIONS CENTER (HOT LINE OR _____

(Use HP Network Line if NRC Hot Line and Land Line are inoperable.)

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, ITEM NUMBER 1. 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 _____

LOCAL DETERMINATION OF STACK CONCENTRATION

This procedure should be performed by a person familiar with the instrumentation used to make a local determination of the stack concentration.

Dosimeter will be worn when performing this procedure. Exposure time will be kept to a minimum.

1. Proceed to the survey area at the exhaust stack on level 10, Turbine Building.

2. Insert instrument probe in shielded box at the exhaust stack and note reading (mR/hr).

3. Leave area immediately. Report the instrument used and reading (mR/hr) to the Control Room via the Gai-tronics.

4. Return to Control Room and verify proper instrument reading (mR/hr) conversion to concentration (µCi/cc) via conversion graph posted in Control Room (refer to HPP-56, as required).

NOTE: Utilize HPP-56, "Manual Release Rate Determination" as a reference, if required.

TABLE 1A

X/Q VALUES ($X10^{-5}$ sec/m^3) 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.

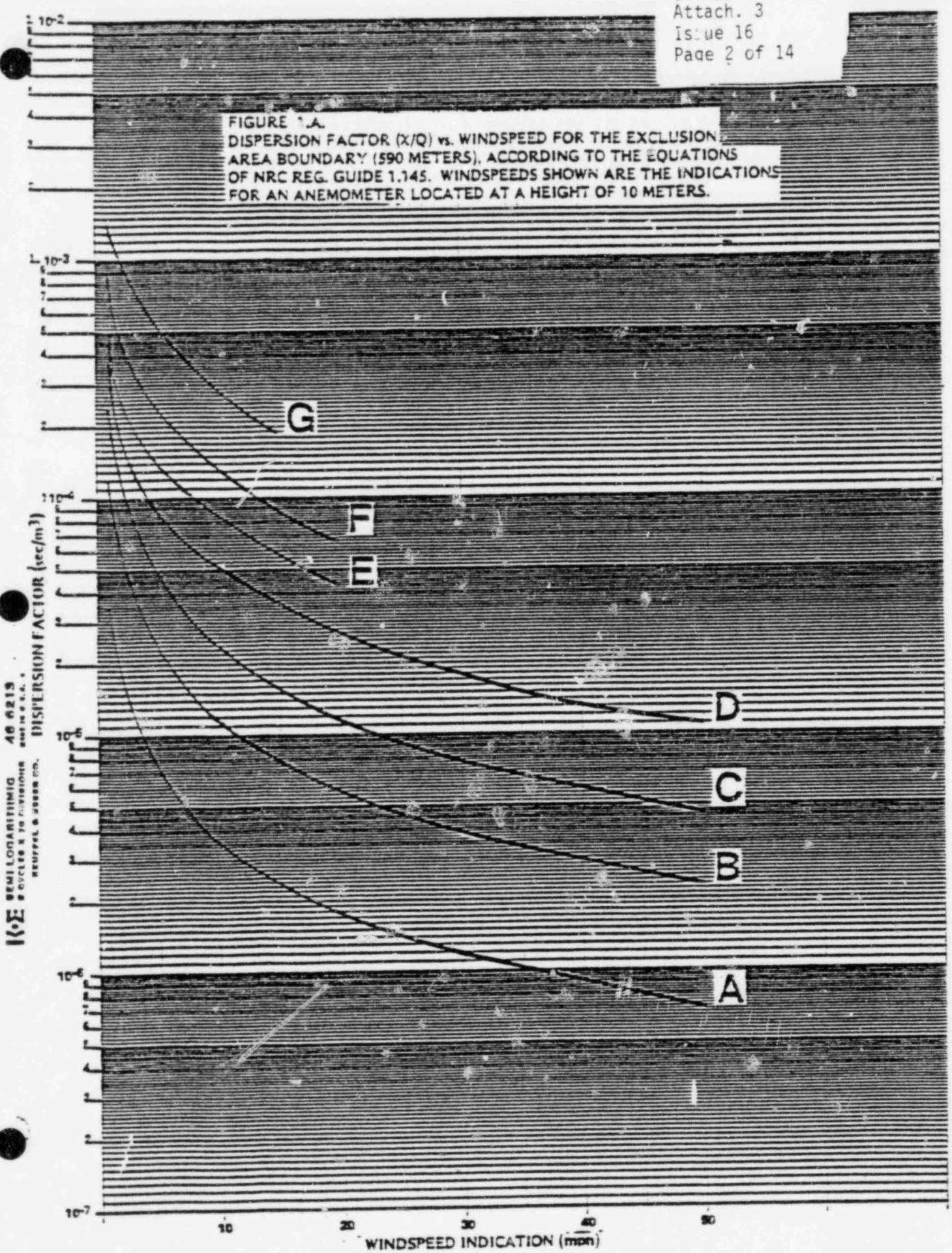


TABLE 2A

X/Q VALUES ($X10^{-6}$ sec/m^3) 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

FIGURE 2.A.
DISPERSION FACTOR (X/Q) vs. WINDSPEED FOR A DOWNWIND DISTANCE OF 2 MILES, 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.

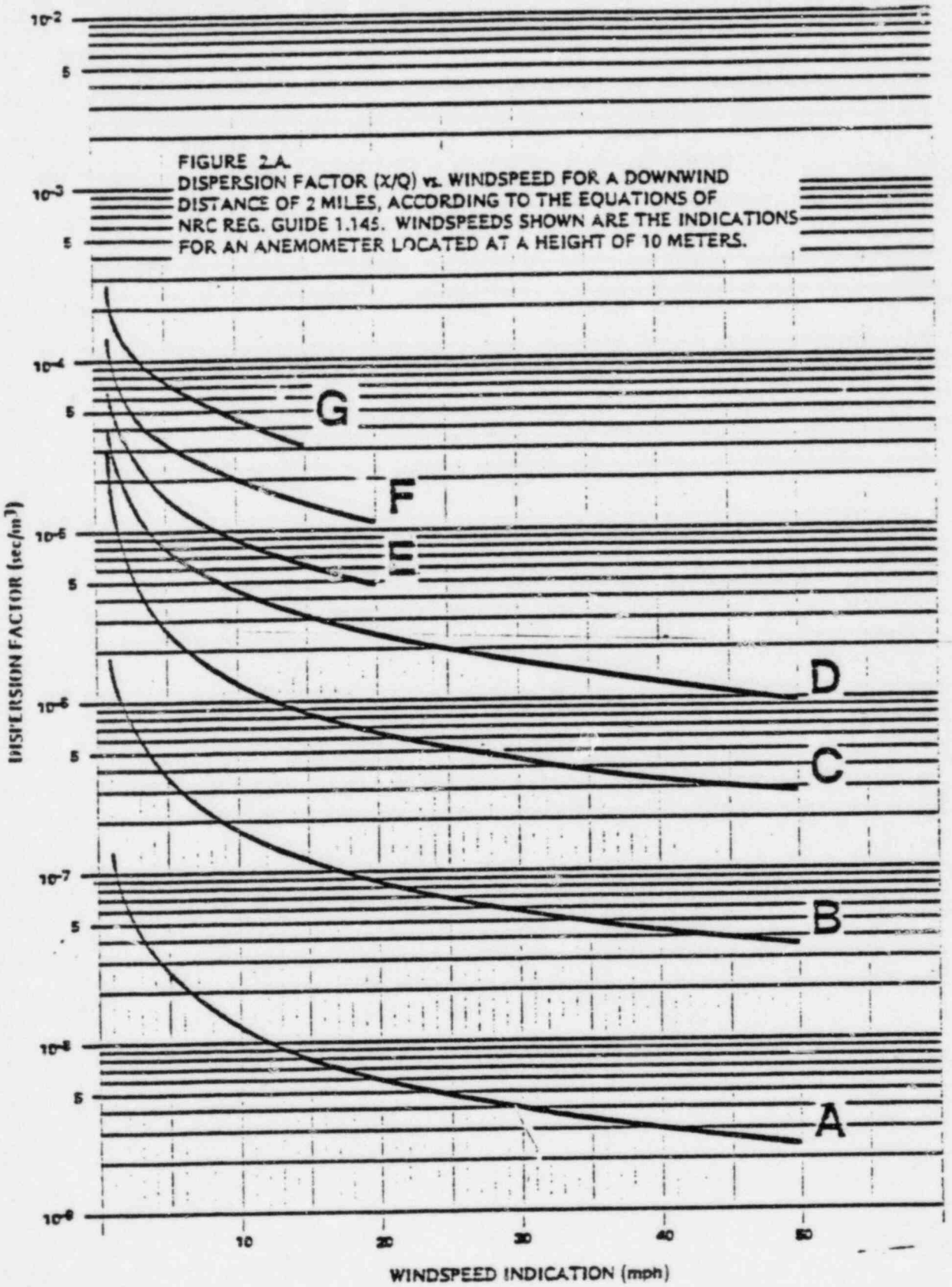


TABLE 3A

X/Q VALUES ($X10^{-6}$ sec/m^3) 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	4.59	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

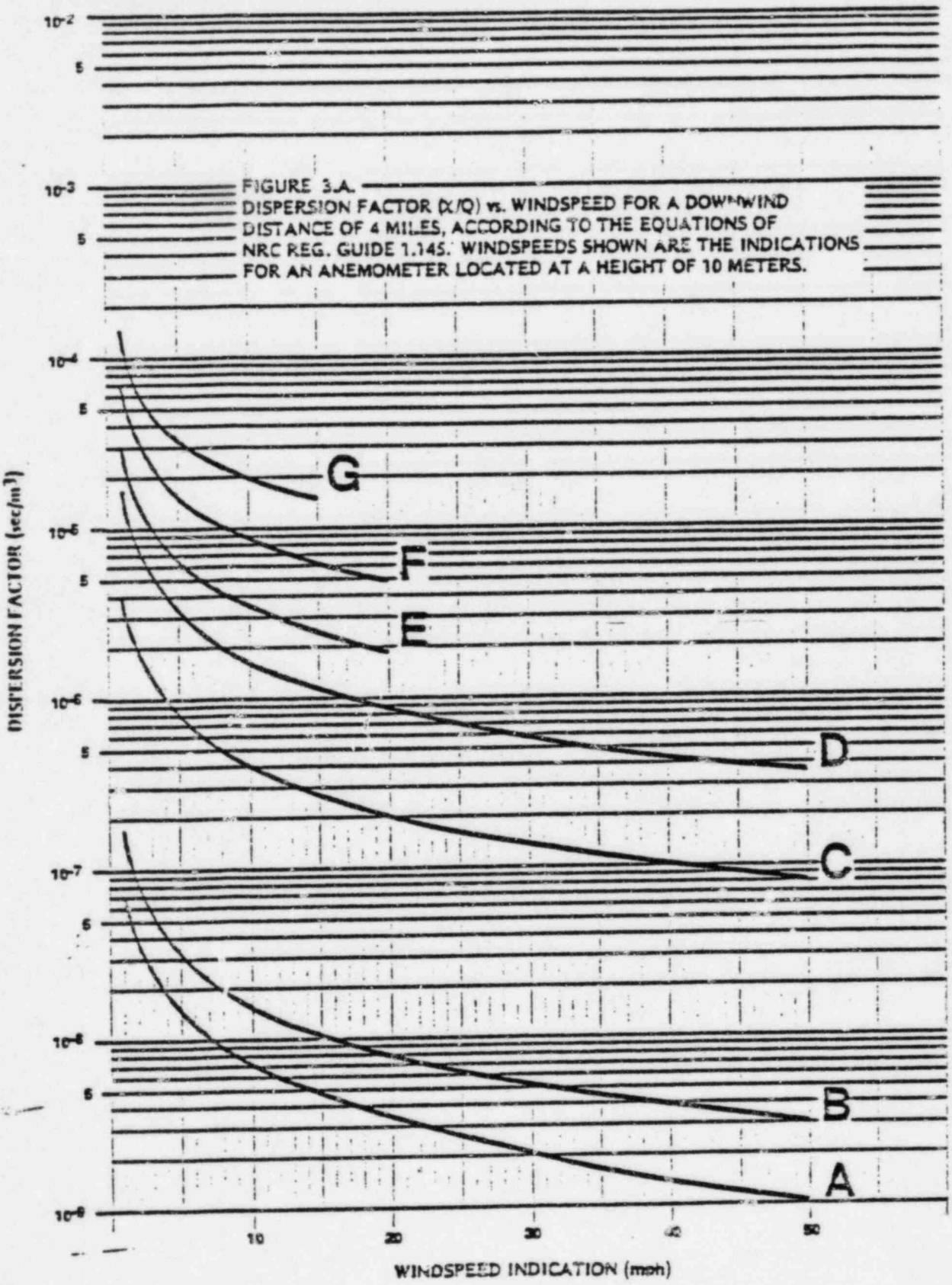

FIGURE 3.A.
DISPERSION FACTOR (X/Q) vs. WINDSPEED FOR A DOWNWIND DISTANCE OF 4 MILES, ACCORDING TO THE EQUATIONS OF NRC REG. GUIDE 1.145. WINDSPEEDS SHOWN ARE THE INDICATIONS FOR AN ANEMOMETER LOCATED AT A HEIGHT OF 10 METERS.
DISPERSION FACTOR (sec/m³)
WINDSPEED INDICATION (mph)
G
F
E
D
C
B
A

TABLE 4A

X/Q VALUES ($X10^{-6}$ sec/m^3) 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

FIGURE 4.A.
DISPERSION FACTOR (X/Q) vs. WINDSPEED FOR A DOWNWIND DISTANCE OF 5 MILES, 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.

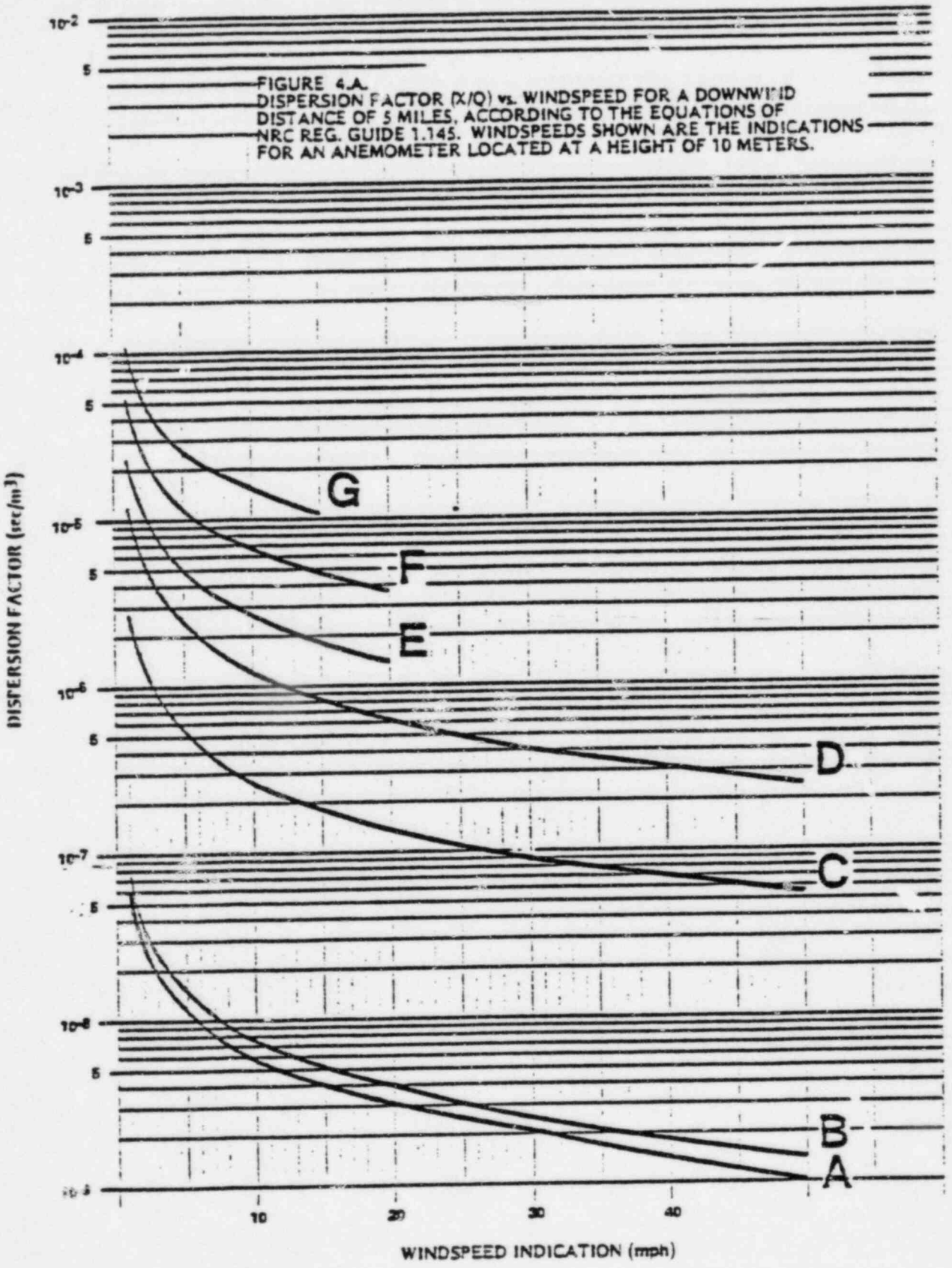


TABLE 5A

X/Q VALUES ($X10^{-7}$ sec/m^3) 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

FIGURE 5.2
DISPERSION FACTOR (X/Q) vs. WINDSPEED FOR A DOWNWIND DISTANCE OF 6 MILES, 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

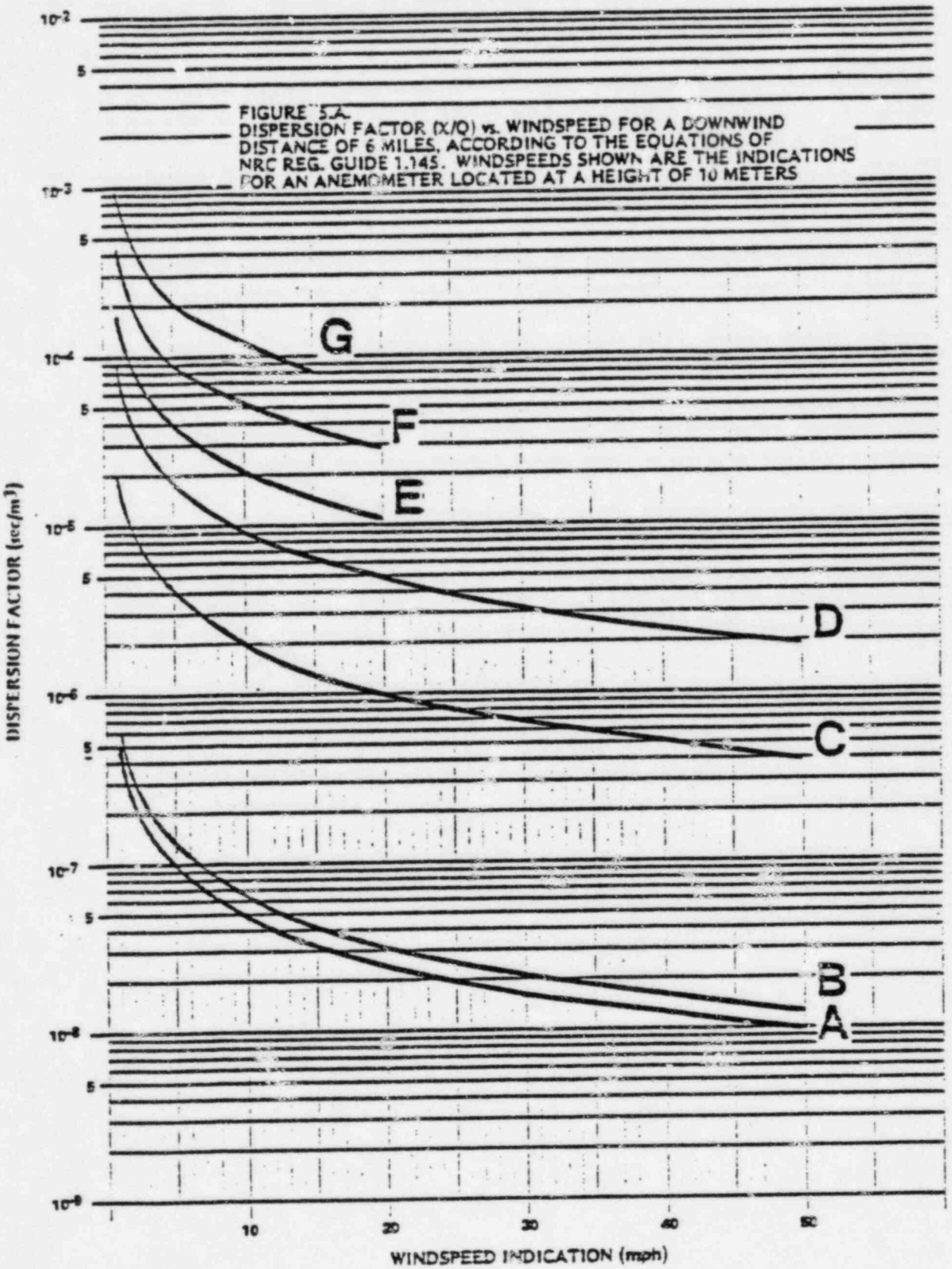


TABLE 6A

X/Q VALUES ($X10^{-7}$ sec/m^3; 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

FIGURE 6.A.
DISPERSION FACTOR (X/Q) vs. WINDSPEED FOR A DOWNWIND DISTANCE OF 8 MILES, 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.

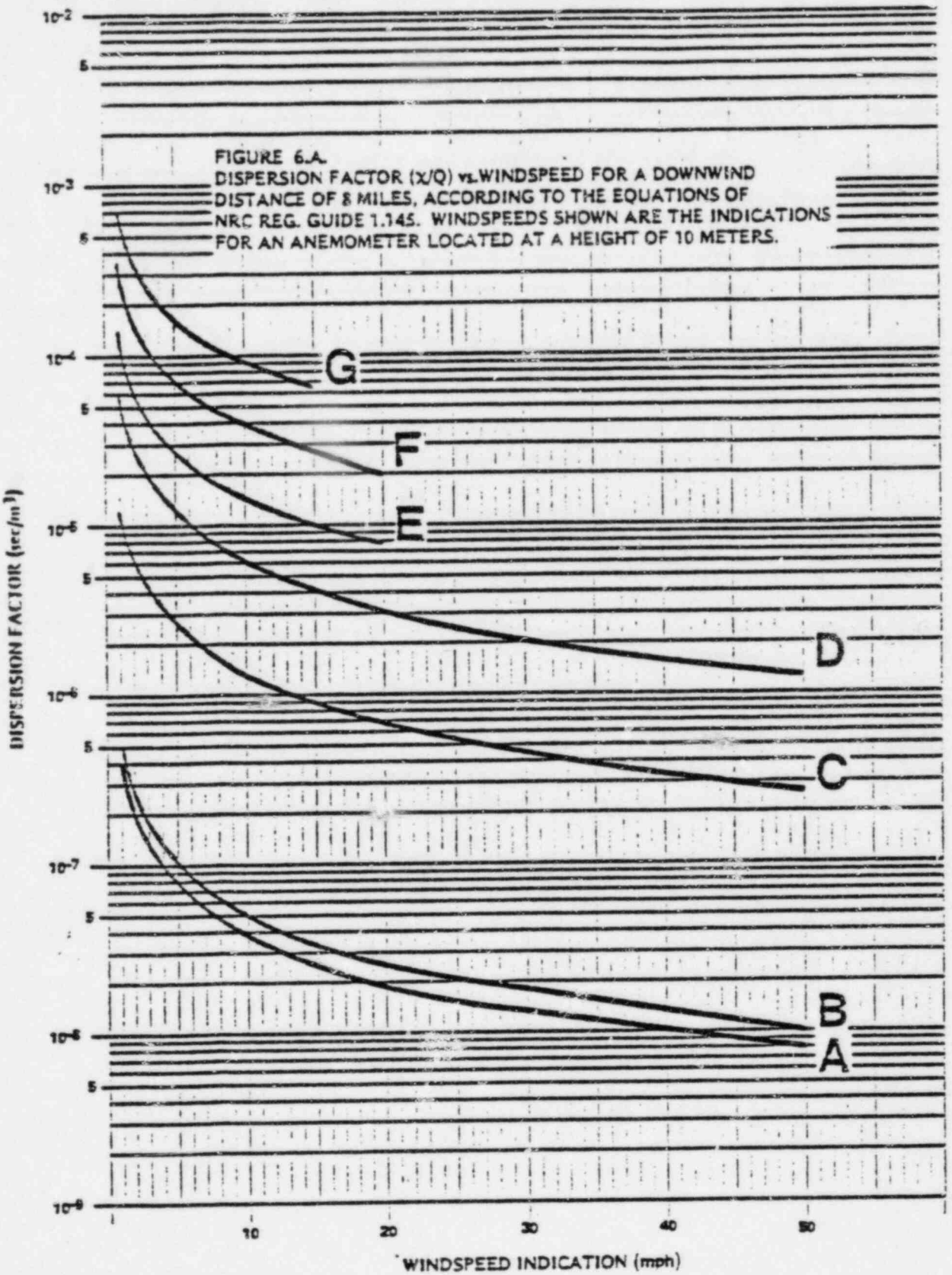


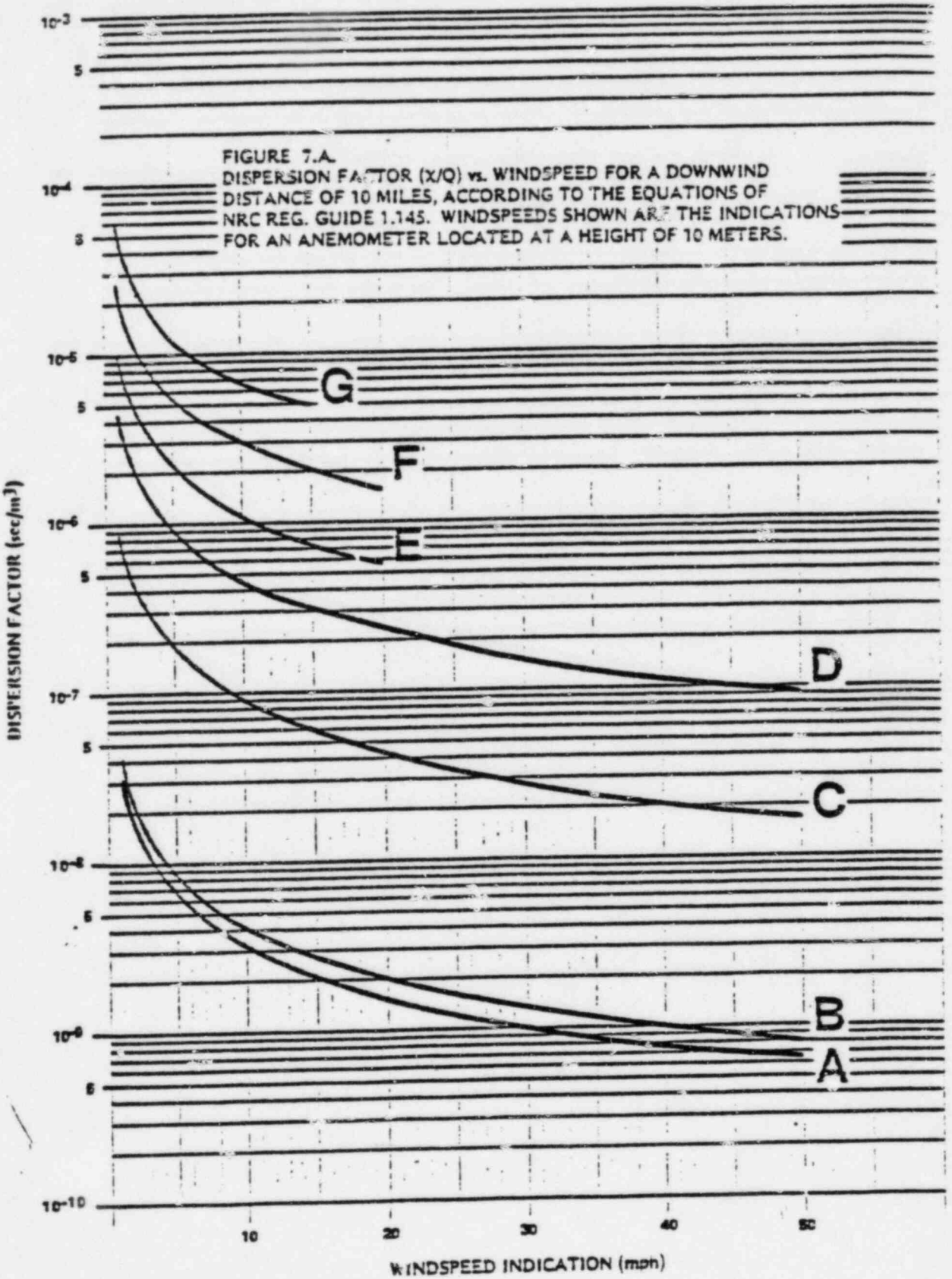
TABLE 7A

X/Q VALUES ($X10^{-7}$ sec/m^3) AT A DOWNWIND DISTANCE OF 30 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	9.384	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	15.26	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

FIGURE 7.A.
DISPERSION FACTOR (X/Q) vs. WINDSPEED FOR A DOWNWIND DISTANCE OF 10 MILES, 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.



Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

   a) __/__/__

   b) ___: ___

2. Projected end of release date and time:

   a) __/__/__

   b) ___: ___

3. Radiation Monitor Values, Noble Gas

   a) RT-7324, 1 _____cpm

   b) RT-7324. 2 _____cpm

   If one of the above is offscale or inoperative:

   a) E-500 or Cutie Pie? ____ _____

   b) Instrument Reading _____mR/hr

4. Exhaust Stack Flow Rate _____cfm

5. Radioiodine Monitor Values; RT-73437, 1

   a) Initial Reading from chart _____cpm

   b) Intermediate Reading from chart _____cpm

   c) Peak or Current Reading from chart _____cpm

   d) Time between a and b _____minutes

   e) Time between b and c _____minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

   _____°

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____mph

8. Distance between upper and lower temperature instruments

_____meters

9. Delta Temperature between temperature instruments

_____°F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) __/__/__

b) ___: ___

2. End of Puff date and time (not to exceed 15 minutes after B.1)

a) __/__/__

b) ___: ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 2 - Data Logger (or IBM) Unmonitored Release)

1. Date and Time of beginning of release

   a) ___/___/___

   b) ___: ___

2. Time of Louvers closed

   ___: ___

3. Maximum CPM, RIS-9301

   _____cpm

4. a) Primary coolant I-131 equivalent circulating inventory

   _____Ci

   b) Primary coolant I-131 equivalent plateout inventory

   _____Ci

5. Primary Coolant Volume

   _____scc

6. a) PCRV Pressure Before Release

   _____psig

   b) PCRV Pressure After Release

   _____psig

7. Wind Direction (prefererd sampling point is 10 meter instrumentation on 60 meter meteorological tower)

   _____°

8. Wind speed (preferred sampling point is 10 meter instrumenation on 60 meter meteorological tower)

   _____mph

9. Distance between upper and lower temperature instruments

_____meters

10. Delta Temperature between temperature instruments

_____°F

11. Standard Deviation (Sigma Theta) of wind Direction - 15 min. average

_____

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 printe 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 2B _____ 4A _____

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/CR DIRECTOR CHECKLIST

1. Initiate Emergency Procedure actions. _____

2. Technical Advisor notified. _____

3. Obtain preliminary assessment of release. _____

4. Obtain meteorological data. _____

5. Initiate protective actions for station personnel. _____

6. Contact plant management and confirm accident classification. _____

7. Complete Notifications Form. _____

   ALERT or Higher - Attachment 1 _____

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

9. Receive initial personnel accountability report. _____

10. Notify Visitor's Center if Alert or higher; specify departure route 1, 2, or 3 (see Figure 2). _____

11. Make notifications.

(ALERT or Higher) PSC Operator _____

Weld County Communications Center _____

NRC Operations Center _____

12. Select the PCC location based upon consideration of the dominant wind direction and accessability to emergency respondants from offsite. The list below summarizes the available alternative locations.

a. Inside Protected Area.

*1) Warehouse

2) Craft-Shops

b. Outside Protected Area.

*1) Mod-City

2) GA Field Office

13. Confirm communications with TSC and notify of PCC location. _____

* Preferred locations for the PCC are either the warehouse or Mod-City, based upon equipment storage.

Checklist 2 - Data Logger Monitored Release

NOTE:
Initialize the summing screen by entering option 4 and running DF 41-0-0. This should be done for the first calculation only.

1. "DEMAND FUNCTION OVERVIEW" key, located cursor on DF 41-0-0 and "XMIT CURSOR."

2. Step 1 brings up display 941. Follow steps on this display. They lead the user from screen to screen through the basic program steps. Always utilize program "OPTION 2" when performing calculations for record keeping or dose reporting purposes. This "OPTION" reverts to a "1" after the Demand Function is run and must be reset to a "2" each time.

3. Perform a "duration of release" calculation utilizing the projected or estimated end of release time. Utilize 2 hours from current as a default value whenever this value isn't known.

4. Print displays from this calculation.

5. Display results and print

*NOTE: Be certain to reset option to "2" after performance of a calculation.

6. Perform a "puff" calculation utilizing a projected ending time 15 minutes from the current time shown on step 3 of this checklist. Release start time should be the same as current time.

* _____

7. Print displays from step 6.

_____

8. Display results and print

_____

9. Set "OPTION" to "3" and rerun DF 41-0-0

_____

10. Print Display 951 which tabulates the results

_____

SUMMARY OF DISPLAYS TO PRINT

Step No.	Displays	Verification
4.	944, 942, 948, 951	_____
5.	945, 947	_____
7.	944, 942	_____
8.	945, 947	_____
10.	949	_____

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) _____µCi/cc/cpm

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

d) Sensitivity, RIS-7324-2: (I-14, 203-P7) _____µCi/cc/cpm

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

NOTE: Maximum CPM/Min must be calculated as:

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

from strip chart.

f) Sensitivity, RIS-73437-1: _____ µCi/cc/cpm/min

g) Site Area Emergency Limit (as posted):

1) 6.6E-2 µCi/cc noble gas

2) 6.7E-5 µCi/cc ^{131}I

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

1) 2.5E-2 µCi/cc noble gas

2) 7.0E-8 µCi/cc ^{131}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: _____ °F
Circle appropriate instrument

60m tower Reactor Building

5. Determine sectors affected using Site Sector Map.

(Figure 3) Sector(s) _____

6. Determine Stability Category using Table 5, Step 4k), and 4m).

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

Noble Gas Concentration

7. Calculate the exhaust stack noble gas concentration.

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

= ( ) x ( )

= _____ µCi/cc

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

= ( ) x ( )

= _____ µCi/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 Attachment 3 for instructions).

Local Indicated Concentration = _____ µCi/cc

d) Enter the highest of 7a), 7b), or 7c) _____ µCi/cc

Noble Gas Release Rate

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

Q = (step 7d) x (step 4j) x (1 E -6 Ci/µci)

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

= _____ Ci/sec

Classification of Event

9. Determine weighted noble gas dose conversion factor from Table 2. 7.5E+2 Rem/hour / Ci/m³

10. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 6) and wind speed (Step 4k).

Dilution Factor = _____ sec/m³

General Emergency Determination

11. Determine whole body dose rate at the EAB.

Dose Rate = (step 8) x (step 9) x (step 10)

= ( ) x ( ) 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 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 µCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 µCi/cc*, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

*NOTE: Technical specification limit = 2.5E-3µCi/cc
10x Technical Specification limit = 2.5E-2 µCi/cc, as stated above.

Curies of Noble Gas Released

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

Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Whole Body Gamma Dose at EAB

15. Calculate the dose received at the EAB.

Dose = (step 11) x (step 3)

= ( ) x ( )

= _____Rem

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

Projections

16. 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). If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____hours.

17. Project the totoal whole body gamma dose at the EAB.

Projected dose at EAB = (step 11) x (step 16)

= ( ) x ( )

= _____Rem

131 I Concentration

18. Calculate the exhaust stack ^{131}I concentration.

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

= ( ) x ( )

= _____uCi/cc

131I and Total Radioiodine Release Rate

19. Calculate the source term Q (^{131}I release rate).

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

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

=_____Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*

= ( ) x (1.05 E + 2)*

=_____Ci/sec

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

Classification of Event

21. Determine weighted radioiodine dose conversion factor from Attachment 8. 5.3E+4 Rem/hour / Ci/m³

General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

Dose Rate = (step 20) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

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

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 µCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 µCi/cc*, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

NOTE: Technical Specification Limit = 7.0E-9µCi/cc
10x Technical Specification Limit = 7.0E-8µCi/cc,
as stated above.

Curies of Radioiodine Released

25. Calculate the curies of radioiodine released to present time.

Curies Released = (step 20) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____curies

Accumulated Thyroid Dose at EAB

26. Calculate the dose received at the EAB.

Dose = (step 22) x (step 3)

= ( ) x ( )

= _____Rem

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

Projections

27. 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). If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____hours.

28. Project the total thyroid dose at the EAB.

Projected Dose at EAB = (step 22) x (step 27)

= ( ) x ( )

= _____Rem

29. Determine the recommended protective action for the general population based on the results of steps 17 and 28, refer to RERP-PAG.

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

31. The classification of the event based on noble gases is (step 11 or step 12 or step 13): _____

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

33. The accumulated whole body gamma dose at the EAB is (step 15): _____ Rem

34. The total number of curies of noble gas release to the present time is (step 14): _____ Curies

35. The projected whole body gamma dose at the EAB is (step 17): _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22): _____ Rem/hour

37. *The classification of the event based on radioiodines is (step 22 or step 23 or step 24): _____

38. The radioiodine release rate is (step 20): _____ Ci/sec

39. The accumulated thyroid dose at the EAB is (step 26): _____ Rem

40. The total number of curies of radioiodine released to the present time is (step 25): _____ Curies

41. The projected thyroid dose at the EAB is (step 28): _____ Rem

    Based on projected release duration of (step 27): _____ hours

*If this classification differs from the classification in step 31, the higher (i.e., more severe) classification is to be used to determine recommended protective action.

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 radioiodine 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) _____ µCi/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) _____ µCi/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 ^{131}I

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

2) 7.0E-8 _____ µCi/cc ^{131}I

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 _____ °F
Circle appropriate instrument

60m Tower Reactor Building

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

2. Determine sectors affected using Site Sector Map (Figure 3):

   Sector(s) _____

3. Determine Stability Category using Table 5 and Steps 1o) and 1q).

   Stability Category _____

   NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

4. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 3) and wind speed (Step 1o).

   Dilution Factor _____ sec/m^3 (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). 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 |$\overline{\text{I}}$| , |$\overline{\text{INV}}$| , |$\overline{\text{2nd}}$| , |$\overline{\text{WRITE}}$| 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 ≥ 6.6E-2 µCi/cc (Step 1.1)1), SITE AREA EMERGENCY.

3) If RCL 17 ≥ 2.5E-2 µCi/cc (Step 1.m)1) and ≤ 6.6E-2 µCi/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 10.g) ≥ 5 Rem/hour, GENERAL EMERGENCY.

2) If RCL 23 ≥ 6.7E-5 µCi/cc (Step 1.1)2), SITE AREA EMERGENCY.

3) If RCL 23 ≥ 7.0E-8 µCi/cc (Step 1.m)2) and < 6.7E-5 µCi/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 10b), 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: _____ µCi/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) 6.6E-2 µCi/cc noble gas
      2) 6.7E-5 µCi/cc ^{131}I

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

z) 7.0E-8 µCi/cc ^{131}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 _____ °F
Circle instrument used:

60m tower Reactor Building

5. Determine sectors affected using Site Sector Map (Figure 3):

Sector(s) _____

6. Determine Stability Category using Table 5, Step 4i and Step 4j:

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

7. Calculate the release noble gas concentration:

RIS-9301 concentration = (step 4a) x (step 4b)

= ( ) x ( )

= _____ µCi/cc

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

a) Reactor Building Louvers

Q_{ng} = (step 7) x (5.8 E +7)* x (1 E -6 Ci/µci)

= ( ) x (5.8 E +7)* x (1 E -6)

= _____ Ci/sec

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

b) PCRV Safety Valves

Q_{ng} = (step 7) x (1.9 E +7)** x (1 E -6)

= ( ) x (1.9 E +7)** x (1 E -6)

= _____Ci/sec

**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 2: 7.5E+2 Rem/hour / Ci/m³

10. Determine the EAB atmospheric dilution factor from Attachment 1 using Steps 6 and 4h:

Dilution Factor _____sec/m³

General Emergency Determination

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

a) Reactor Building Louvers

Dose Rate = (step 8a) x (step 9) x (step 10)

= ( ) x ( ) x ( )

= _____Rem/hour

b) PCRV Safety Valves

Dose Rate = (step 8b) (step 9) x (step 10)

= ( ) x ( ) x ( )

= _____Rem/hour

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. Tnen 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 ten times the Technical Specification limit 3.7E-1 Ci/sec, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 15.

NOTE: Technical Specification Limit = 3.7E-2 Ci/sec.
10x Technical Specification Limit = 3.7E-1 Ci/cc, as stated above

Curies of Noble Gas Released

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

a) Reactor Building Louvers

Curies Released = (step 8a) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

b) PCRV Safety Valves

Curies Released = (step 8b) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Whole Body Gamma Dose at EAB

16. Calculate the dose received at the EAB.

a) Reactor Building Louvers

Dose = (step 11a) x (step 3)

= ( ) x ( )

= _____Rem

b) PCRV Safety Valves

Dose = (step 11b) x (step 3)

= ( ) x ( )

= _____Rem

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). 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

Projected Dose at EAB = (step 11a) x (step 17)

= ( ) x ( )

= _____Rem

b) PCRV Safety Valves

Projected Dose at EAB = (step 11b) x (step 17)

= ( ) x ( )

= _____ Rem

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

^{131}I Equivalent Concentration =

(step 4c) + (step 4d) x (5.7 E -3) *** ÷ (step 4e)

=( ) + ( ) x (5.7 E -3) *** ÷ ( )

= _____ 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 = (step 19) x (5.8 E +7)

= ( ) x (5.8 E +7)

= _____ Ci/sec

b) PCRV Safety Valves

Q = (step 19) x (1.9 E + 7)

= ( ) x (1.9 E +7)

= _____ Ci/sec

Classification of Event

21. Determine ^{131}I dose conversion factor from Attachment 8. 1.2E+6 Rem/hour / Ci/m³

22. Determine the thyroid dose rate at the EAB.

a) Reactor Building Louvers

Dose Rate = (step 20a) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

b) PCRV Safety Valves

Dose Rate = (step 20b) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

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 26 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 ten times the Technical Specification limit 1.0E-7 Ci/sec, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 26.

NOTE: Technical Specification Limit = 1.0E-8 Ci/cc
10x Technical Specification Limit = 1.0E-7 Ci/cc,
as stated above.

Curies of ^{131}I Equivalent Released

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

a) Reactor Building Louvers

Curies Released = (step 20a) x (step 3) x (3.6 E +3 s/hr)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

b) PCRV Safety Valves

Curies Released = (step 20b) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Thyroid Dose at EAB

27. Calculate the dose received at the EAB.

a) Reactor Building Louvers

Dose =
= (step 22a) x (step 3)

= _____Rem

b) PCRV Safety Valves

Dose = (step 22b) x (step 3)

= ( ) x ( )

= _____Rem

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). 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

    Projected Dose at EAB = (step 22a) x (step 28)

    = ( ) x ( )

    = _____Rem

    b) PCRV Safety Valves

    Projected Dose at EAB = (step 22b) x (step 28)

    = ( ) x ( )

    = _____Rem

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

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 ^{131}I equivalent is (Step 23 or Step 24 or Step 25): _____

40. The ^{131}I 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 ^{131}I 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 31, 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: (RR-93256, Pt. 10) _____ cpm (STO 01)

e) Sensitivity RIS-9301: _____ µCi/cc/cpm (STO 02)

f) Primary Coolant ^{131}I equivalent circulating inventory: (posted) _____ Ci (STO 03)

g) Primary Coolant ^{131} equivalent plateout inventory: (posted) _____ Ci (STO 04)

h) Primary Coolant Volume: (posted) _____ cc (STO 05)

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

2) 6.7E-5 µCi/cc ^{131}I

j) Ten Times Technical Specification Limits (posted):

1) 6.5E-2 µCi/cc noble gas

2) 7.0E-8 µCi/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 _____ °F
Circle instrument used

60m Tower Reactor Building

2. Determine sectors affected using Site Sector Map (Figure 3):

Sector(s) _____

3. Determine Stability Category using Table 5 and Steps 1.l) and 1.m).

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

4. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 3) 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). 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) ≥ 9.6E-1 Ci/sec SITE AREA EMERGENCY.

3) If Step 10c) ≥ 3.7E-1 Ci/sec and ≤ 9.6E-1 Ci/sec, RADIOLOGICAL ALERT.

4) If RCL 11 ≥ 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

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

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

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

1) If Step 10h) ≥ 5 Rem/hour, GENERAL EMERGENCY.

2) If Step 10i) ≥ 9.8E-4C Ci/sec SITE AREA EMERGENCY

3) If Step 10i) ≥ 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 ^{131}I 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 10b), the higher (i.e., more severe) classification is to be used to determine recommended protective actions.

Work/Datasheet/Checklist Control List

Worksheet No.	Title	Number Copies
1	Monitored Release Calculations (Manual)	2
2	Monitored Release Calculations (TI-59)	2
3	Unmonitored Release Calculations (Manual)	2
4	Unmonitored Release Calculations (TI-59)	2
Datasheet No.		
1	Datalogger Monitored Release	5
2	Datalogger Unmonitored Release	2
3	Preliminary Assessment of Plant Conditions	2
Checklist No.		
1	Emergency Coordinator/Control Room Director Checklist	2
Attachment No.		
1	Notification to Activate State Emergency Response Centers	2

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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: _____

Technical Clerk and Recorder_____ *

Date Received_____

Date Replaced_____

* Technical Clerk and Recorder 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.

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) _____µCi/cc/cpm

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

d) Sensitivity, RIS-7324-2: (I-14, 203-P7) _____µCi/cc/cpm

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

NOTE: Maximum CPM/Min must be calculated as:

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

from strip chart.

f) Sensitivity, RIS-73437-1: _____ µCi/cc/cpm/min

g) Site Area Emergency Limit (as posted):

1) 6.6E-2 µCi/cc noble gas

2) 6.7E-5 µCi/cc ^{131}I

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

1) 2.5E-2 µCi/cc noble gas

2) 7.0E-8 µCi/cc ^{131}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: _____ °F
Circle appropriate instrument

60m tower Reactor Building

5. Determine sectors affected using Site Sector Map.

(Figure 3) Sector(s) _____

6. Determine Stability Category using Table 5, Step 4k), and 4m).

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

Noble Gas Concentration

7. Calculate the exhaust stack noble gas concentration.

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

= ( ) x ( )

= _____ µCi/cc

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

= ( ) x ( )

= _____ µCi/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 Attachment 3 for instructions).

Local Indicated Concentration = _____ µCi/cc

d) Enter the highest of 7a), 7b), or 7c) _____ µCi/cc

Noble Gas Release Rate

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

Q = (step 7d) x (step 4j) x (1 E -6 Ci/µci)

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

= _____ Ci/sec

Classification of Event

9. Determine weighted noble gas dose conversion factor from Table 2. 7.5E+2 Rem/hour / Ci/m³

10. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 6) and wind speed (Step 4k).

Dilution Factor = _____ sec/m³

General Emergency Determination

11. Determine whole body dose rate at the EAB.

Dose Rate = (step 8) x (step 9) x (step 10)

= ( ) x ( ) 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 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 µCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 µCi/cc*, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

*NOTE: Technical specification limit = 2.5E-3µCi/cc
10x Technical Specification limit = 2.5E-2 µCi/cc,
as stated above.

Curies of Noble Gas Released

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

Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Whole Body Gamma Dose at EAB

15. Calculate the dose received at the EAB.

Dose = (step 11) x (step 3)

= ( ) x ( )

= _____Rem

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

Projections

16. 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). If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____hours.

17. Project the totoal whole body gamma dose at the EAB.

Projected dose at EAB = (step 11) x (step 16)

= ( ) x ( )

= _____Rem

131 I Concentration

18. Calculate the exhaust stack ^{131}I concentration.

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

= ( ) x ( )

= _____μCi/cc

131I and Total Radioiodine Release Rate

19. Calculate the source term Q (^{131}I release rate).

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

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

=_____Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*

= ( ) x (1.05 E + 2)*

=_____Ci/sec

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

Classification of Event

21. Determine weighted radioiodine dose conversion factor from Attachment 8. 5.3E+4 Rem/hour / Ci/m^3

General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

Dose Rate = (step 20) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

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

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 µCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 µCi/cc*, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

NOTE: Technical Specification Limit = 7.0E-9µCi/cc
10x Technical Specification Limit = 7.0E-8µCi/cc,
as stated above.

Curies of Radioiodine Released

25. Calculate the curies of radioiodine released to present time.

Curies Released = (step 20) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____curies

Accumulated Thyroid Dose at EAB

26. Calculate the dose received at the EAB.

Dose = (step 22) x (step 3)

= ( ) x ( )

= _____Rem

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

Projections

27. 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). If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____hours.

28. Project the total thyroid dose at the EAB.

Projected Dose at EAB = (step 22) x (step 27)

= ( ) x ( )

= _____Rem

29. Determine the recommended protective action for the general population based on the results of steps 17 and 28, refer to RERP-PAG.

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

31. The classification of the event based on noble gases is (step 11 or step 12 or step 13): _____

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

33. The accumulated whole body gamma dose at the EAB is (step 15): _____ Rem

34. The total number of curies of noble gas release to the present time is (step 14): _____ Curies

35. The projected whole body gamma dose at the EAB is (step 17): _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22): _____ Rem/hour

37. *The classification of the event based on radioiodines is (step 22 or step 23 or step 24): _____

38. The radioiodine release rate is (step 20): _____ Ci/sec

39. The accumulated thyroid dose at the EAB is (step 26): _____ Rem

40. The total number of curies of radioiodine released to the present time is (step 25): _____ Curies

41. The projected thyroid dose at the EAB is (step 28): _____ Rem

    Based on projected release duration of (step 27): _____ hours

*If this classification differs from the classification in step 31, the higher (i.e., more severe) classification is to be used to determine recommended protective action.

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) _____ µCi/cc/cpm

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

d) Sensitivity, RIS-7324-2: (I-14, 203-P7) _____ µCi/cc/cpm

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

NOTE: Maximum CPM/Min must be calculated as:

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

from strip chart.

f) Sensitivity, RIS-73437-1: _____ µCi/cc/cpm/min

g) Site Area Emergency Limit (as posted):

1) 6.6E-2 µCi/cc noble gas

2) 6.7E-5 µCi/cc ^{131}I

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

1) 2.5E-2 µCi/cc noble gas

2) 7.0E-8 µCi/cc ^{131}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. _____ °F
Circle appropriate instrument

60m tower Reactor Building

5. Determine sectors affected using Site Sector Map.

(Figure 3) Sector(s) _____

6. Determine Stability Category using Table 5, Step 4k), and 4m).

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

Noble Gas Concentration

7. Calculate the exhaust stack noble gas concentration.

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

= ( ) x ( )

= _____µCi/cc

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

= ( ) x ( )

= _____µCi/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 Attachment 3 for instructions).

Local Indicated Concentration = _____µCi/cc

d) Enter the highest of 7a), 7b), or 7c) _____µCi/cc

Noble Gas Release Rate

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

Q = (step 7d) x (step 4j) x (1 E -6 Ci/µci)

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

= _____Ci/sec

Classification of Event

9. Determine weighted noble gas dose conversion factor from Table 2. 7.5E+2 Rem/hour / Ci/m³

10. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 6) and wind speed (Step 4k).

Dilution Factor = _____ sec/m³

General Emergency Determination

11. Determine whole body dose rate at the EAB.

Dose Rate = (step 8) x (step 9) x (step 10)

= ( ) x ( ) 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 14 of this attachment.

Site Area Emergency Determination

12. Criteria for Site Emergency: If Step 7d) is greater than or equal to 6.6E-2 µCi/cc, the classification of the event is SITE AREA EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 14 of this attachment.

Radiological Alert Determination

13. Criteria for Radiological Alert: If Step 7d) is greater than or equal to ten times the Technical Specification limit 2.5E-2 µCi/cc*, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 14.

*NOTE: Technical specification limit = 2.5E-3µCi/cc
10x Technical Specification limit = 2.5E-2 µCi/cc, as stated above.

Curies of Noble Gas Released

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

Curies released = (step 8) x (step 3) x (3.6 E +3 s/hr)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Whole Body Gamma Dose at EAB

15. Calculate the dose received at the EAB.

Dose = (step 11) x (step 3)

= ( ) x ( )

= _____Rem

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

Projections

16. 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). If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____hours.

17. Project the totoal whole body gamma dose at the EAB.

Projected dose at EAB = (step 11) x (step 16)

= ( ) x ( )

= _____Rem

131 I Concentration

18. Calculate the exhaust stack ^{131}I concentration.

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

= ( ) x ( )

= _____µCi/cc

131I and Total Radioiodine Release Rate

19. Calculate the source term Q (^{131}I release rate).

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

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

=_____Ci/sec

20. Calculate Q_T for total radioiodine release.

Q_T = (step 19) x (1.05 E + 2)*

= ( ) x (1.05 E + 2)*

=_____Ci/sec

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

Classification of Event

21. Determine weighted radioiodine dose conversion factor from Attachment 8. 5.3E+4 Rem/hour / Ci/m^3

General Emergency Determination

22. Determine the thyroid dose rate at the EAB.

Dose Rate = (step 20) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

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

23. Criteria for Site Area Emergency: If Step 18 is great than or equal to 6.7E-5 µCi/cc, the classification of the event is SITE EMERGENCY. Inform the Shift Supervisor of the Site Emergency Condition. Then go directly to Step 25 of this attachment.

Radiological Alert Determination

24. Criteria for Radiological Alert: If Step 18 is greater than or equal to ten times the Technical Specification limit 7.0E-8 µCi/cc*, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 25.

NOTE: Technical Specification Limit = 7.0E-9µCi/cc
10x Technical Specification Limit = 7.0E-8µCi/cc,
as stated above.

Curies of Radioiodine Released

25. Calculate the curies of radioiodine released to present time.

Curies Released = (step 20) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____curies

Accumulated Thyroid Dose at EAB

26. Calculate the dose received at the EAB.

Dose = (step 22) x (step 3)

= ( ) x ( )

= _____Rem

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

Projections

27. 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). If the release has terminated, enter value from step 3.

Preliminary estimate of release hours _____hours.

28. Project the total thyroid dose at the EAB.

Projected Dose at EAB = (step 22) x (step 27)

= ( ) x ( )

= _____Rem

29. Determine the recommended protective action for the general population based on the results of steps 17 and 28, refer to RERP-PAG.

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

31. The classification of the event based on noble gases is (step 11 or step 12 or step 13): _____

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

33. The accumulated whole body gamma dose at the EAB is (step 15): _____ Rem

34. The total number of curies of noble gas release to the present time is (step 14): _____ Curies

35. The projected whole body gamma dose at the EAB is (step 17): . _____ Rem

    Based on projected release duration of (step 16): _____ hours

36. The thyroid dose rate at the EAB is (step 22): _____ Rem/hour

37. *The classification of the event based on radioiodines is (step 22 or step 23 or step 24): _____

38. The radioiodine release rate is (step 20): _____ Ci/sec

39. The accumulated thyroid dose at the EAB is (step 26): _____ Rem

40. The total number of curies of radioiodine released to the present time is (step 25): _____ Curies

41. The projected thyroid dose at the EAB is (step 28): _____ Rem

    Based on projected release duration of (step 27): _____ hours

*If this classification differs from the classification in step 31, the higher (i.e., more severe) classification is to be used to determine recommended protective action.

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 radioiodine 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) _____ µCi/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) _____ µCi/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:

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

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 ^{131}I

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

2) 7.0E-8 _____ µCi/cc ^{131}I

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 _____ °F
Circle appropriate instrument

60m Tower Reactor Building

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

2. Determine sectors affected using Site Sector Map (Figure 3):

   Sector(s) _____

3. Determine Stability Category using Table 5 and Steps 1o) and 1q).

   Stability Category _____

   NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

4. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 3) and wind speed (Step 1o).

   Dilution Factor _____ sec/m^3 (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). 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 |$\overline{1}$| , |$\overline{\text{INV}}$| , |$\overline{\text{2nd}}$| , |$\overline{\text{WRITE}}$| 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 ≥ 6.6E-2 µCi/cc (Step 1.1)1), SITE AREA EMERGENCY.

3) If RCL 17 ≥ 2.5E-2 µCi/cc (Step 1.m)1) and ≤ 6.6E-2 µCi/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 10.g) ≥ 5 Rem/hour, GENERAL EMERGENCY.

2) If RCL 23 ≥ 6.7E-5 µCi/cc (Step 1.l)2), SITE AREA EMERGENCY.

3) If RCL 23 ≥ 7.0E-8 µCi/cc (Step 1.m)2) and < 6.7E-5 µCi/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 10b), 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 radioiodine 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) _____ µCi/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) _____ µCi/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:

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

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 ^{131}I

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

2) 7.0E-8 µCi/cc ^{131}I

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 _____ °F
Circle appropriate instrument

60m Tower Reactor Building

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

2. Determine sectors affected using Site Sector Map (Figure 3):

   Sector(s) _____

3. Determine Stability Category using Table 5 and Steps 1o) and 1q).

   Stability Category _____ _____

   NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

4. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 3) and wind speed (Step 1o).

   Dilution Factor _____ sec/m^3 (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). 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 |$\overline{\text{I}}$| , |$\overline{\text{INV}}$| , |$\overline{\text{2nd}}$| , |$\overline{\text{WRITE}}$| keys.

      2) Insert magnetic card into right side of TI-59. Card should be right side up with the "." 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 ≥ 6.6E-2 µCi/cc (Step 1.1)1), SITE AREA EMERGENCY.

3) If RCL 17 ≥ 2.5E-2 µCi/cc (Step 1.m)1) and ≤ 6.6E-2 µCi/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 10.g) ≥ 5 Rem/hour, GENERAL EMERGENCY.

2) If RCL 23 ≥ 6.7E-5 µCi/cc (Step 1.1)2), SITE AREA EMERGENCY.

3) If RCL 23 ≥ 7.0E-8 µCi/cc (Step 1.m)2) and < 6.7E-5 µCi/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 10b), 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: _____ µCi/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) 6.6E-2 µCi/cc noble gas

      2) 6.7E-5 µCi/cc ^{131}I

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

2) 7.0E-8 µCi/cc ^{131}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 _____°F
Circle instrument used:

60m tower Reactor Building

5. Determine sectors affected using Site Sector Map (Figure 3):

Sector(s) _____

6. Determine Stability Category using Table 5, Step 4i and Step 4j:

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

7. Calculate the release noble gas concentration:

RIS-9301 concentration = (step 4a) x (step 4b)

= ( ) x ( )

= _____µCi/cc

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

a) Reactor Building Louvers

Q_{ng} = (step 7) x (5.8 E +7)* x (1 E -6 Ci/µci)
= ( ) x (5.8 E +7)* x (1 E -6)

= _____Ci/sec

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

b) PCRV Safety Valves

Q_{ng} = (step 7) x (1.9 E +7)** x (1 E -6)

= ( ) x (1.9 E +7)** x (1 E -6)

= _____Ci/sec

**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 2: 7.5E+2 Rem/hour / Ci/m³

10. Determine the EAB atmospheric dilution factor from Attachment 1 using Steps 6 and 4h:

Dilution Factor _____sec/m³

General Emergency Determination

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

a) Reactor Building Louvers

Dose Rate = (step 8a) x (step 9) x (step 10)

= ( ) x ( ) x ( )

= _____Rem/hour

b) PCRV Safety Valves

Dose Rate = (step 8b) (step 9) x (step 10)

= ( ) x ( ) x ( )

= _____Rem/hour

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 ten times the Technical Specification limit 3.7E-1 Ci/sec, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 15.

    NOTE: Technical Specification Limit = 3.7E-2 Ci/sec.
    10x Technical Specification Limit = 3.7E-1 Ci/cc,
    as stated above

Curies of Noble Gas Released

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

    a) Reactor Building Louvers

    Curies Released = (step 8a) x (step 3) x (3.6 E +3)

    = ( ) x ( ) x (3.6 E +3)

    = _____Curies

    b) PCRV Safety Valves

    Curies Released = (step 8b) x (step 3) x (3.6 E +3)

    = ( ) x ( ) x (3.6 E +3)

    = _____Curies

Accumulated Whole Body Gamma Dose at EAB

16. Calculate the dose received at the EAB.

a) Reactor Building Louvers

Dose = (step 11a) x (step 3)

= ( ) x ( )

= _____Rem

b) PCRV Safety Valves

Dose = (step 11b) x (step 3)

= ( ) x ( )

= _____Rem

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). 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

Projected Dose at EAB = (step 11a) x (step 17)

= ( ) x ( )

= _____Rem

b) PCRV Safety Valves

Projected Dose at EAB = (step 11b) x (step 17)

= ( ) x ( )

= _____ Rem

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

^{131}I Equivalent Concentration =

(step 4c) + (step 4d) x (5.7 E -3) *** ÷ (step 4e)

=( ) + ( ) x (5.7 E -3) *** ÷ ( )

= _____ 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 = (step 19) x (5.8 E +7)

= ( ) x (5.8 E +7)

= _____ Ci/sec

b) PCRV Safety Valves

Q = (step 19) x (1.9 E + 7)

= ( ) x (1.9 E +7)

= _____ Ci/sec

Classification of Event

21. Determine ^{131}I dose conversion factor from Attachment 8. 1.2E+6 $\frac{\text{Rem/hour}}{\text{Ci/m}^3}$

22. Determine the thyroid dose rate at the EAB.

a) Reactor Building Louvers

Dose Rate = (step 20a) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

b) PCRV Safety Valves

Dose Rate = (step 20b) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

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 26 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 ten times the Technical Specification limit 1.0E-7 Ci/sec, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 26.

NOTE: Technical Specification Limit = 1.0E-8 Ci/cc
10x Technical Specification Limit = 1.0E-7 Ci/cc,
as stated above.

Curies of ^{131}I Equivalent Released

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

a) Reactor Building Louvers

Curies Released = (step 20a) x (step 3) x (3.6 E +3 s/hr)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

b) PCRV Safety Valves

Curies Released = (step 20b) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Thyroid Dose at EAB

27. Calculate the dose received at the EAB.

a) Reactor Building Louvers

Dose =
= (step 22a) x (step 3)

= _____Rem

b) PCRV Safety Valves

Dose = (step 22b) x (step 3)

= ( ) x ( )

= _____Rem

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). 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

    Projected Dose at EAB = (step 22a) x (step 28)

    = ( ) x ( )

    = _____Rem

    b) PCRV Safety Valves

    Projected Dose at EAB = (step 22b) x (step 28)

    = ( ) x ( )

    = _____Rem

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

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 ^{131}I equivalent is (Step 23 or Step 24 or Step 25): _____

40. The ^{131}I 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 ^{131}I 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 31, the higher (i.e., more severe) classification is to be used to determine recommended protective action.

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: _____ µCi/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) 6.6E-2 µCi/cc noble gas

      2) 6.7E-5 µCi/cc ^{131}I

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

2) 7.0E-8 µCi/cc ^{131}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 _____ °F
Circle instrument used:

60m tower Reactor Building

5. Determine sectors affected using Site Sector Map (Figure 3):

Sector(s) _____

6. Determine Stability Category using Table 5, Step 4i and Step 4j:

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

7. Calculate the release noble gas concentration:

RIS-9301 concentration = (step 4a) x (step 4b)

= ( ) x ( )

= _____ µCi/cc

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

a) Reactor Building Louvers

Q_{ng} = (step 7) x (5.8 E +7)* x (1 E -6 Ci/µci)

= ( ) x (5.8 E +7)* x (1 E -6)

= _____ Ci/sec

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

b) PCRV Safety Valves

Q_{ng} = (step 7) x (1.9 E +7)** x (1 E -6)

= ( ) x (1.9 E +7)** x (1 E -6)

= _____Ci/sec

**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 2: 7.5E+2 Rem/hour / Ci/m³

10. Determine the EAB atmospheric dilution factor from Attachment 1 using Steps 6 and 4h:

Dilution Factor _____sec/m³

General Emergency Determination

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

a) Reactor Building Louvers

Dose Rate = (step 8a) x (step 9) x (step 10)

= ( ) x ( ) x ( )

= _____Rem/hour

b) PCRV Safety Valves

Dose Rate = (step 8b) (step 9) x (step 10)

= ( ) x ( ) x ( )

= _____Rem/hour

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 ten times the Technical Specification limit 3.7E-1 Ci/sec, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 15.

NOTE: Technical Specification Limit = 3.7E-2 Ci/sec.
10x Technical Specification Limit = 3.7E-1 Ci/cc,
as stated above

Curies of Noble Gas Released

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

a) Reactor Building Louvers

Curies Released = (step 8a) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

b) PCRV Safety Valves

Curies Released = (step 8b) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Whole Body Gamma Dose at EAB

16. Calculate the dose received at the EAB.

a) Reactor Building Louvers

Dose = (step 11a) x (step 3)

= ( ) x ( )

= _____Rem

b) PCRV Safety Valves

Dose = (step 11b) x (step 3)

= ( ) x ( )

= _____Rem

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). 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

Projected Dose at EAB = (step 11a) x (step 17)

= ( ) x ( )

= _____Rem

b) PCRV Safety Valves

Projected Dose at EAB = (step 11b) x (step 17)

= ( ) x ( )

= _____Rem

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

^{131}I Equivalent Concentration =

(step 4c) + (step 4d) x (5.7 E -3) *** ÷ (step 4e)

=( ) + ( ) x (5.7 E -3) *** ÷ ( )

= _____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 = (step 19) x (5.8 E +7)

= ( ) x (5.8 E +7)

= _____Ci/sec

b) PCRV Safety Valves

Q = (step 19) x (1.9 E + 7)

= ( ) x (1.9 E +7)

= _____Ci/sec

Classification of Event

21. Determine ^{131}I dose conversion factor from Attachment 8. 1.2E+6 $\frac{\text{Rem/hour}}{\text{Ci/m}^3}$

22. Determine the thyroid dose rate at the EAB.

a) Reactor Building Louvers

Dose Rate = (step 20a) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

b) PCRV Safety Valves

Dose Rate = (step 20b) x (step 21) x (step 10)

= ( ) x ( ) x ( )

= _____ Rem/hour

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 26 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 ten times the Technical Specification limit 1.0E-7 Ci/sec, the classification of the event is RADIOLOGICAL ALERT. Inform the Shift Supervisor of the Radiological Alert Condition. Then proceed with Step 26.

NOTE: Technical Specification Limit = 1.0E-8 Ci/cc
10x Technical Specification Limit = 1.0E-7 Ci/cc,
as stated above.

Curies of ^{131}I Equivalent Released

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

a) Reactor Building Louvers

Curies Released = (step 20a) x (step 3) x (3.6 E +3 s/hr)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

b) PCRV Safety Valves

Curies Released = (step 20b) x (step 3) x (3.6 E +3)

= ( ) x ( ) x (3.6 E +3)

= _____Curies

Accumulated Thyroid Dose at EAB

27. Calculate the dose received at the EAB.

a) Reactor Building Louvers

Dose =
= (step 22a) x (step 3)

= _____Rem

b) PCRV Safety Valves

Dose = (step 22b) x (step 3)

= ( ) x ( )

= _____Rem

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). 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

    Projected Dose at EAB = (step 22a) x (step 28)

    = ( ) x ( )

    = _____Rem

    b) PCRV Safety Valves

    Projected Dose at EAB = (step 22b) x (step 28)

    = ( ) x ( )

    = _____Rem

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

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 ^{131}I equivalent is (Step 23 or Step 24 or Step 25): _____

40. The ^{131}I 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 ^{131}I 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 31, 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: (RR-93256, Pt. 10) _____ cpm (STO 01)

e) Sensitivity RIS-9301: _____ μCi/cc/cpm (STO 02)

f) Primary Coolant ^{131}I equivalent circulating inventory: (posted) _____ Ci (STO 03)

g) Primary Coolant ^{131} equivalent plateout inventory: (posted) _____ Ci (STO 04)

h) Primary Coolant Volume: (posted) _____ cc (STO 05)

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

2) 6.7E-5 µCi/cc ^{131}I

j) Ten Times Technical Specification Limits (posted):

1) 2.5E-2 µCi/cc noble gas

2) 7.0E-8 µCi/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 _____ °F
Circle instrument used

60m Tower Reactor Building

2. Determine sectors affected using Site Sector Map (Figure 3):

Sector(s) _____

3. Determine Stability Category using Table 5 and Steps 1.l) and 1.m).

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

4. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 3) 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). 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) ≥ 9.6E-1 Ci/sec SITE AREA EMERGENCY.

3) If Step 10c) ≥ 3.7E-1 Ci/sec and ≤ 9.6E-1 Ci/sec, RADIOLOGICAL ALERT.

4) If RCL 11 ≥ 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

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

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

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

1) If Step 10h) ≥ 5 Rem/hour, GENERAL EMERGENCY.

2) If Step 10i) ≥ 9.8E-4C Ci/sec SITE AREA EMERGENCY

3) If Step 10i) ≥ 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 ^{131}I 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 10b), the higher (i.e., more severe) classification is to be used to determine recommended protective actions.

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: (RR-93256, Pt. 10) _____ cpm (STO 01)

e) Sensitivity RIS-9301: _____ µCi/cc/cpm (STO 02)

f) Primary Coolant ^{131}I equivalent circulating inventory: (posted) _____ Ci (STO 03)

g) Primary Coolant ^{131} equivalent plateout inventory: (posted) _____ Ci (STO 04)

h) Primary Coolant Volume: (posted) _____ cc (STO 05)

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

2) 6.7E-5 µCi/cc ^{131}I

j) Ten Times Technical Specification Limits (posted):

1) 2.5E-2 µCi/cc noble gas

2) 7.0E-8 µCi/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 _____ °F
Circle instrument used

60m Tower Reactor Building

2. Determine sectors affected using Site Sector Map (Figure 3):

Sector(s) _____

3. Determine Stability Category using Table 5 and Steps 1.l) and 1.m).

Stability Category _____

NOTE: Use proper column based on whether 60m tower or reactor building ΔT instruments used.

4. Determine the EAB dilution factor from Attachment 1 using the Stability Category (Step 3) 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). 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) ≥ 9.6E-1 Ci/sec SITE AREA EMERGENCY.

3) If Step 10c) ≥ 3.7E-1 Ci/sec and ≤ 9.6E-1 Ci/sec, RADIOLOGICAL ALERT.

4) If RCL 11 ≥ 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

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

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

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

1) If Step 10h) ≥ 5 Rem/hour, GENERAL EMERGENCY.

2) If Step 10i) ≥ 9.8E-4C Ci/sec SITE AREA EMERGENCY

3) If Step 10i) ≥ 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 ^{131}I 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 10b), the higher (i.e., more severe) classification is to be used to determine recommended protective actions.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

   a) __/__/__

   b) ___: ___

2. Projected end of release date and time:

   a) __/__/__

   b) ___: ___

3. Radiation Monitor Values, Noble Gas

   a) RT-7324, 1 _____cpm

   b) RT-7324. 2 _____cpm

   If one of the above is offscale or inoperative:

   a) E-500 or Cutie Pie? _____

   b) Instrument Reading _____mR/hr

4. Exhaust Stack Flow Rate _____cfm

5. Radioiodine Monitor Values; RT-73437, 1

   a) Initial Reading from chart _____cpm

   b) Intermediate Reading from chart _____cpm

   c) Peak or Current Reading from chart _____cpm

   d) Time between a and b _____minutes

   e) Time between b and c _____minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

   _____°

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____mph

8. Distance between upper and lower temperature instruments

_____meters

9. Delta Temperature between temperature instruments

_____°F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) __/__/__

b) ___: ___

2. End of Puff date and time (not to exceed 15 minutes after B.1)

a) __/__/__

b) ___: ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

   a) __/__/__

   b) ___: ___

2. Projected end of release date and time:

   a) __/__/__

   b) ___: ___

3. Radiation Monitor Values, Noble Gas

   a) RT-7324, 1 _____cpm

   b) RT-7324. 2 _____cpm

   If one of the above is offscale or inoperative:

   a) E-500 or Cutie Pie? _____

   b) Instrument Reading _____mR/hr

4. Exhaust Stack Flow Rate _____cfm

5. Radioiodine Monitor Values; RT-73437, 1

   a) Initial Reading from chart _____cpm

   b) Intermediate Reading from chart _____cpm

   c) Peak or Current Reading from chart _____cpm

   d) Time between a and b _____minutes

   e) Time between b and c _____minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

   _____°

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____mph

8. Distance between upper and lower temperature instruments

_____meters

9. Delta Temperature between temperature instruments

_____°F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) __/__/__

b) ___: ___

2. End of Puff date and time (not to exceed 15 minutes after B.1)

a) __/__/__

b) ___: ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

   a) __/__/__

   b) ___: ___

2. Projected end of release date and time:

   a) __/__/__

   b) ___: ___

3. Radiation Monitor Values, Noble Gas

   a) RT-7324, 1 _____cpm

   b) RT-7324. 2 _____cpm

   If one of the above is offscale or inoperative:

   a) E-500 or Cutie Pie? _____

   b) Instrument Reading _____mR/hr

4. Exhaust Stack Flow Rate _____cfm

5. Radioiodine Monitor Values; RT-73437, 1

   a) Initial Reading from chart _____cpm

   b) Intermediate Reading from chart _____cpm

   c) Peak or Current Reading from chart _____cpm

   d) Time between a and b _____minutes

   e) Time between b and c _____minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

   _____°

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____mph

8. Distance between upper and lower temperature instruments

_____meters

9. Delta Temperature between temperature instruments

_____°F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) __/__/__

b) ___: ___

2. End of Puff date and time (not to exceed 15 minutes after B.1)

a) __/__/__

b) ___: ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

   a) ___/___/___

   b) ___: ___

2. Projected end of release date and time:

   a) ___/___/___

   b) ___: ___

3. Radiation Monitor Values, Noble Gas

   a) RT-7324, 1 _____cpm

   b) RT-7324. 2 _____cpm

   If one of the above is offscale or inoperative:

   a) E-500 or Cutie Pie? _____

   b) Instrument Reading _____mR/hr

4. Exhaust Stack Flow Rate _____cfm

5. Radioiodine Monitor Values; RT-73437, 1

   a) Initial Reading from chart _____cpm

   b) Intermediate Reading from chart _____cpm

   c) Peak or Current Reading from chart _____cpm

   d) Time between a and b _____minutes

   e) Time between b and c _____minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

   _____°

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____mph

8. Distance between upper and lower temperature instruments

_____meters

9. Delta Temperature between temperature instruments

_____°F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) __/__/__

b) ___: ___

2. End of Puff date and time (not to exceed 15 minutes after B 1)

a) __/__/__

b) ___: ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 1 - Data Logger (or IBM) Monitored Release

A. Projection - Option 2

1. Current and release start date and time:

   a) ___/___/___

   b) ___: ___

2. Projected end of release date and time:

   a) ___/___/___

   b) ___: ___

3. Radiation Monitor Values, Noble Gas

   a) RT-7324, 1 _____cpm

   b) RT-7324. 2 _____cpm

   If one of the above is offscale or inoperative:

   a) E-500 or Cutie Pie? _____

   b) Instrument Reading _____mR/hr

4. Exhaust Stack Flow Rate _____cfm

5. Radioiodine Monitor Values; RT-73437, 1

   a) Initial Reading from chart _____cpm

   b) Intermediate Reading from chart _____cpm

   c) Peak or Current Reading from chart _____cpm

   d) Time between a and b _____minutes

   e) Time between b and c _____minutes

6. Wind Direction (preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

   _____°

7. Wind Speed (Preferred sampling point is 10 meter instrument on 60 meter meteorological tower)

_____mph

8. Distance between upper and lower temperature instruments

_____meters

9. Delta Temperature between temperature instruments

_____°F

10. Standard Deviation (Sigma Theta) of Wind Direction - 15 min. average

_____

B. Puff - Option 2

1. Current and release start date and time:

a) __/__/__

b) ___: __

2. End of Puff date and time (not to exceed 15 minutes after B.1)

a) __/__/__

b) ___: ___

C. Total for All Puffs - Option 3

Change option and execute DF 41-0-0.

Datasheet 2 - Data Logger (or IBM) Unmonitored Release)

1. Date and Time of beginning of release

   a) __/__/__

   b) ___: ___

2. Time of Louvers closed

   ___: ___

3. Maximum CPM, RIS-9301

   _____cpm

4. a) Primary coolant I-131 equivalent circulating inventory

   _____Ci

   b) Primary coolant I-131 equivalent plateout inventory

   _____Ci

5. Primary Coolant Volume

   _____scc

6. a) PCRV Pressure Before Release

   _____psig

   b) PCRV Pressure After Release

   _____psig

7. Wind Direction (prefererd sampling point is 10 meter instrumentation on 60 meter meteorological tower)

   _____°

8. Wind speed (preferred sampling point is 10 meter instrumenation on 60 meter meteorological tower)

   _____mph

9. Distance between upper and lower temperature instruments

_____meters

10. Delta Temperature between temperature instruments

_____°F

11. Standard Deviation (Sigma Theta) of wind Direction - 15 min. average

_____

Datasheet 2 - Data Logger (or IBM) Unmonitored Release)

1. Date and Time of beginning of release

   a) __/__/__

   b) ___: ___

2. Time of Louvers closed

   ___: ___

3. Maximum CPM, RIS-9301

   _____cpm

4. a) Primary coolant I-131 equivalent circulating inventory

   _____Ci

   b) Primary coolant I-131 equivalent plateout inventory

   _____Ci

5. Primary Coolant Volume

   ____ _____scc

6. a) PCRV Pressure Before Release

   _____psig

   b) PCRV Pressure After Release

   _____psig

7. Wind Direction (prefererd sampling point is 10 meter instrumentation on 60 meter meteorological tower)

   _____°

8. Wind speed (preferred sampling point is 10 meter instrumenation on 60 meter meteorological tower)

   _____mph

9. Distance between upper and lower temperature instruments

_____meters

10. Delta Temperature between temperature instruments

_____°F

11. Standard Deviation (Sigma Theta) of wind Direction - 15 min. average

_____

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 printe 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 2B_____ 4A_____

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

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 printe 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 2B_____ 4A_____

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/CR DIRECTOR CHECKLIST

1. Initiate Emergency Procedure actions. _____

2. Technical Advisor notified. _____

3. Obtain preliminary assessment of release. _____

4. Obtain meteorological data. _____

5. Initiate protective actions for station personnel. _____

6. Contact plant management and confirm accident classification. _____

7. Complete Notifications Form. _____

   ALERT or Higher - Attachment 1 _____

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

9. Receive initial personnel accountability report. _____

10. Notify Visitor's Center if Alert or higher; specify departure route 1, 2, or 3 (see Figure 2).

_____

11. Make notifications.

(ALERT or Higher) PSC Operator

_____

Weld County Communications Center

_____

NRC Operations Center

_____

12. Select the PCC location based upon consideration of the dominant wind direction and accessability to emergency respondants from offsite. The list below summarizes the available alternative locations.

a. Inside Protected Area

*1) Warehouse

2) Craft-Shops

b. Outside Protected Area.

*1) Mod-City

2) GA Field Office

13. Confirm communications with TSC and notify of PCC location.

_____

* Preferred locations for the PCC are either the warehouse or Mod-City, based upon equipment storage.

EMERGENCY COORDINATOR/CR DIRECTOR CHECKLIST

1. Initiate Emergency Procedure actions. _____

2. Technical Advisor notified. _____

3. Obtain preliminary assessment of release. _____

4. Obtain meteorological data. _____

5. Initiate protective actions for station personnel. _____

6. Contact plant management and confirm accident classification. _____

7. Complete Notifications Form. _____

   ALERT or Higher - Attachment 1 _____

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

9. Receive initial personnel accountability report. _____

10. Notify Visitor's Center if Alert or higher; specify departure route 1, 2, or 3 (see Figure 2). _____

11. Make notifications.

(ALERT or Higher) PSC Operator _____

Weld County Communications Center _____

NRC Operations Center _____

12. Select the PCC location based upon consideration of the dominant wind direction and accessability to emergency respondants from offsite. The list below summarizes the available alternative locations.

a. Inside Protected Area.

*1) Warehouse

2) Craft-Shops

b. Outside Protected Area.

*1) Mod-City

2) GA Field Office

13. Confirm communications with TSC and notify of PCC location. _____

* Preferred locations for the PCC are either the warehouse or Mod-City, based upon equipment storage.

NOTIFICATION TO ACTIVATE STATE EMERGENCY RESPONSE CENTERS

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

   OR

   c) 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.

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 Section 2.2.1.2 of this procedure.

1. Date and Time of Incident _____

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

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

4. Current release rate:
Noble Gas _____Ci/sec Iodine _____Ci/sec

5. Estimated curies released Noble Gas _____Ci Iodine _____Ci

6. Wind Velocity ____MPH, from ____degrees. Air Temp. ____° F.

7. Stability Category _____, Form of Precip. _____

8. Dose rate at EAB - WB _____rem/hr Thyroid _____rem/hr

9. Projected dose at EAB - WB _____rem Thyroid _____rem

10. Estimated accumulated dose at EAB-WB ____rem Thyroid ____rem

11. Estimate of any surface radioactive contamination _____

_____

12. On-site response actions under way _____

_____

13. Recommended Protective Action based on the projected dose at the EAB (NOTE: Refer to RERP-PAG):

Circle Appropriate Protective Actions and Read Aloud

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

14. Prognosis for worsening of event _____

15. Date and time of report _____

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

_____ _____

PSC Company Operator
or

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 _____

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

(Use HP Network Line if NRC Hot Line and Land Line are inoperable.)

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, ITEM NUMBER 1. 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 _____

NOTIFICATION TO ACTIVATE STATE EMERGENCY RESPONSE CENTERS

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

   OR

   c) 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.

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 Section 2.2.1.2 of this procedure.

1. Date and Time of Incident _____

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

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

4. Current release rate:
Noble Gas _____Ci/sec Iodine _____Ci/sec

5. Estimated curies released Noble Gas _____Ci Iodine _____Ci

6. Wind Velocity ___MPH, from ___degrees. Air Temp. ___° F.

7. Stability Category _____, Form of Precip. _____

8. Dose rate at EAB - WB _____rem/hr Thyroid _____rem/hr

9. Projected dose at EAB - WB _____rem Thyroid _____rem

10. Estimated accumulated dose at EAB-WB ___rem Thyroid ___rem

11. Estimate of any surface radioactive contamination _____

_____

12. On-site response actions under way _____

_____

13. Recommended Protective Action based on the projected dose at the EAB (NOTE: Refer to RERP-PAG):

Circle Appropriate Protective Actions and Read Aloud

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

14. Prognosis for worsening of event _____

15. Date and time of report _____

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

PSC Company Operator
or

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 _____

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

(Use HP Network Line if NRC Hot Line and Land Line are inoperable.)

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, ITEM NUMBER 1. 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 _____

Work/Datasheet/Checklist Control List

Worksheet No.	Title	Number Copies
1	Monitored Release Calculations (Manual)	2
2	Monitored Release Calculations (TI-59)	2
3	Unmonitored Release Calculations (Manual)	2
4	Unmonitored Release Calculations (TI-59)	2
Datasheet No.		
1	Datalogger Monitored Release	5
2	Datalogger Unmonitored Release	2
3	Preliminary Assessment of Plant Conditions	2
Checklist No.		
1	Emergency Coordinator/Control Room Director Checklist	2
Attachment No.		
1	Notification to Activate State Emergency Response Centers	2

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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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Datasheet Numbers	Copies Used

Checklist Numbers	Copies Used

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FORMS USE REPORTING SHEET (Continued)

COMMENTS

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Technical Clerk and Recorder_____ *

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NON-CONTROLLED COPY
BOOK 2 NRC
1/3/83 Eisenhut

RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
RERP-ECP	Executive Command Post Procedure	6	01-03-83
RERP-EXP	Emergency Exposure Guidelines	1	08-02-82
RERP-FCP	Forward Command Post Procedure	8	01-03-83
RERP-FIELD	Field Monitoring Procedure	2	09-01-82
RERP-HOME	Home Packet for Off-Shift Notifications	2	10-26-82
RERP-ORG	FSV Emergency Organization and Responsibilities	3	01-03-83
RERP-PAG	Protective Action Guideline Recommendations	1	08-02-82
RERP-PCC	Personnel Control Center Procedure	8	12-20-82
RERP-SEOC	State Emergency Operations Center Procedure	5	01-03-83
RERP-SURVEY	Inplant/Onsite Radiological Monitoring	1	09-09-82
RERP-THYROID	Thyroid Blocking Agent Administration	2	12-03-82

TITLE: EXECUTIVE COMMAND POST PROCEDURE

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

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Figure 1	Executive Command Post Organization	1
Figure 2	Emergency Organization	1
Attachment 1	Support Equipment/Material	1
Checklist 1	ECP Director's Checklist	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 TECHNICAL CLERK AND RECORDER, 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 POST

1.0 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 Procedure

2.1 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). It is the responsiblity of the ECP Alternate Director, or the first individual contacted by the ECP Director, to ensure that the notifications are made. Refer to the RERP PHONE 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 be 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 responsbility 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 Mangers, communications, and clerical personnel, 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).

Primary

Telephone (open line)

3.2.2 When instructed to do so, inform the FCP that the ECP is manned and ready and 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.

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 contruction reviews; temporary housing, office, transportation, and contruction equipment; purchasing, financial, legal and general office support; and, food deliveries and related logistics support to designated emergency operations.

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

EXECUTIVE COMMAND POST ORGANIZATION

Fort St. Vrain Nuclear Generating Station

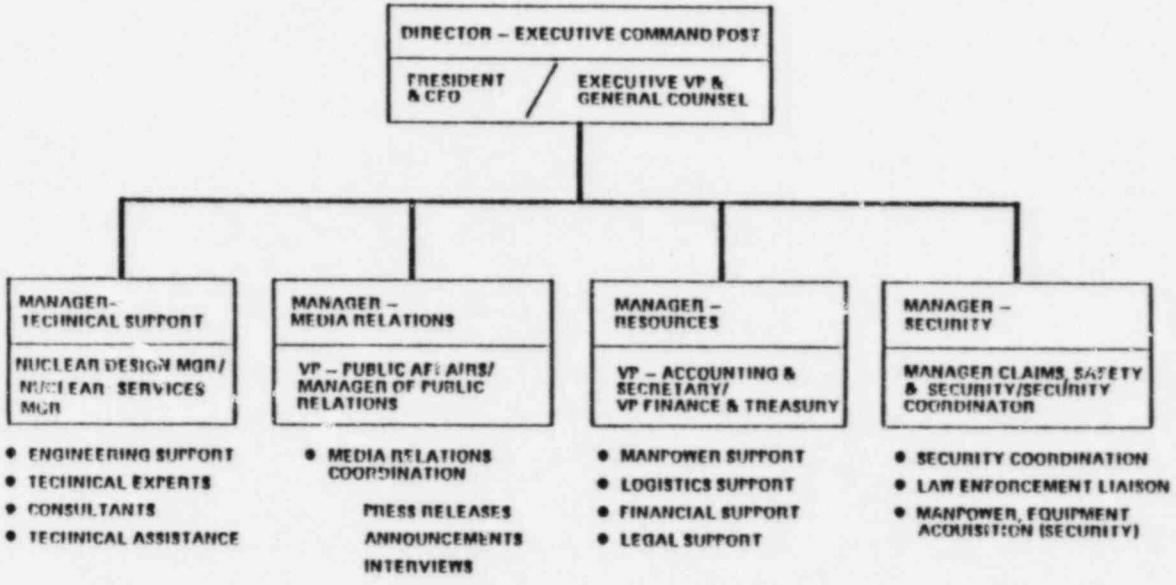


FIGURE 1

EXECUTIVE COMMAND POST ORGANIZATION

FORM 372 - 22 - 3643

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

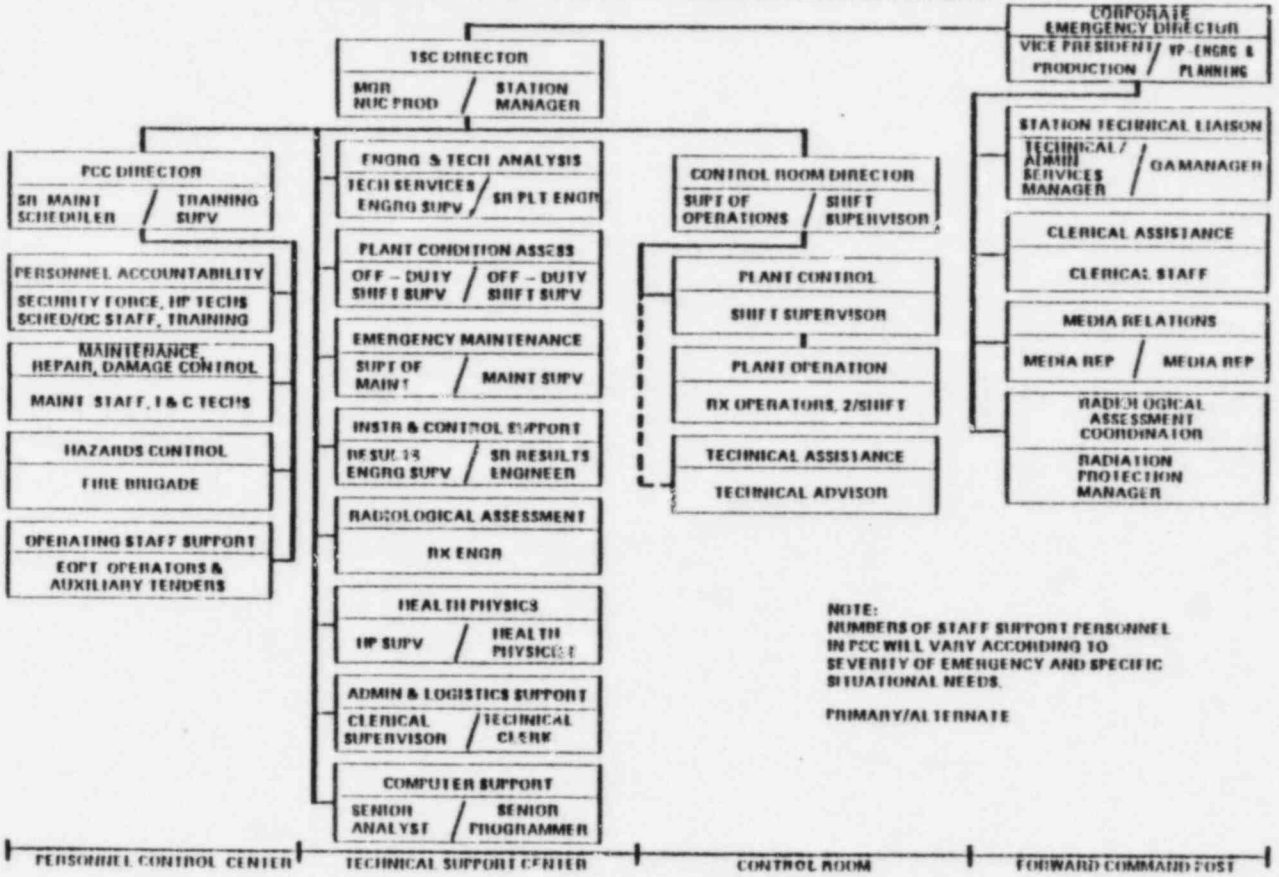


FIGURE 2
EMERGENCY ORGANIZATION

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

		Time
1.	Personnel Accountability	
	a. Manager of Technical Support - Nuclear Design Department Manager/Nuclear Services Manager	_____
	b. Manager of Media Relations - VP Public Affairs/ Manager of Media 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

Worksheet No.	Title	Number Copies
None	N/A	N/A

Datasheet No.		
None	N/A	N/A

Checklist No.		
1	ECP Director's Checklist	2

FORMS USE REPORTING SHEET

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Datasheet Numbers	Copies Used

Checklist Numbers	Copies Used

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FORMS USE REPORTING SHEET(Continued)

COMMENTS

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ECP DIRECTOR'S CHECKLIST

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

		Time
1.	Personnel Accountability	
	a. Manager of Technical Support - Nuclear Design Department Manager/Nuclear Services Manager	_____
	b. Manager of Media Relations - VP Public Affairs/ Manager of Media 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

		Time
1.	Personnel Accountability	
	a. Manager of Technical Support - Nuclear Design Department Manager/Nuclear Services Manager	_____
	b. Manager of Media Relations - VP Public Affairs/ Manager of Media 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

Worksheet No.	Title	Number Copies
None	N/A	N/A

Datasheet No.		
None	N/A	N/A

Checklist No.		
1	ECP Director's Checklist	2

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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Datasheet Numbers	Copies Used

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FORMS USE REPORTING SHEET(Continued)

COMMENTS

Reported By:_____

Date: _____

Technical Clerk and Recorder_____ *

Date Received_____

Date Replaced_____

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TITLE: FORWARD COMMAND POST PROCEDURE

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

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5.0	Referenced or Supporting Procedures	7
Figure 1	Location Map	1
Figure 2	Forward Command Post Floor Plan	1
Figure 3	Forward Command Post Organization	1
Figure 4	Emergency Organization	1
Figure 5	Site Sector Map	1
Figure 6	Aerial View Map of Plant	1
Attachment 1	Support Equipment/Materials	1
Datasheet 1	Forward Command Post Status Board	1
Checklist 1	Corporate Emergency Director's Checklist	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 TECHNICAL CLERK AND RECORDER, 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 FORWARD COMMAND POST

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 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 notifed by telephone. It is the responsibility of the CED alternate to ensure that the notifications are made. Refer to RERP PHONE LIST for the FCP for instructions, names, and phone numbers (after hours, see RERP-HOME).

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 communcation 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).

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.

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 FCP when the emergency condition has been brought to a recovery phase.

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 board at approximately 15 minute intervals. Data for 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 all status board updates. These sheets shall be retained for record keeping purposes.

3.4 Station Technical Liaison

a) Provide assistance and substantiated data on emergency status and conditions.

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 Status Board Update Sheets. 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. The Radiological Assessment Coordinator will supply and review all 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).

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

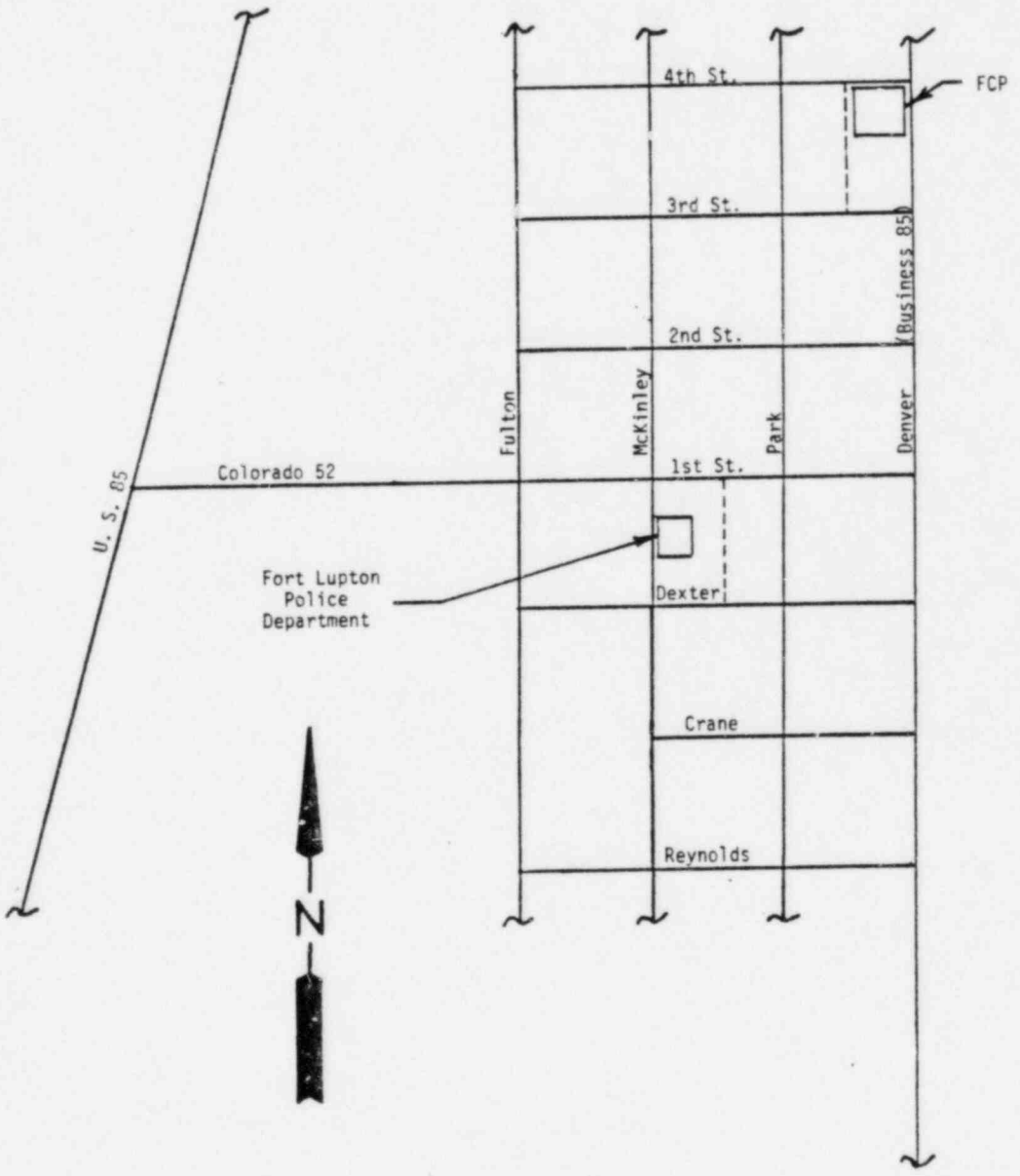
5.7 RERP-THYROID, Thyroid Blocking Agent Administration

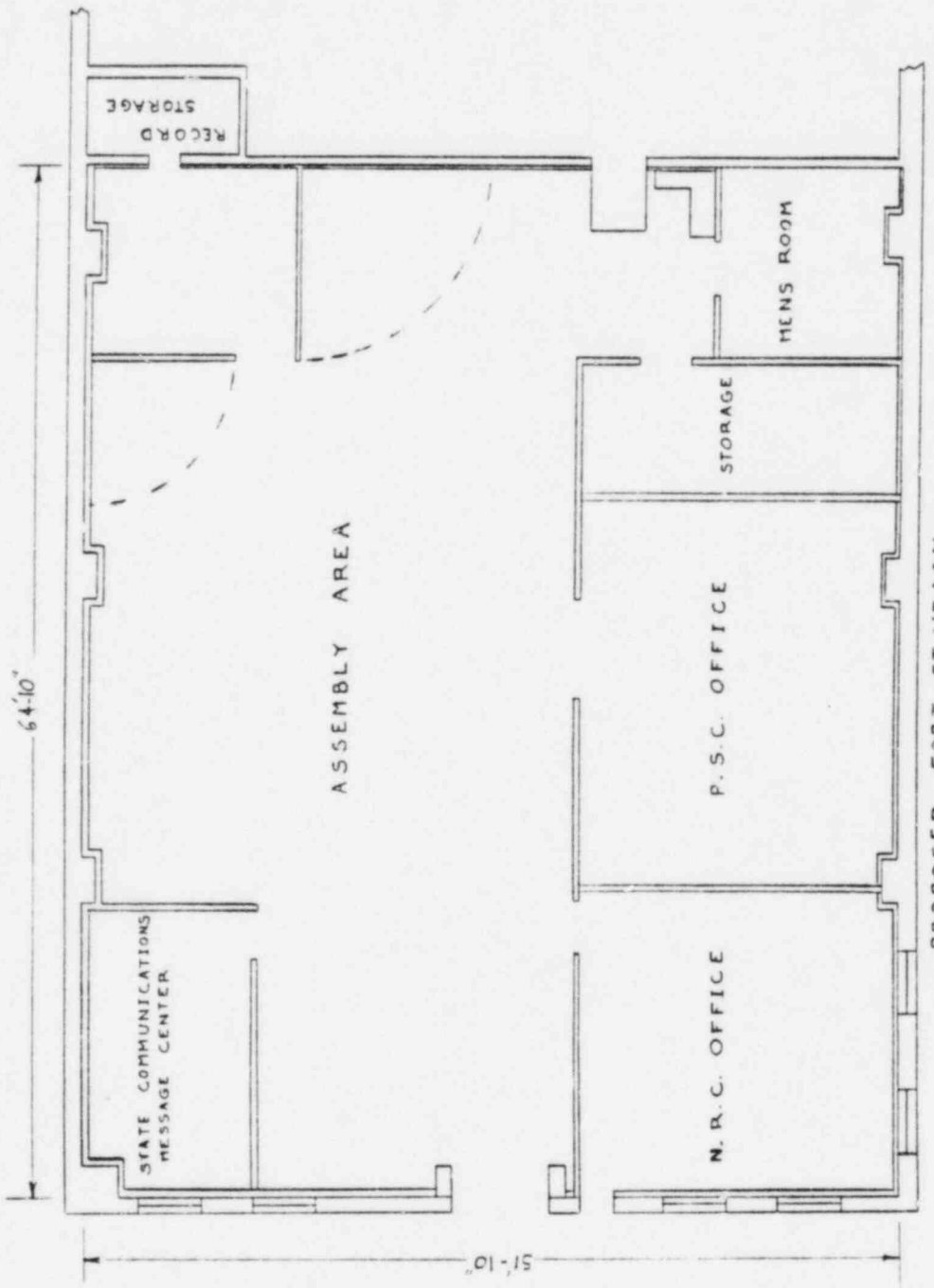
5.8 EP-CLASS, Event and Emergency Classification Overview

| 5.9 RERP-SURVEY, Inplant/Onsite Radiological Monitoring

| 5.10 Fort St. Vrain Final Safety Analysis Report

FIGURE 1

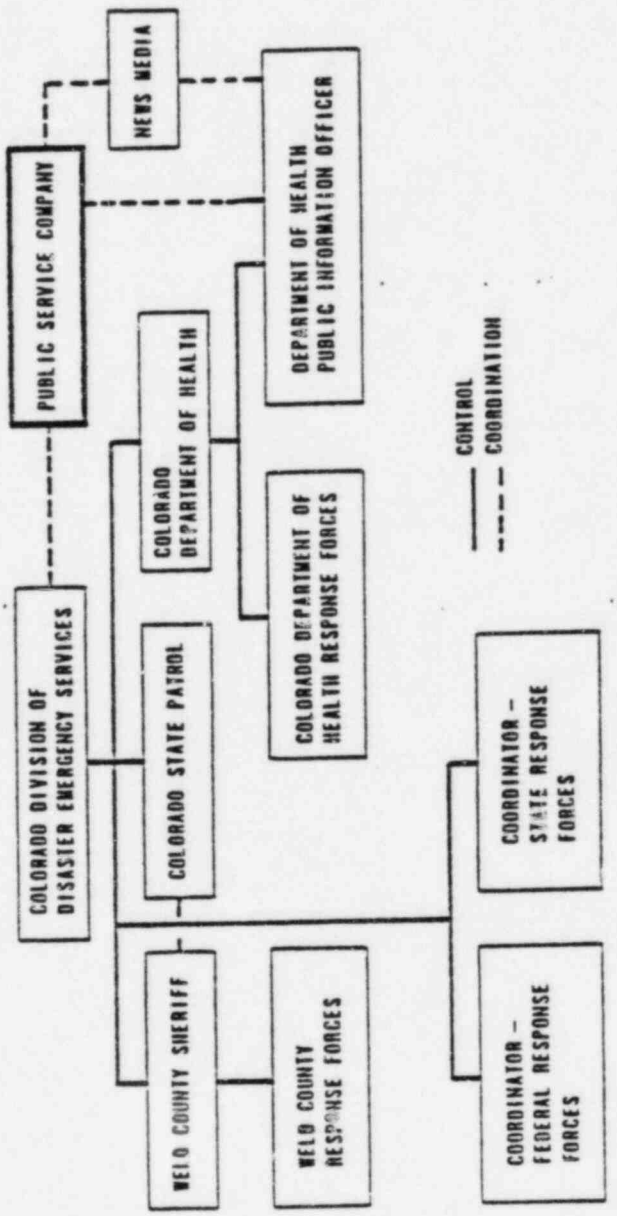

4th St.
FCP
3rd St.
Business 85
2nd St.
Fulton
McKinley
Park
Denver
Colorado 52
1st St.
U. S. 85
Fort Lupton
Police
Department
Dexter
Crane
Reynolds
N



PROPOSED FORT ST. VRAIN
FORWARD COMMAND POST (AT FORT LUPTIN)
SCALE: 1/8" = 1'

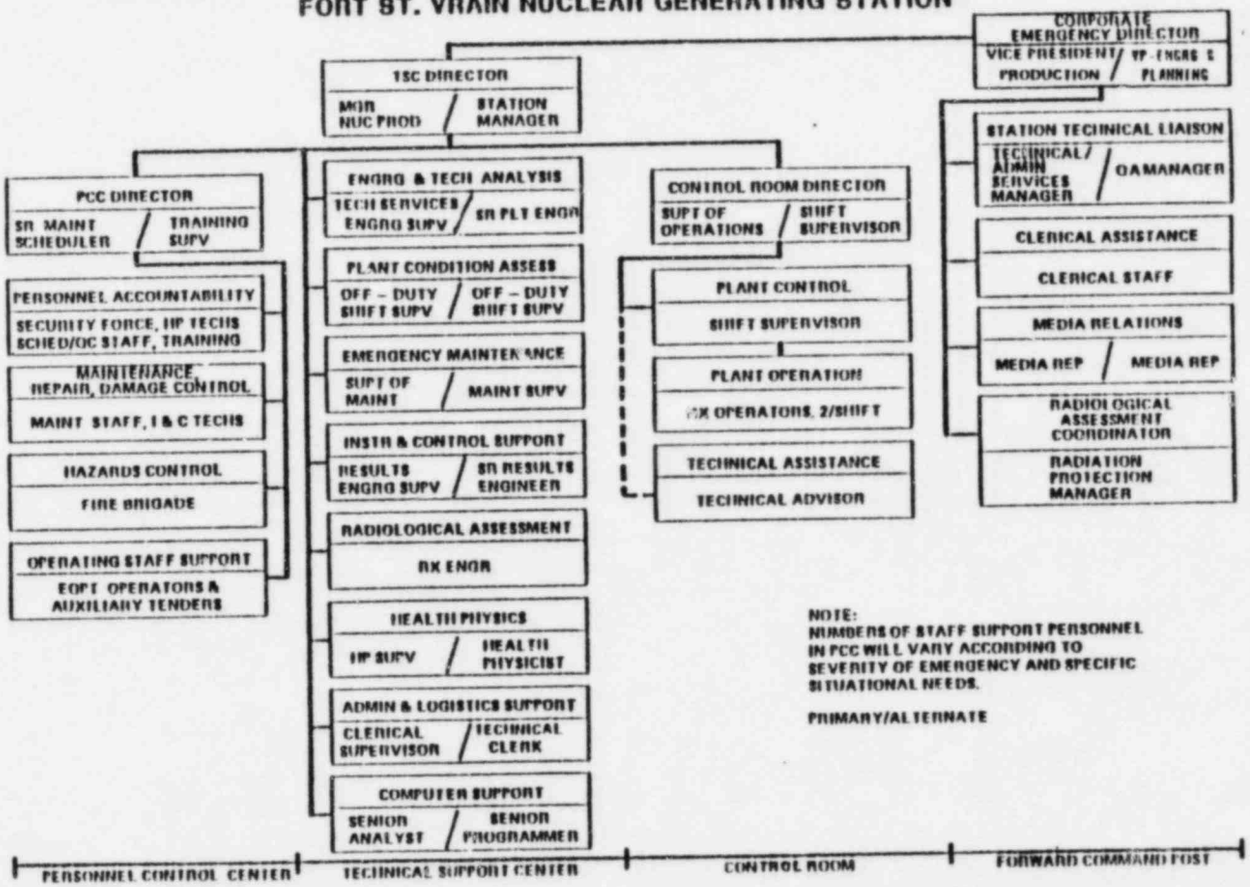
FORWARD COMMAND POST ORGANIZATION

Fort St. Vrain Nuclear Generating Station



FORM 372 - 22 - 3643

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

FIGURE 5

SITE SECTOR MAP - GEOGRAPHICAL AREA IDENTIFICATION DESIGNATIONS

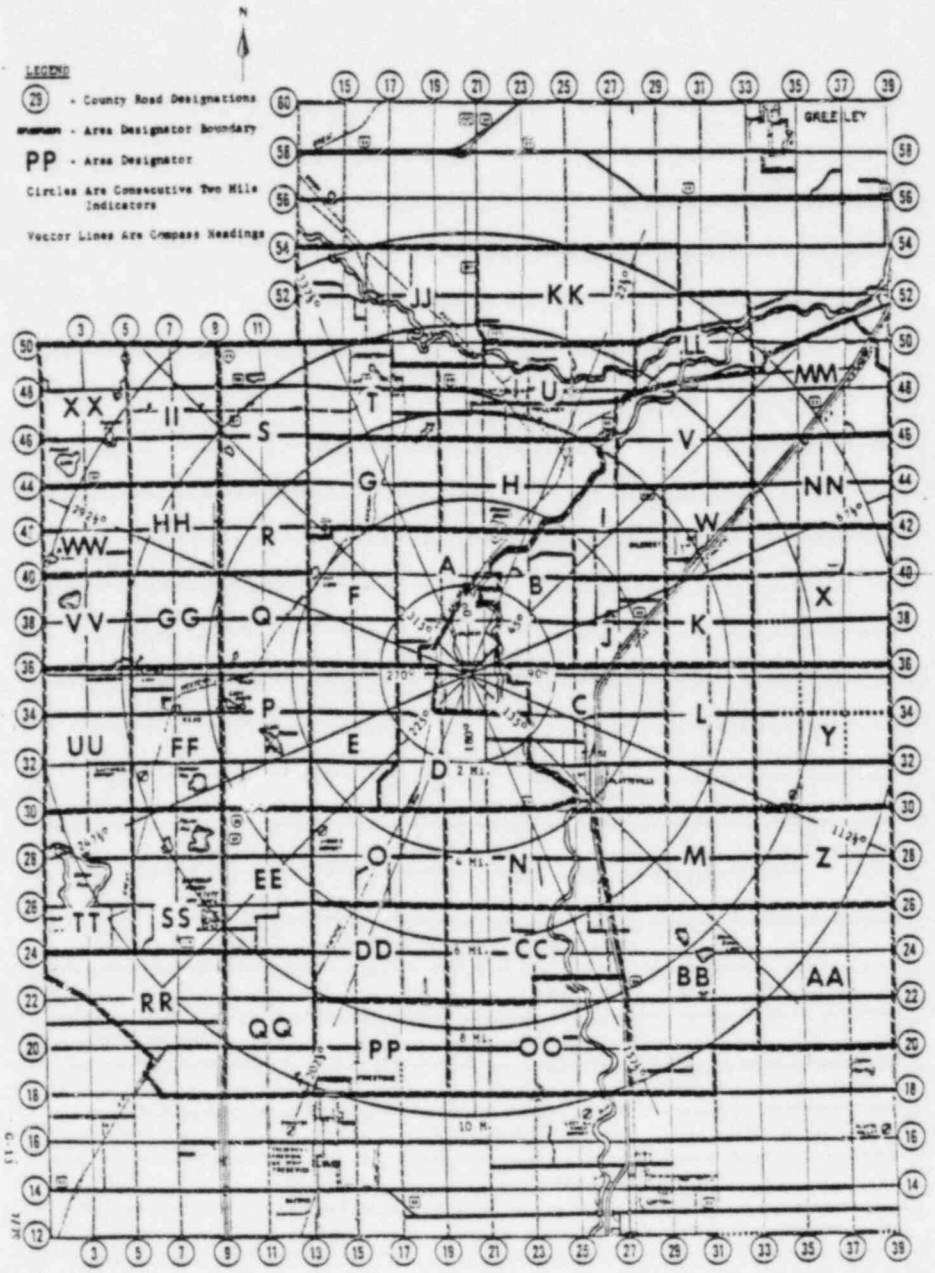
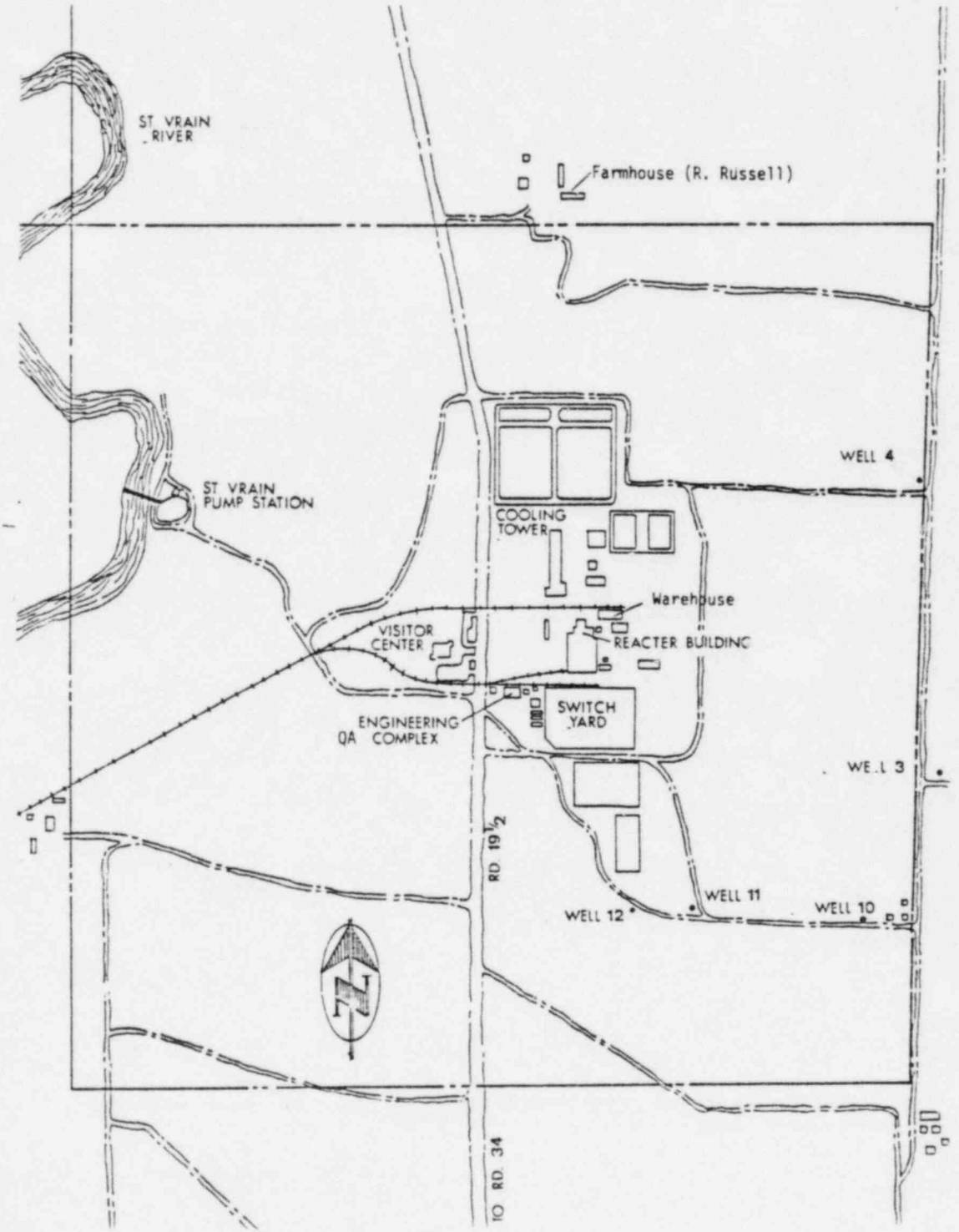


FIGURE 6

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

16. Emergency Procedures

17. Medical Emergency Plan

18. Calculator/Printer

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

ERP-FCP
Datasheet 1
Issue 8
Page 1 of 3

FORM 372-22-3643

FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

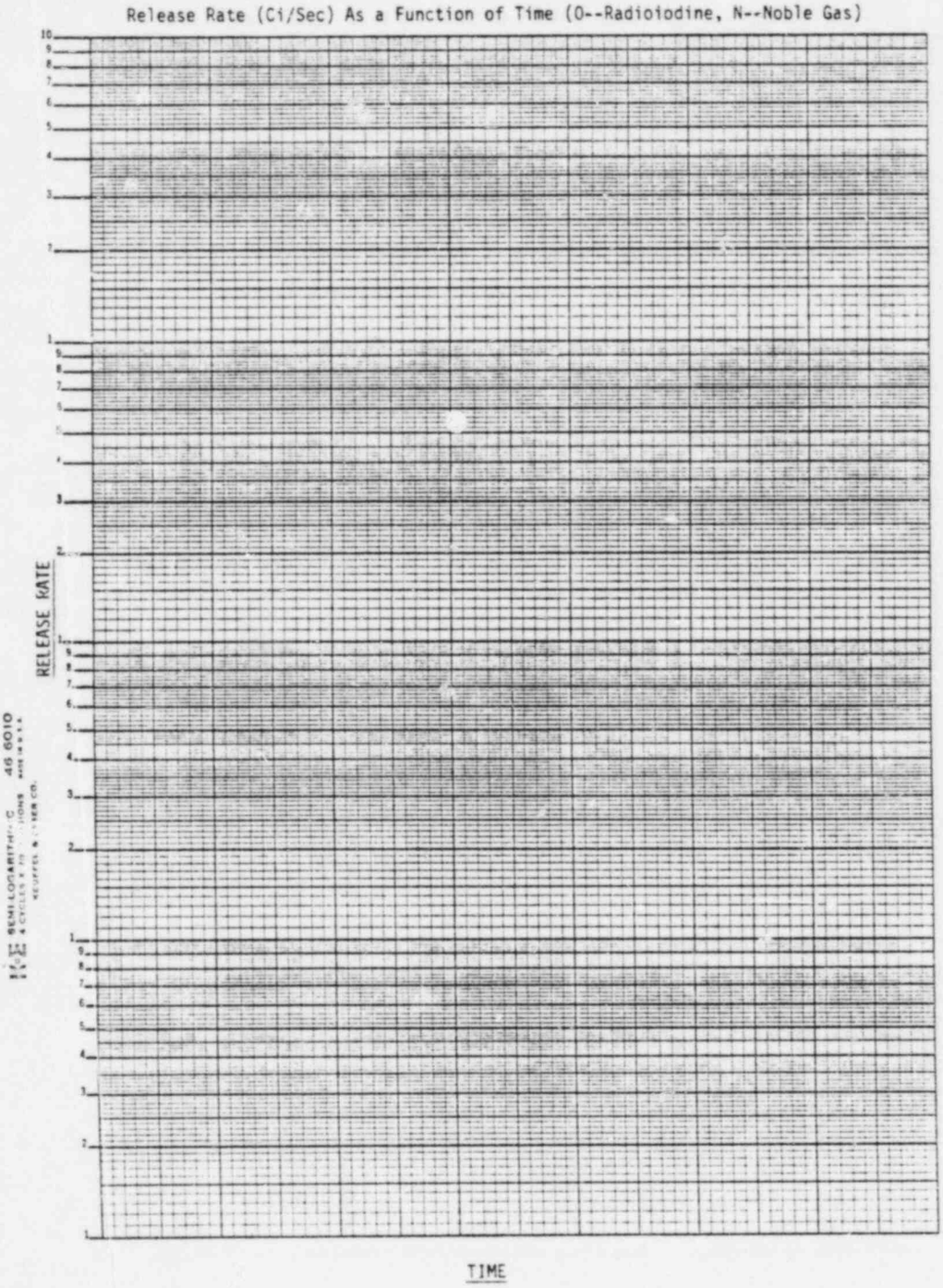
Projected Duration of Release _____

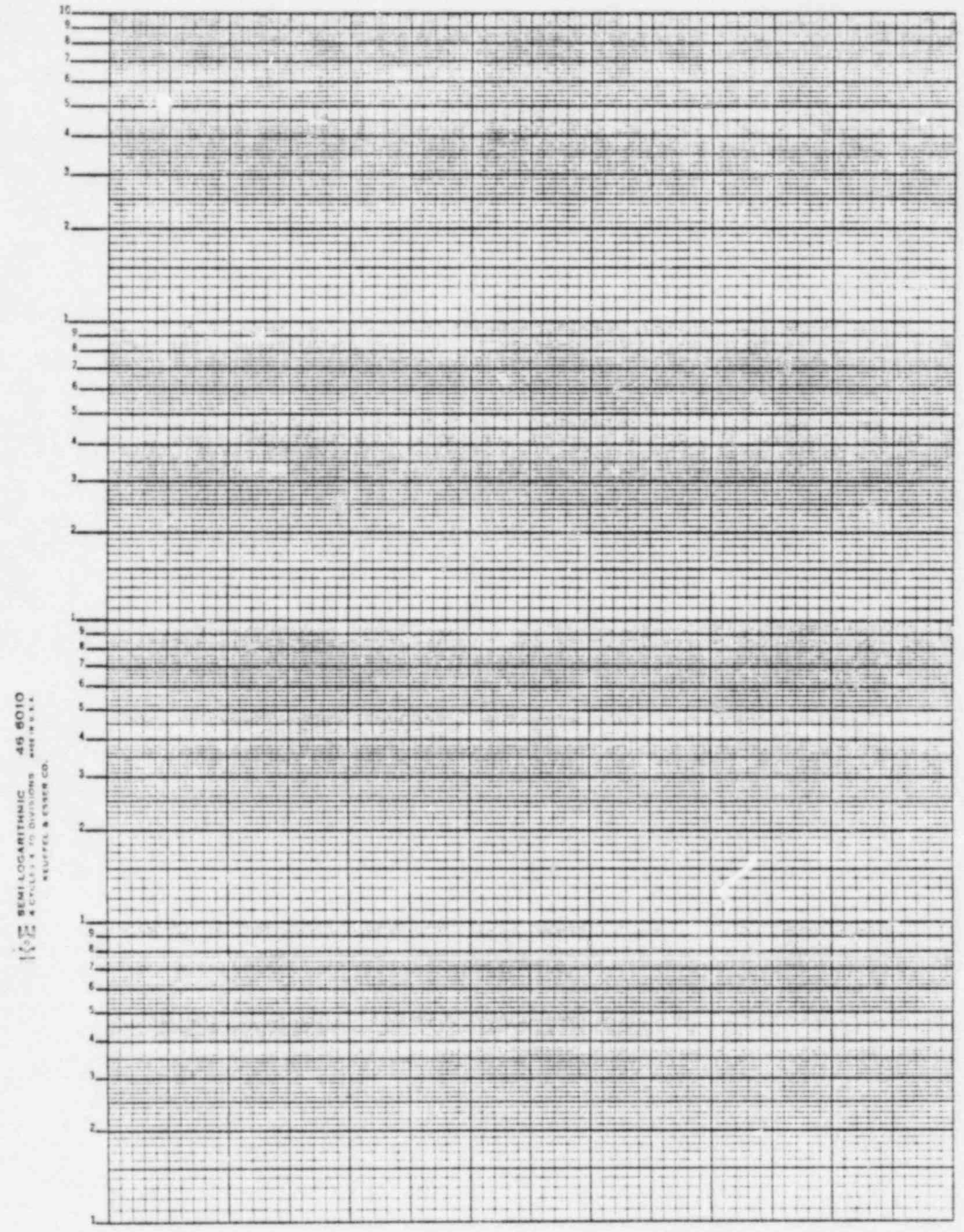
Posted By: _____

Location	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 Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




SEMI-LOGARITHMIC
46 6010

CHECKLIST 1

CORPORATE EMERGENCY DIRECTOR'S CHECKLIST

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

		Time
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.	_____

		Time
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

Worksheet No.	Title	Number Copies
None	N/A	N/A
Datasheet No.		
1	Forward Command Post Status Board	25
Checklist No.		
1	Corporate Emergency Director's Checklist	2

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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: _____

Technical Clerk and Recorder_____ *

Date Received_____

Date Replaced_____

* Technical Clerk and Recorder 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.

FORM 372 - 22 - 3643

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Datasheet 1
Issue 8
Page 1 of 3

FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

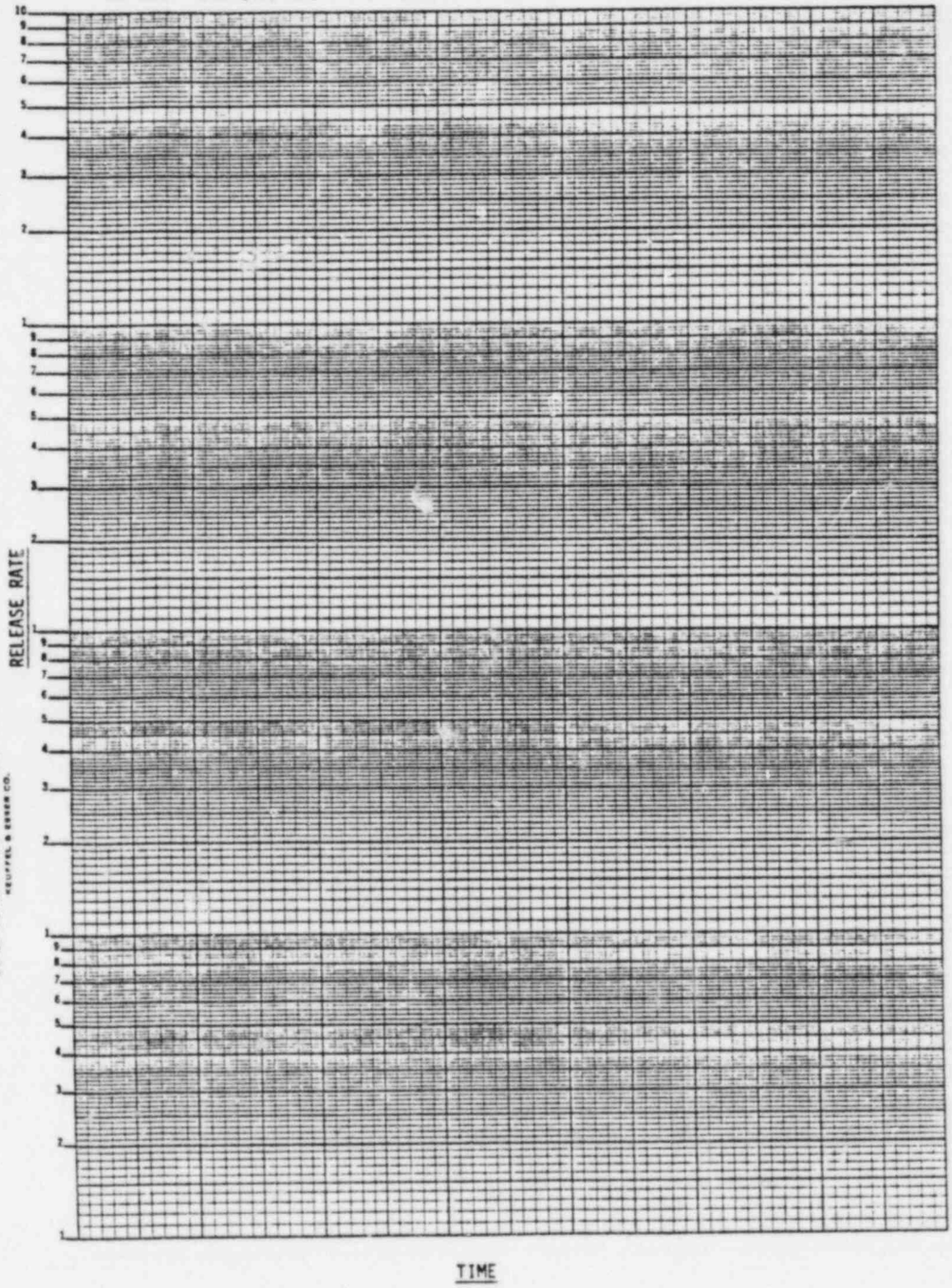
Projected Duration of Release _____

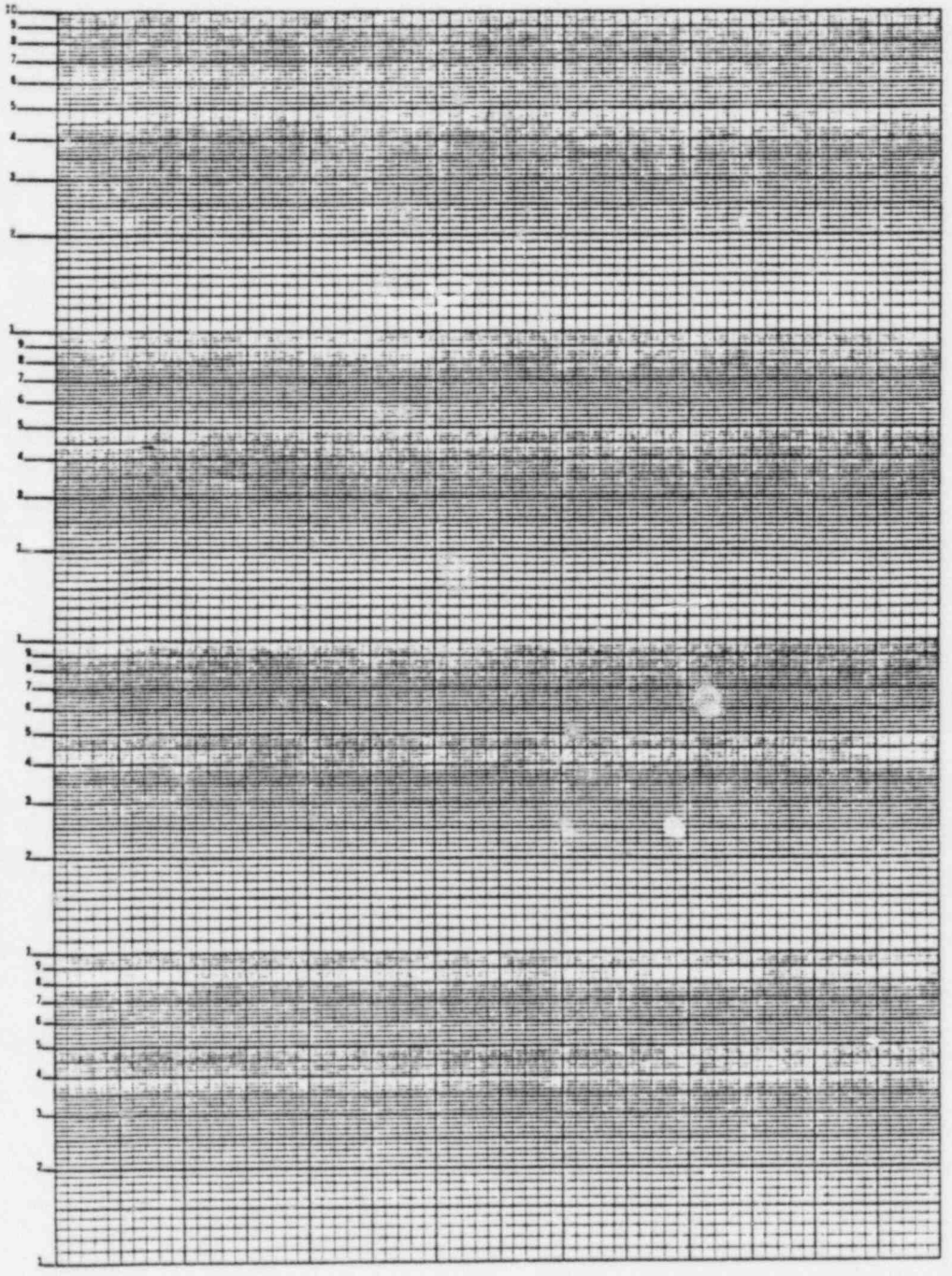
Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Posted By: _____

Verified By: _____

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





FORM 372-22-3643

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Datasheet 1
Issue 8
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FORWARD COMMAND POST STATUS BOARD

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Current Wind Direction _____ °

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

Projected EAB Whole Body Dose _____ (Rem)

Projected EAB Thyroid Dose _____ (Rem)

Emergency Classification _____

Affected Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

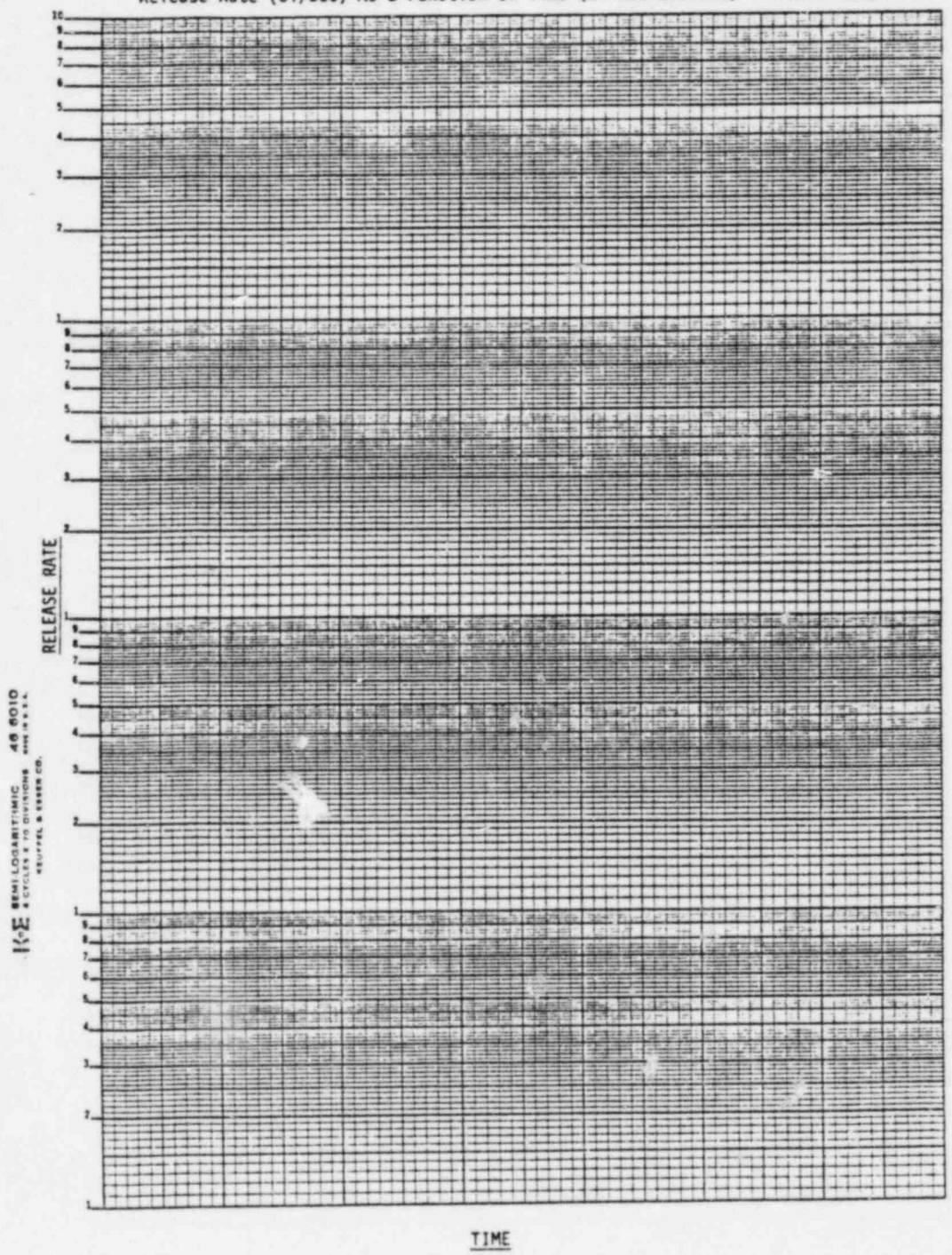
Projected Duration of Release _____

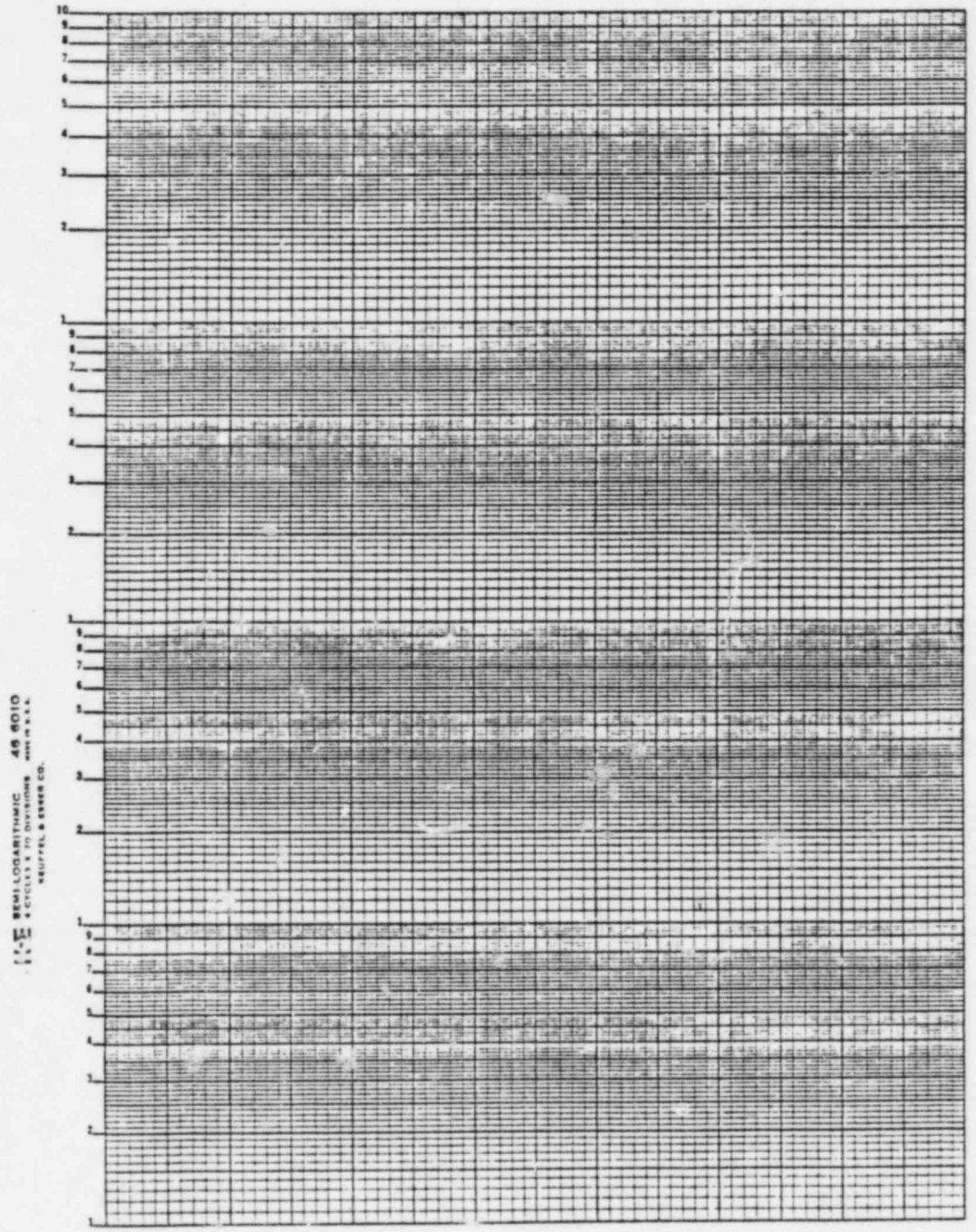
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




SEMI-LOGARITHMIC
46 6010
KEUFFEL & ESSER CO.

FORM 372-22-3643

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Datasheet 1
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FORWARD COMMAND POST STATUS BOARD

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Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

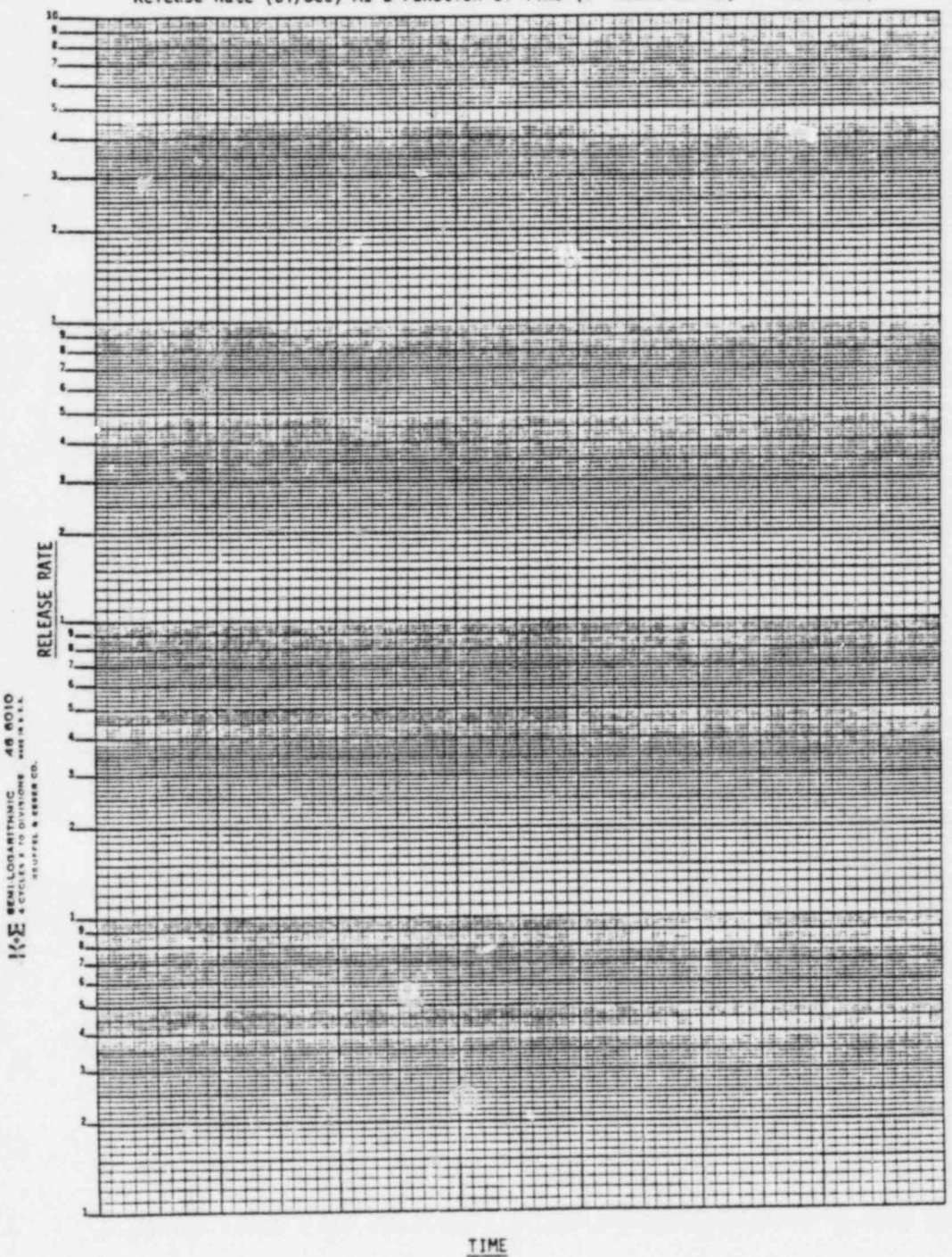
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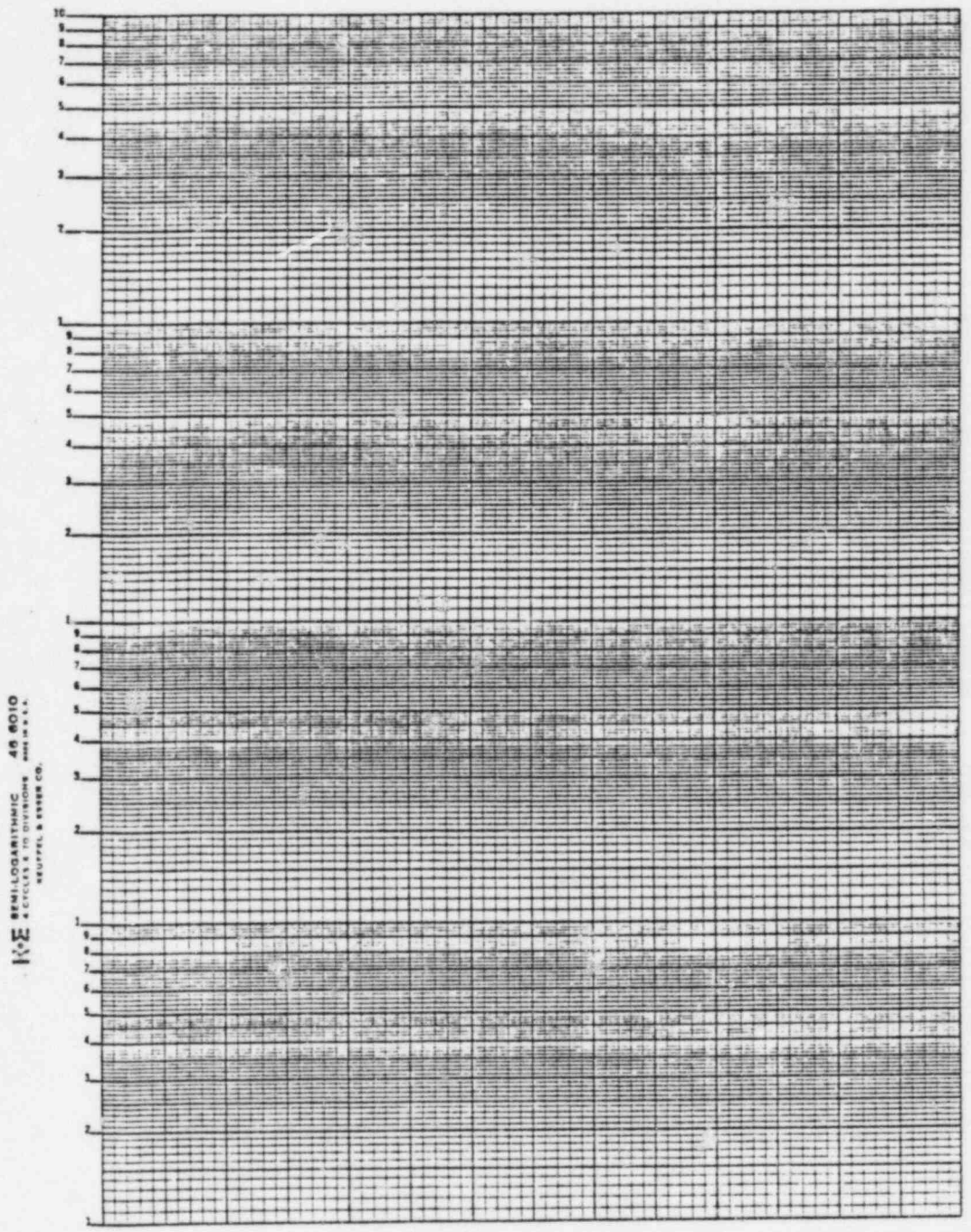
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




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46 6010

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

RERP-FCP
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FORWARD COMMAND POST STATUS BOARD

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Current Windspeed _____ (mph)

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Atmospheric Stability Class _____

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

Projected EAB Whole Body Dose _____ (Rem)

Projected EAB Thyroid Dose _____ (Rem)

Emergency Classification _____

Affected Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

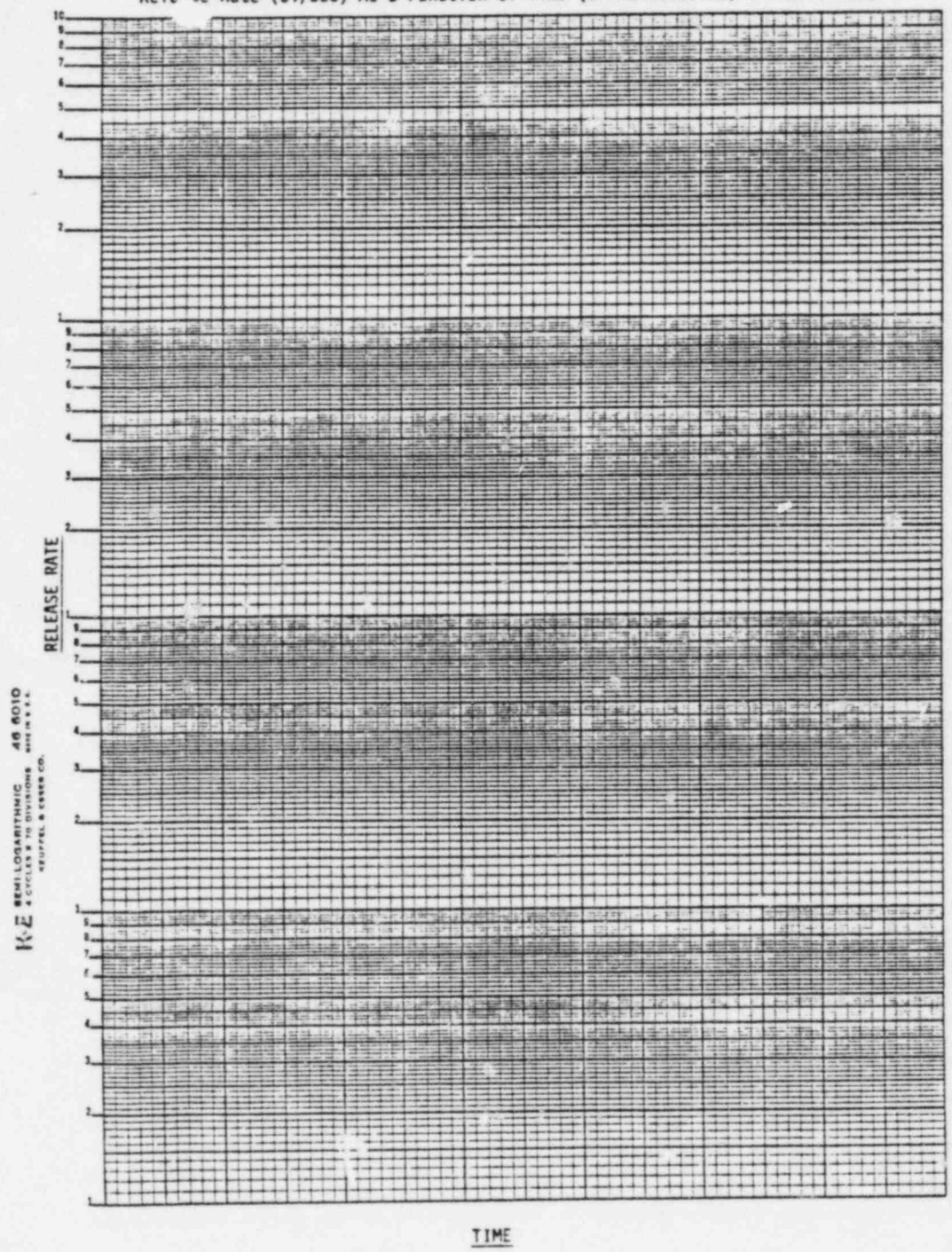
Projected Duration of Release _____

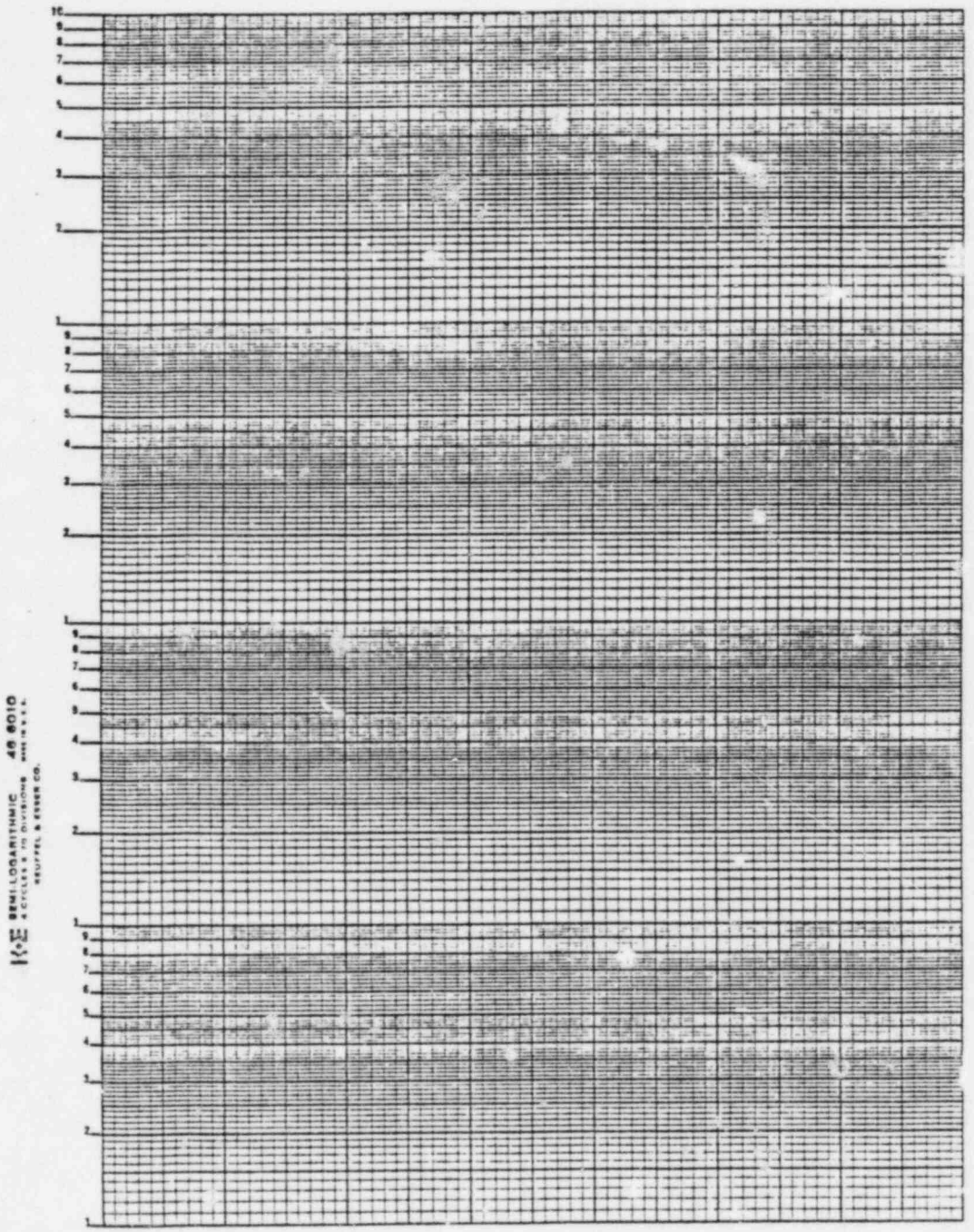
Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Posted By: _____

Verified By: _____

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




SEMILOGARITHMIC
46 6010

FORM: 372-22-3643

FORWARD COMMAND POST STATUS BOARD

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Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

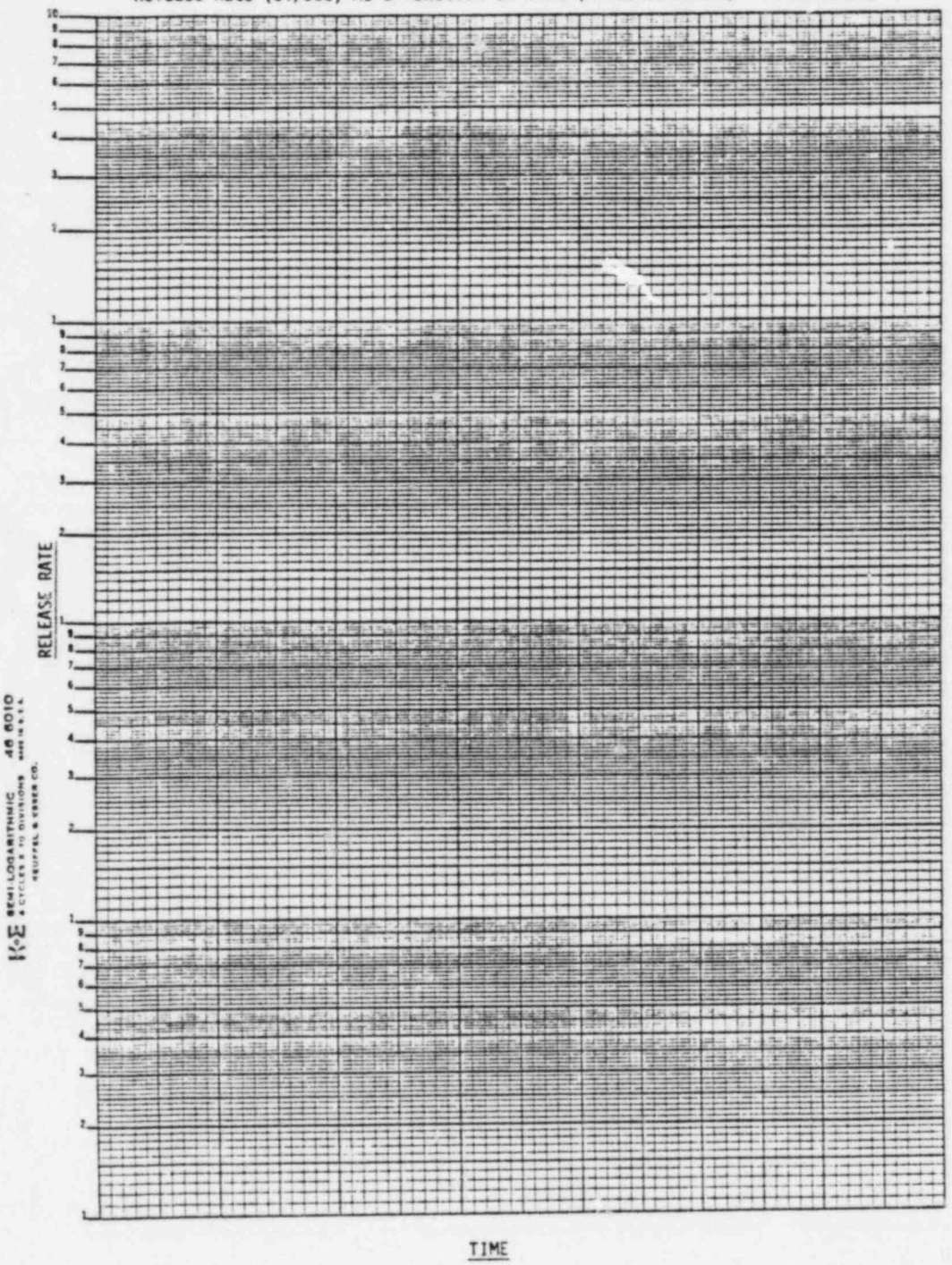
Projected Duration of Release _____

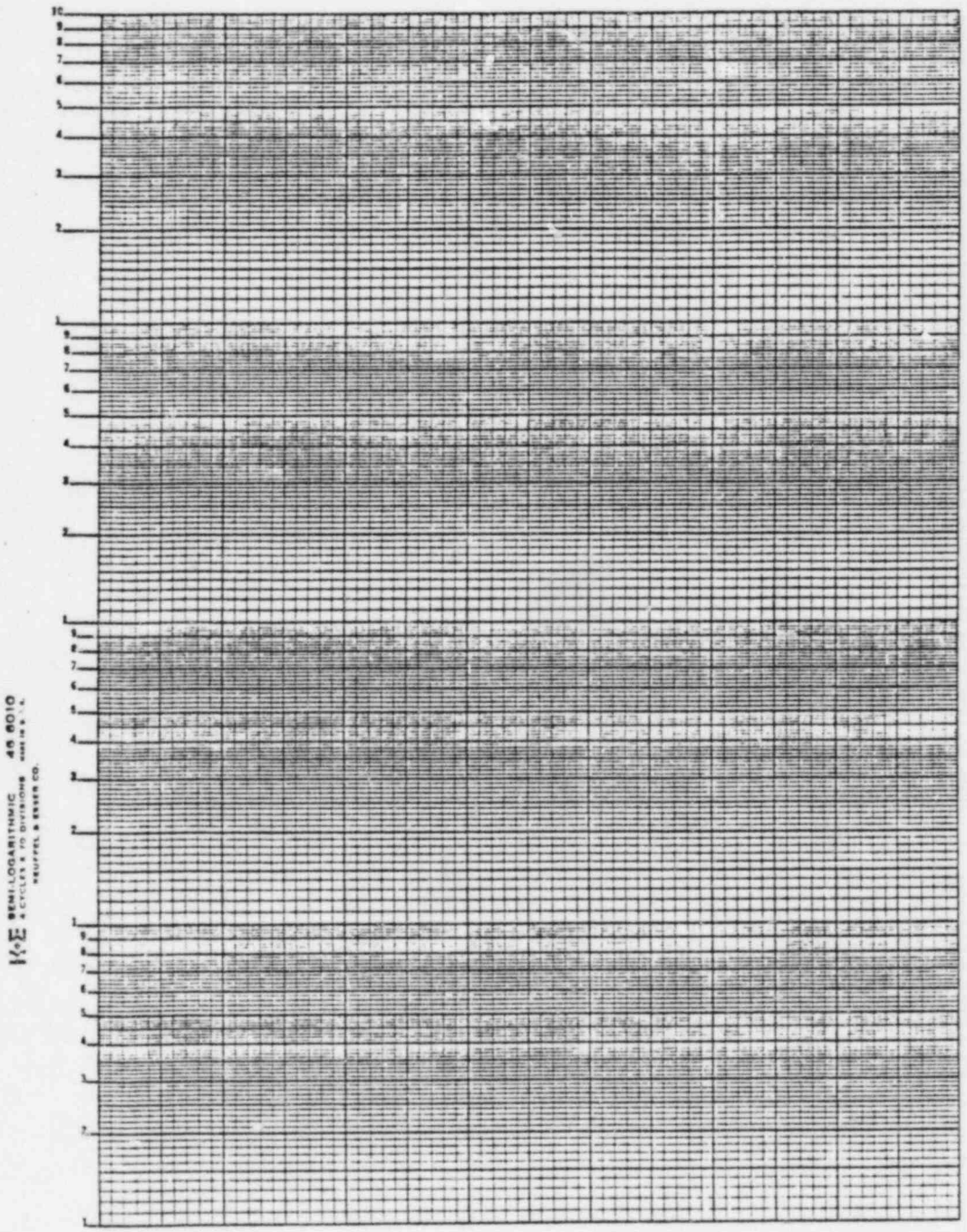
Posted By: _____

Verified By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

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




K+E SEMI-LOGARITHMIC 46 6010
4 CYCLES X 10 DIVISIONS
KEUFFEL & ESSER CO.

FORM 372-22-3643

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

RERP-FCP
Datasheet 1
Issue 8
Page 1 of 3

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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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

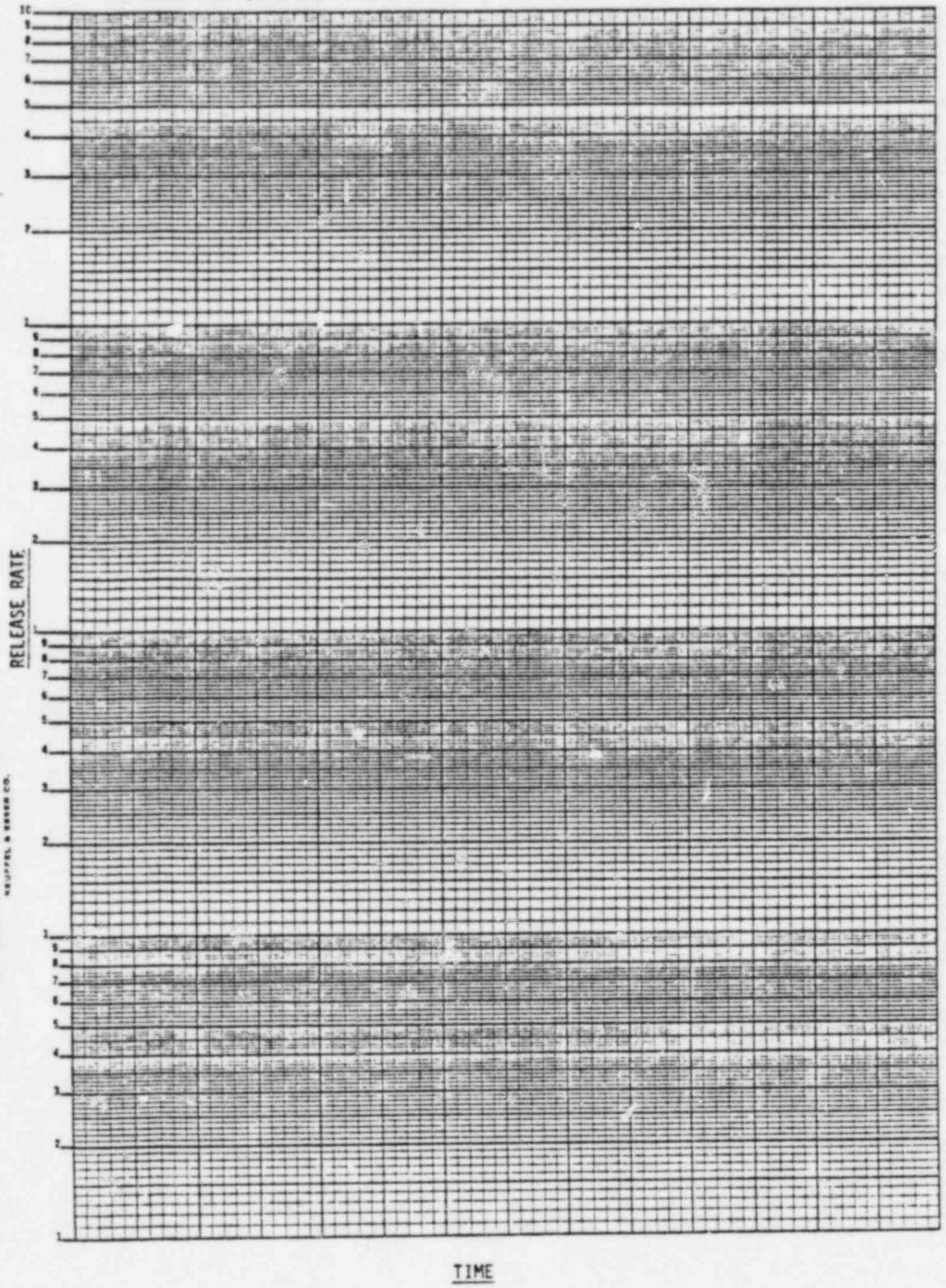
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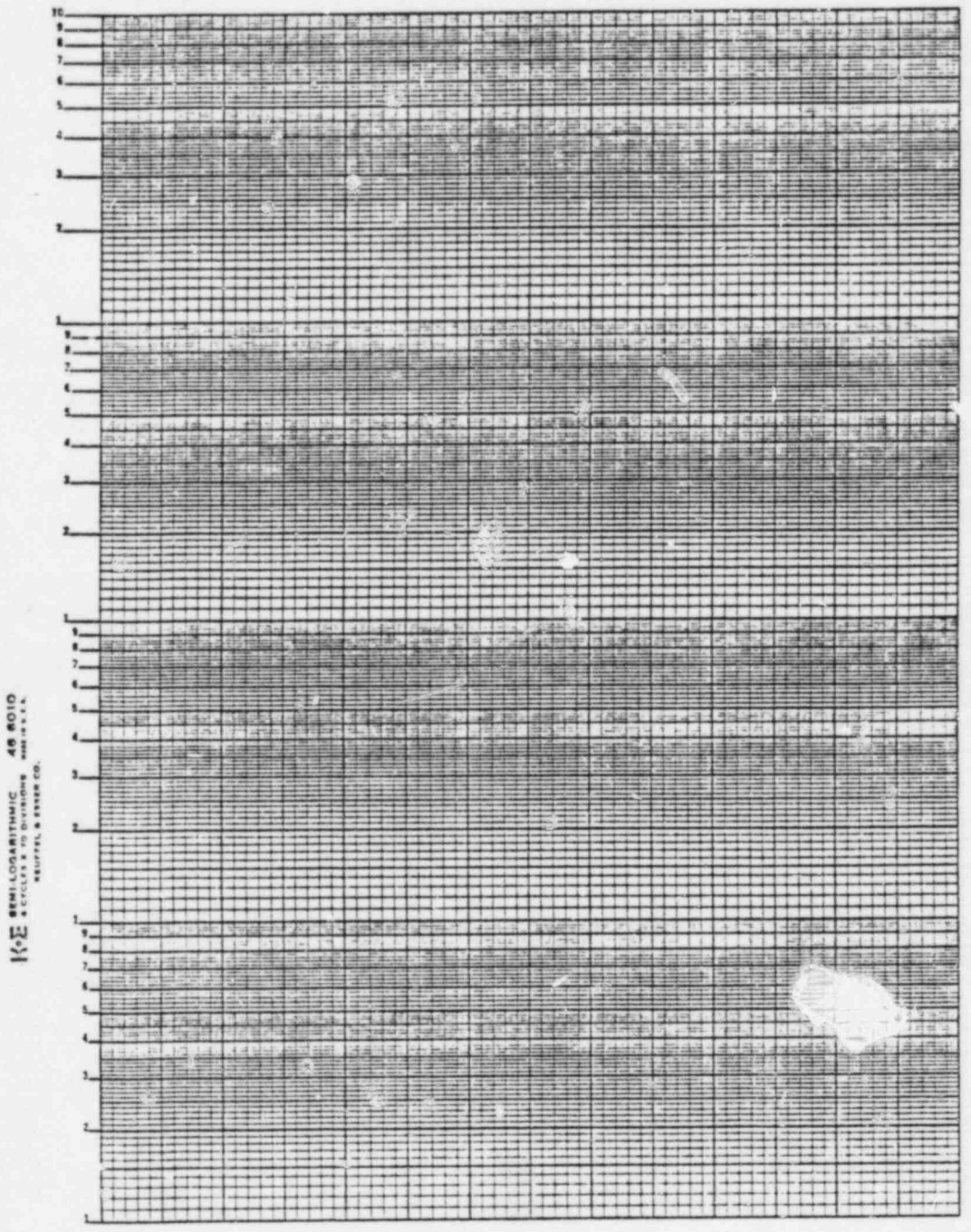
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




K+E SEMI-LOGARITHMIC 46 6010
4 CYCLES X 70 DIVISIONS

FORM 372 - 22 - 3643

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

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

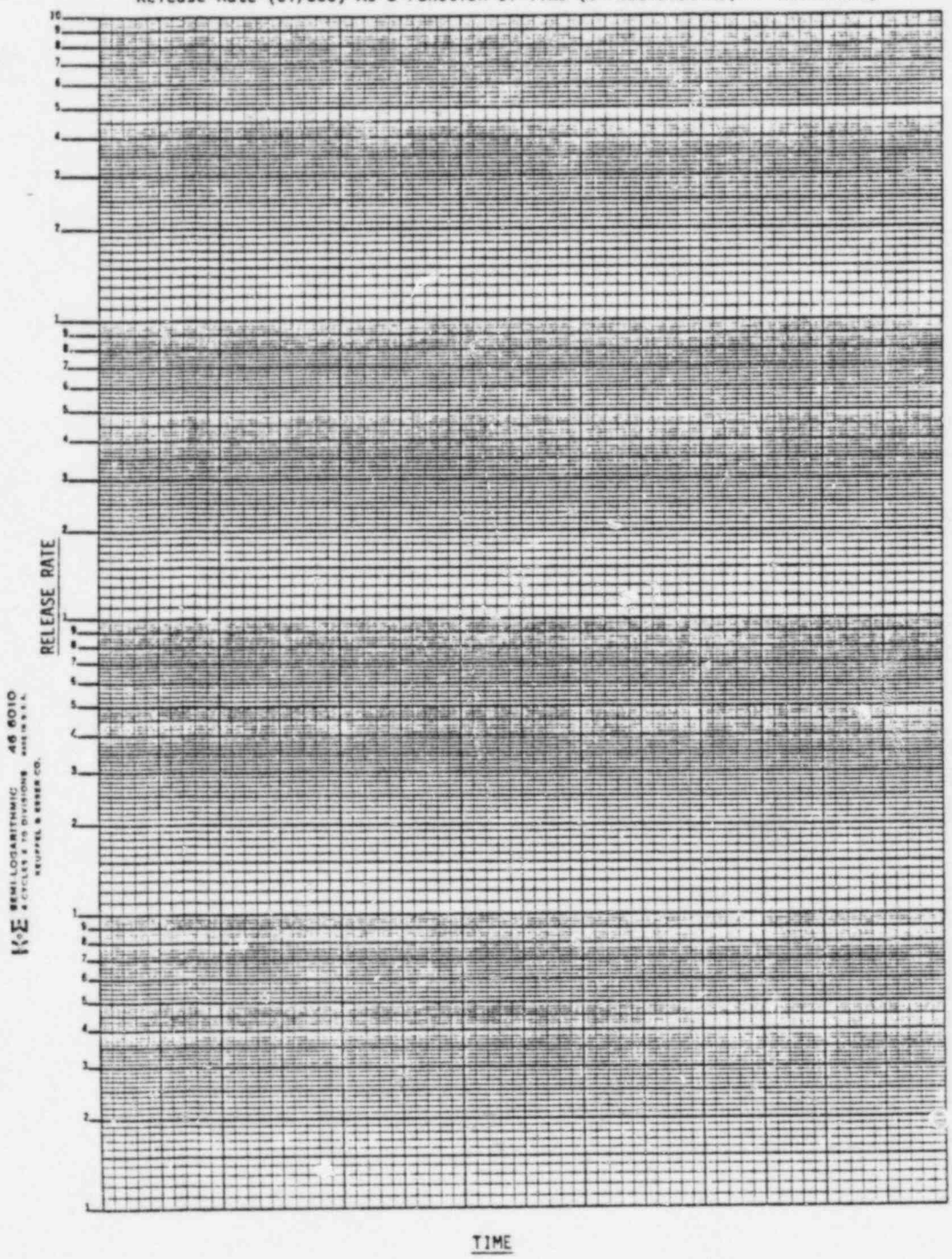
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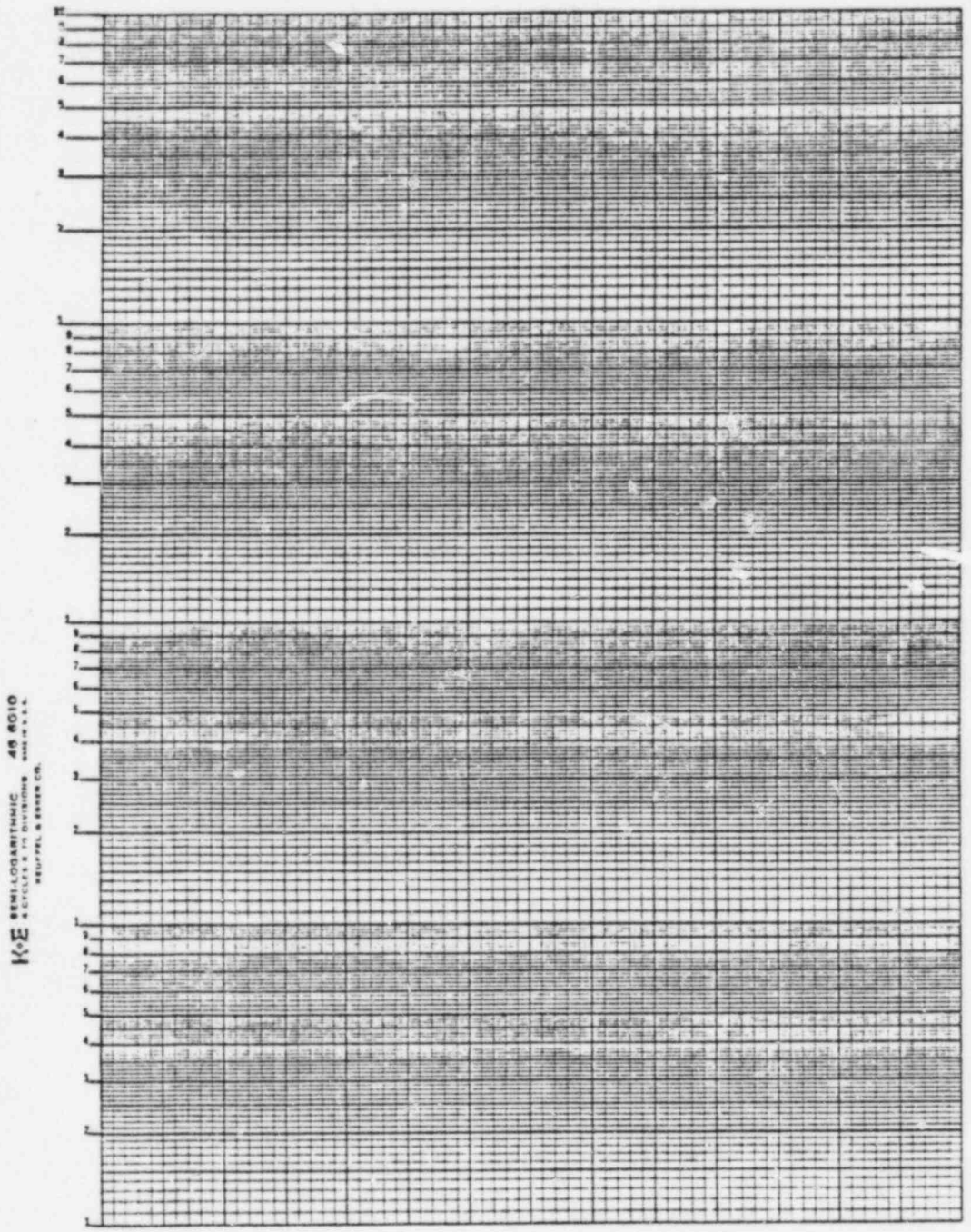
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




K+E SEMI-LOGARITHMIC 46 6010

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FORT ST. VRAIN NUCLEAR GENERATING STATION

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

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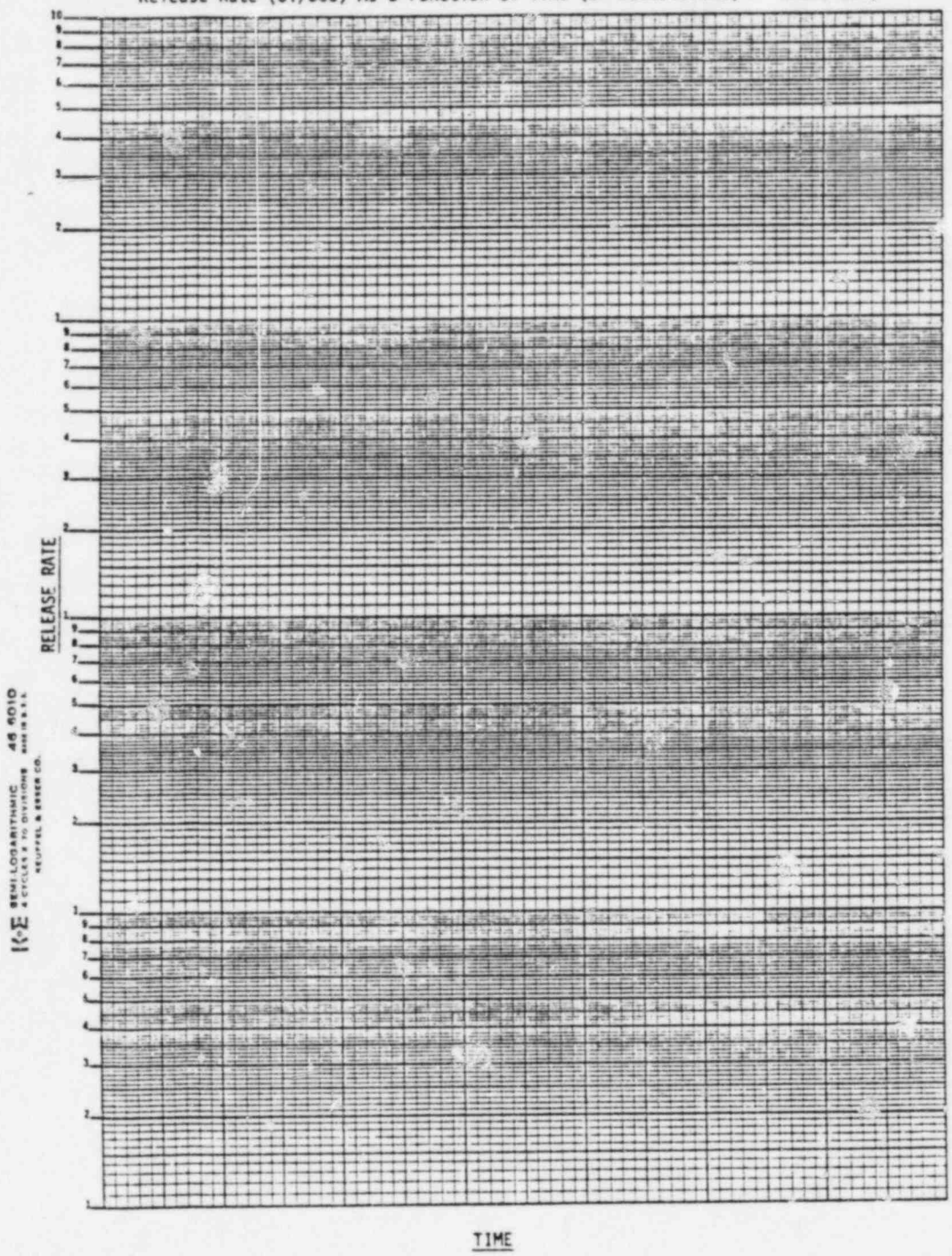
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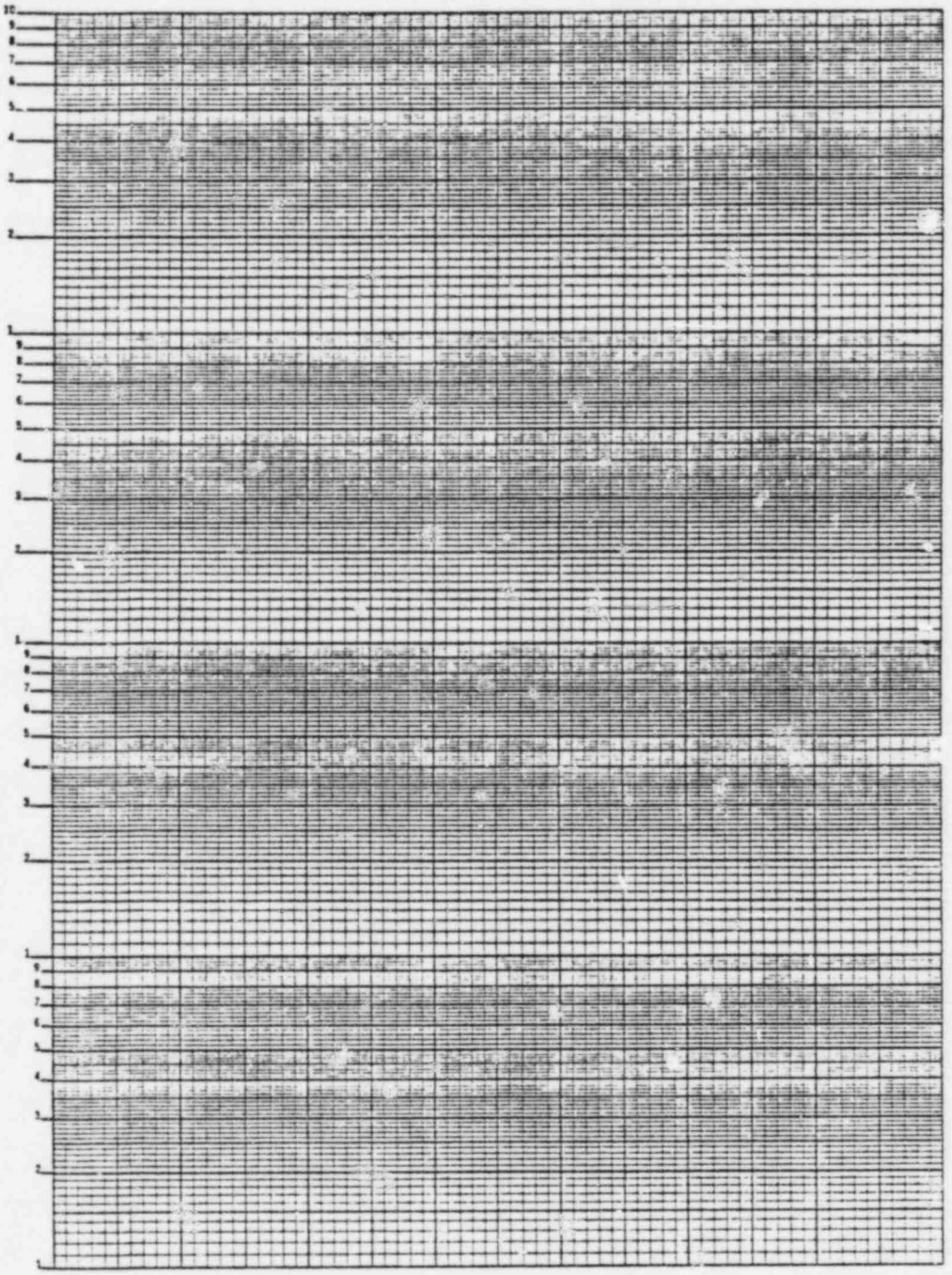
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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





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

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FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

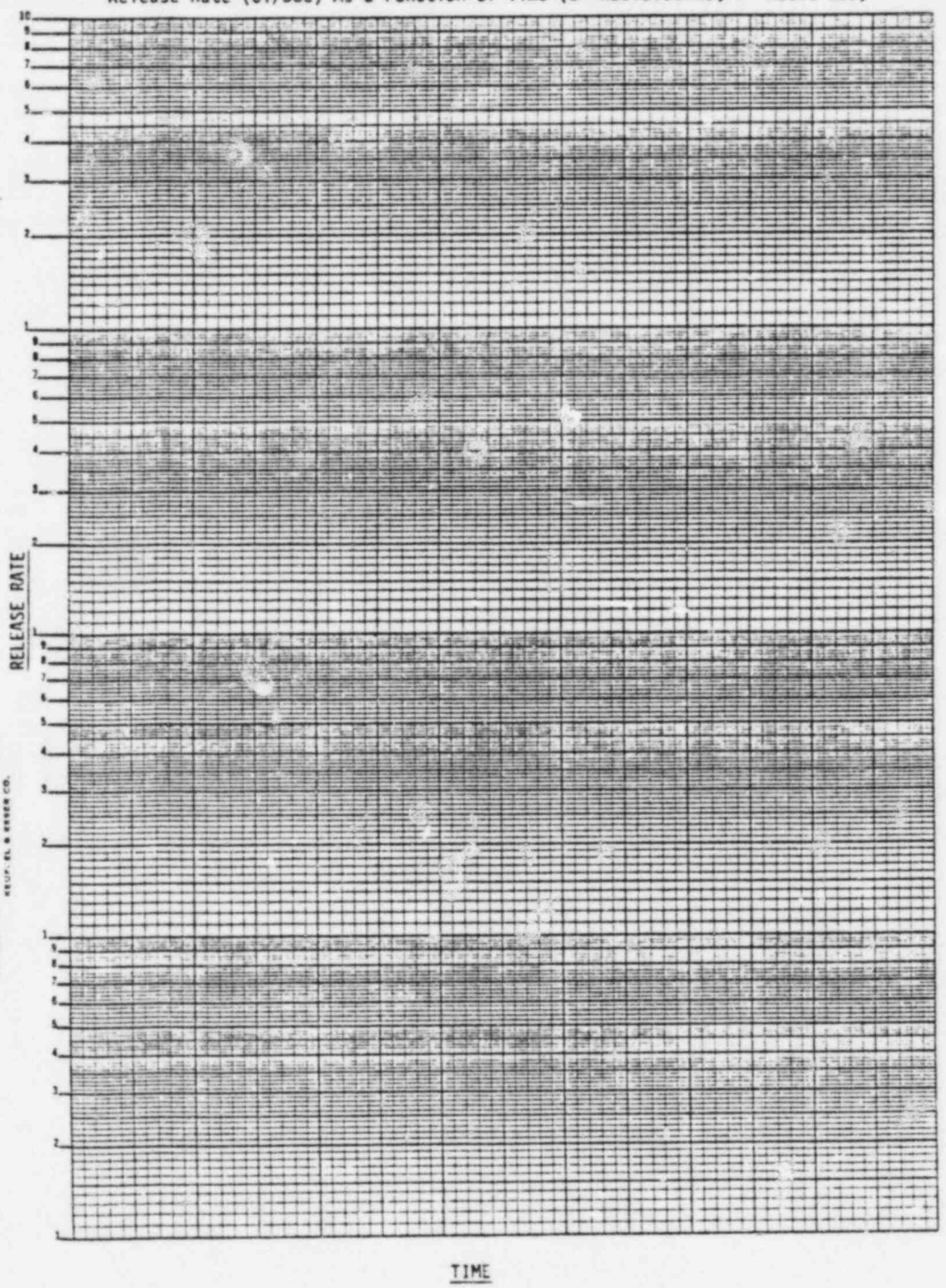
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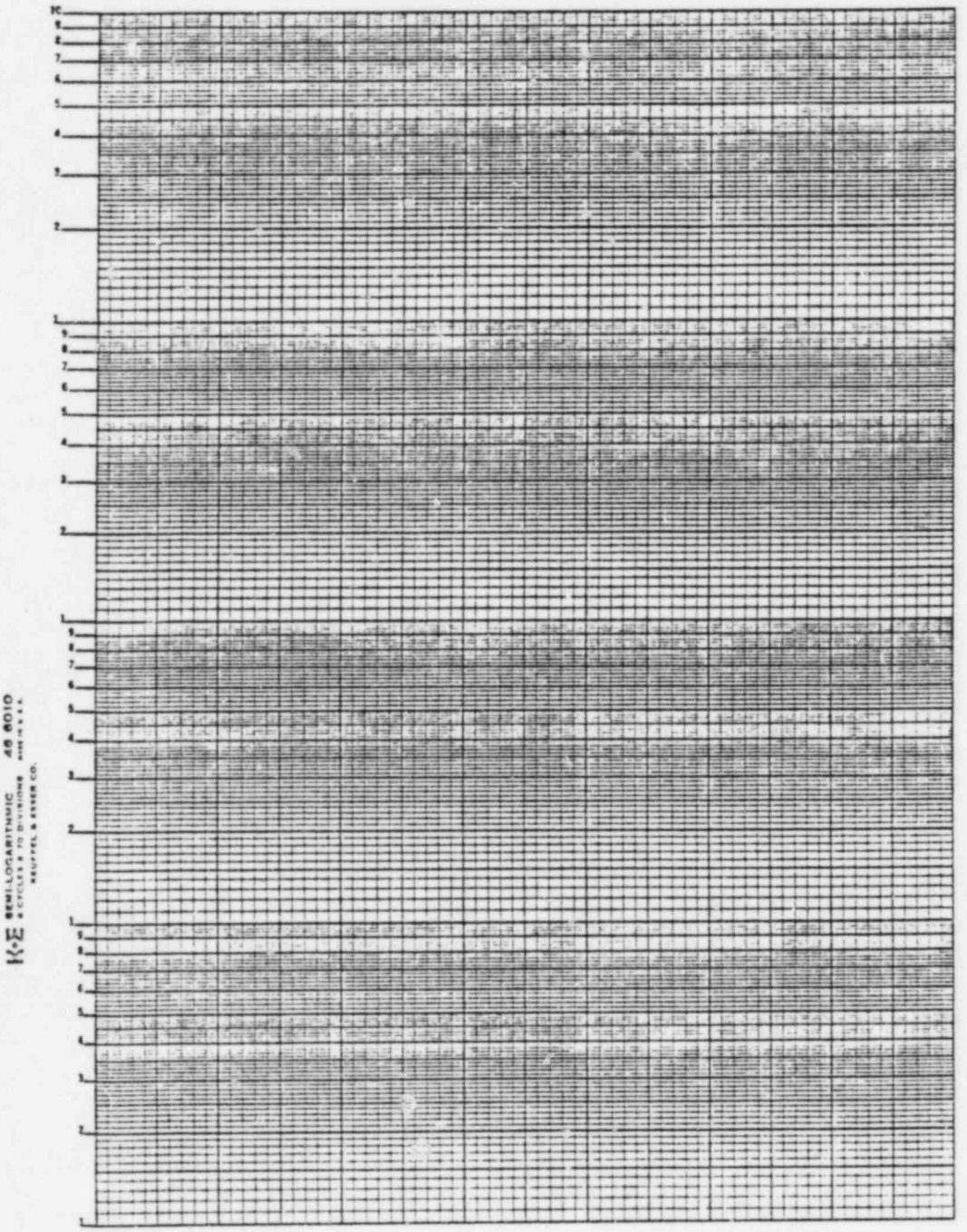
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




K+E SEMI-LOGARITHMIC 46 6010
KEUFFEL & ESSER CO.

FORM 372-22-3643

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

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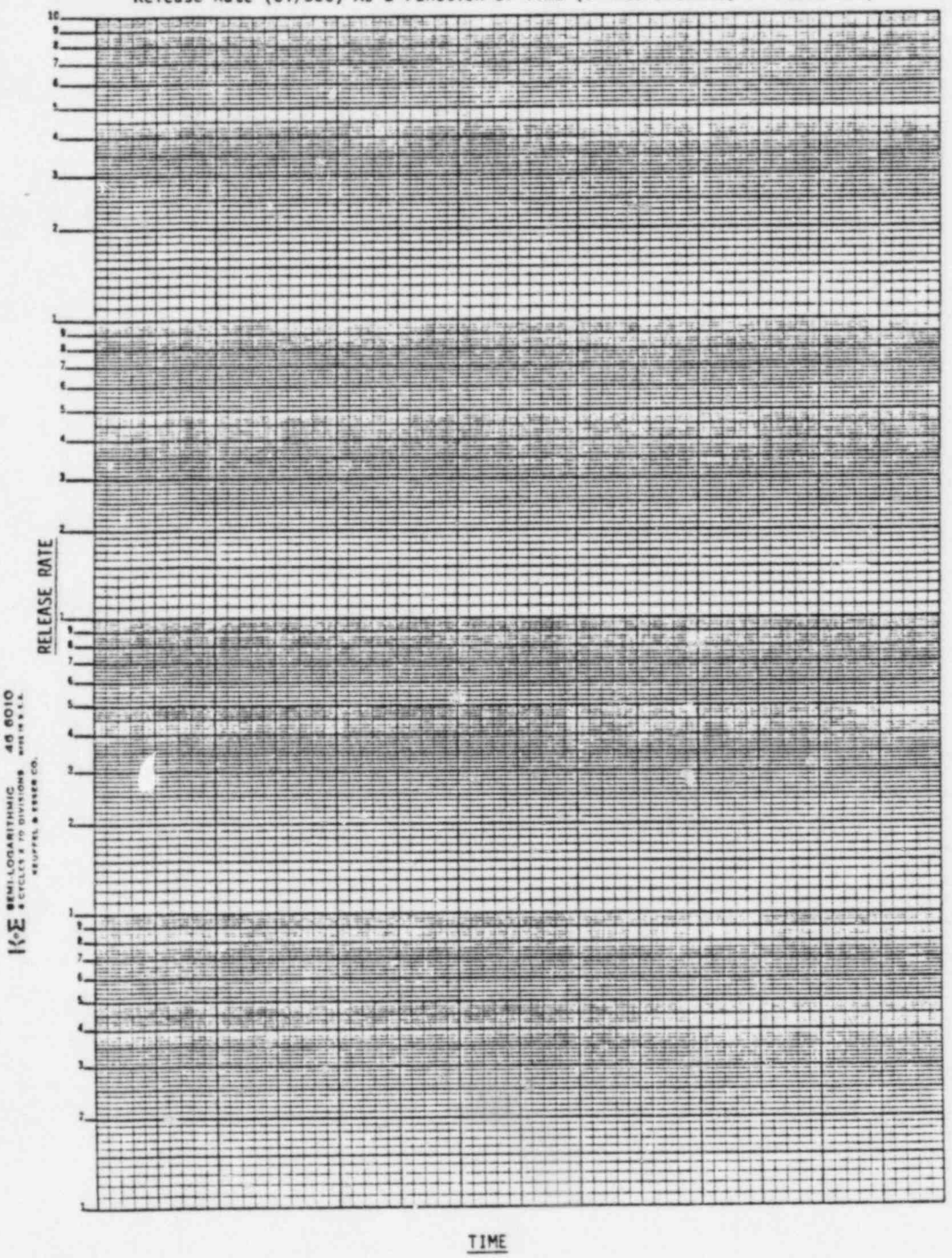
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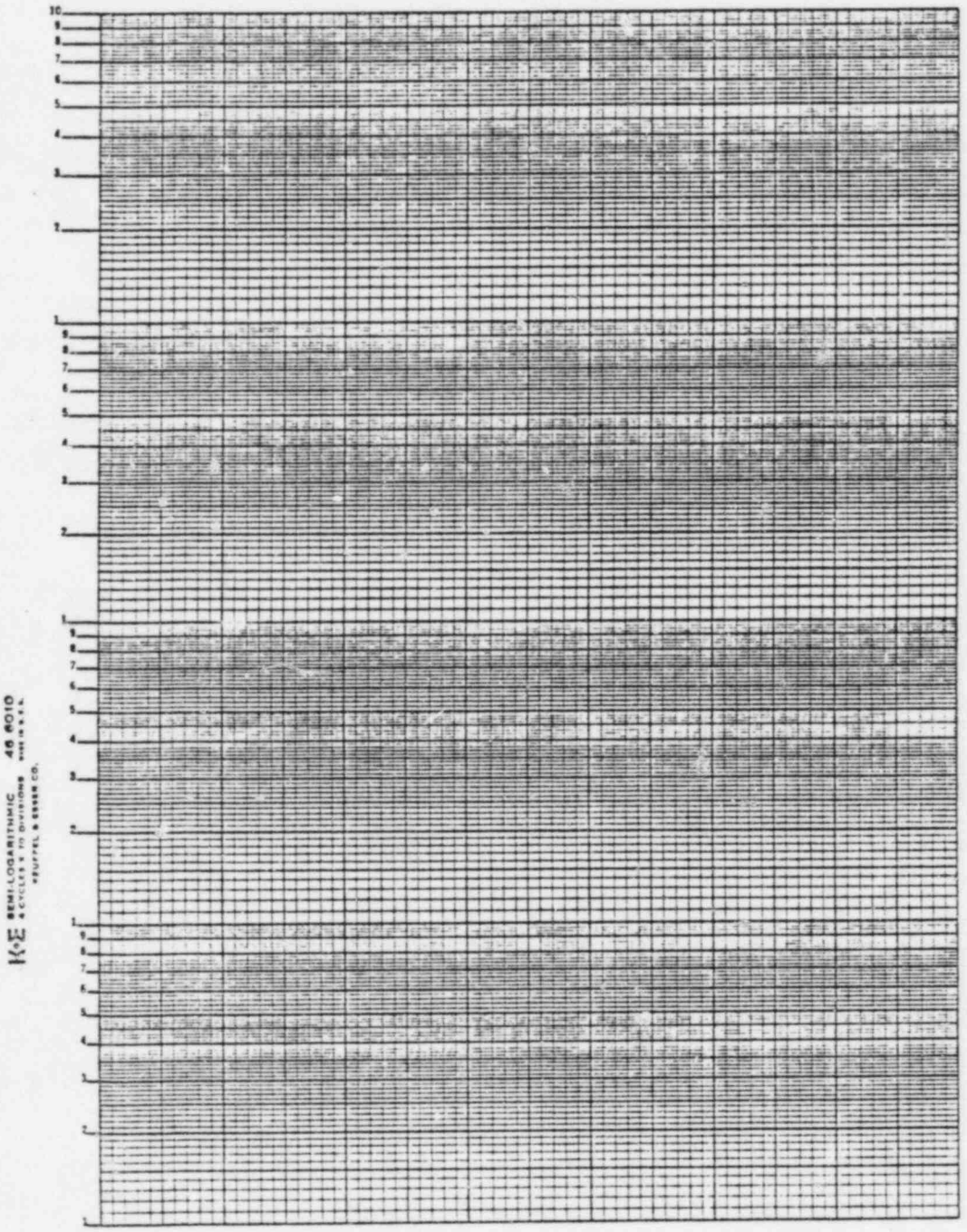
Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Posted By: _____

Verified By: _____

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




K&E SEMI-LOGARITHMIC 46 6010
4 CYCLES X 10 DIVISIONS

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

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Plant Status _____

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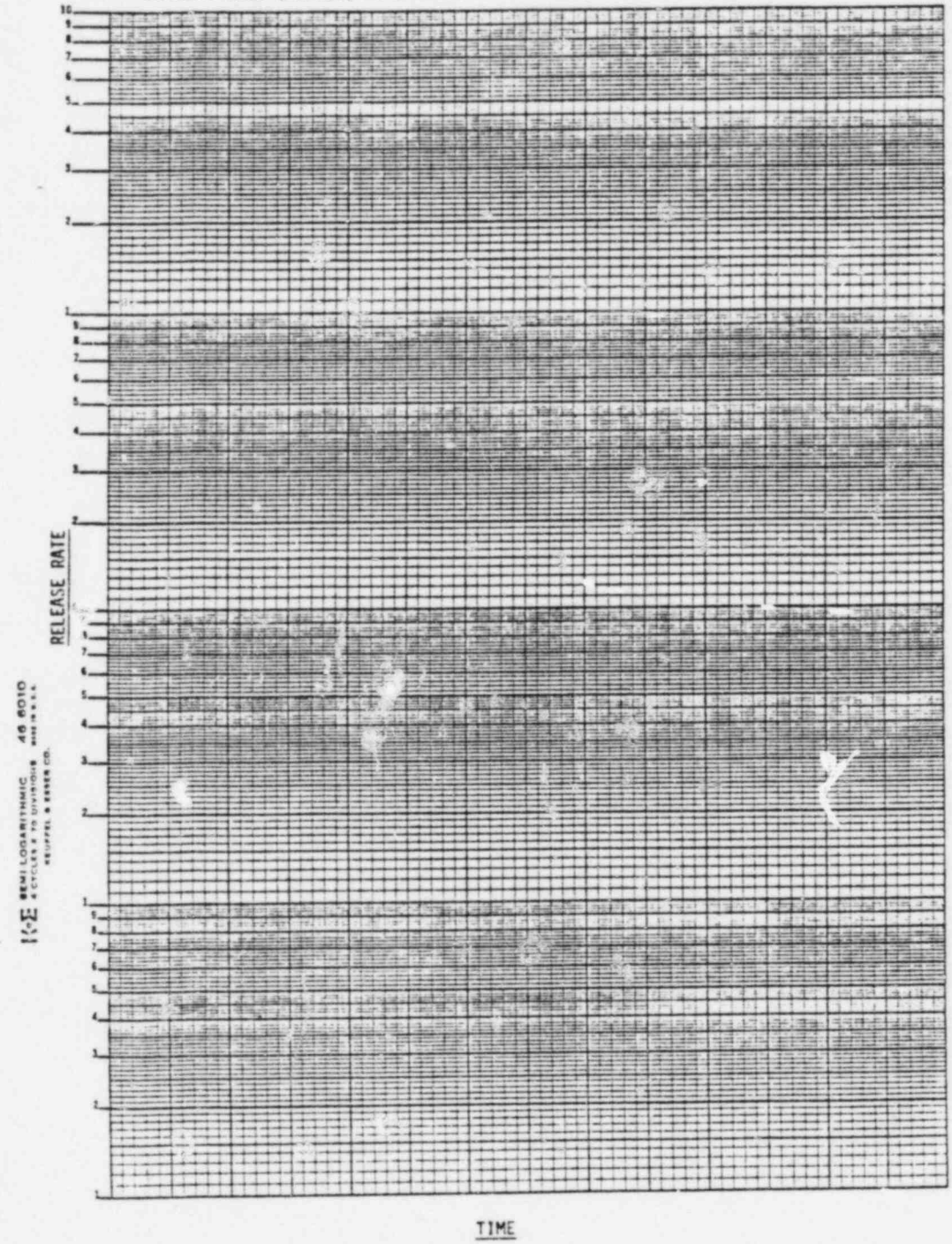
Projected Duration of Release _____

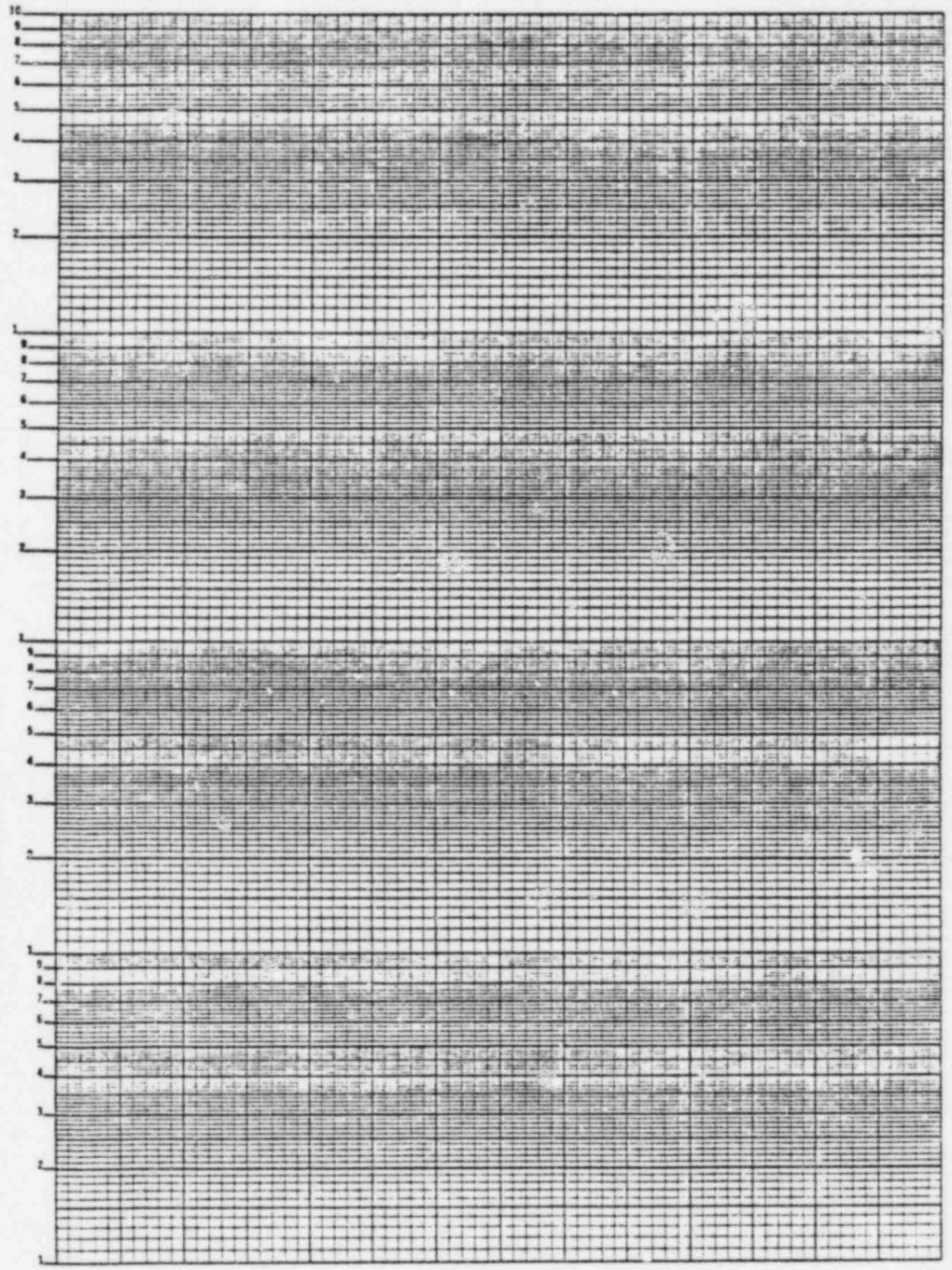
Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Posted By: _____

Verified By: _____

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




46 6010

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

FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

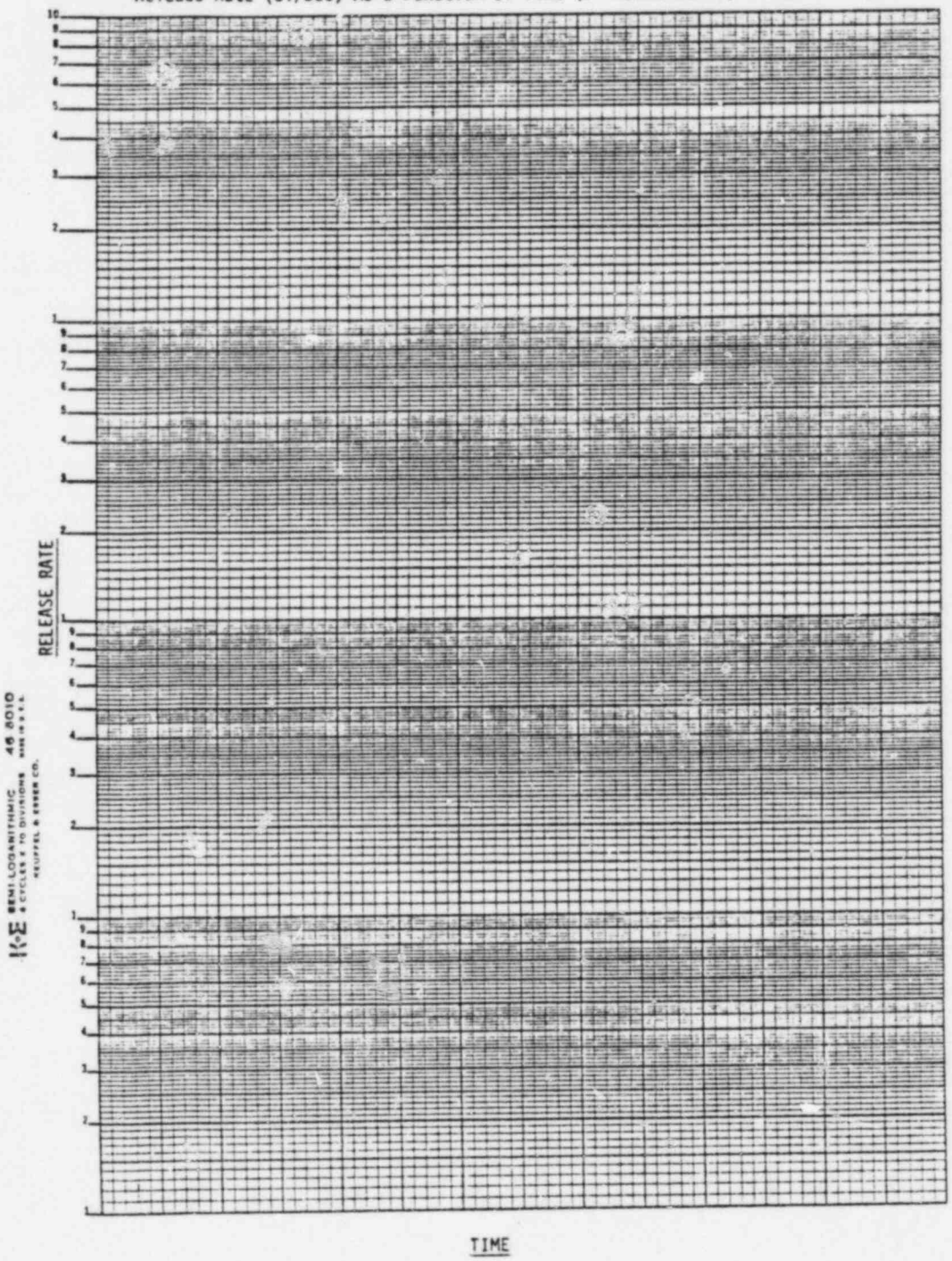
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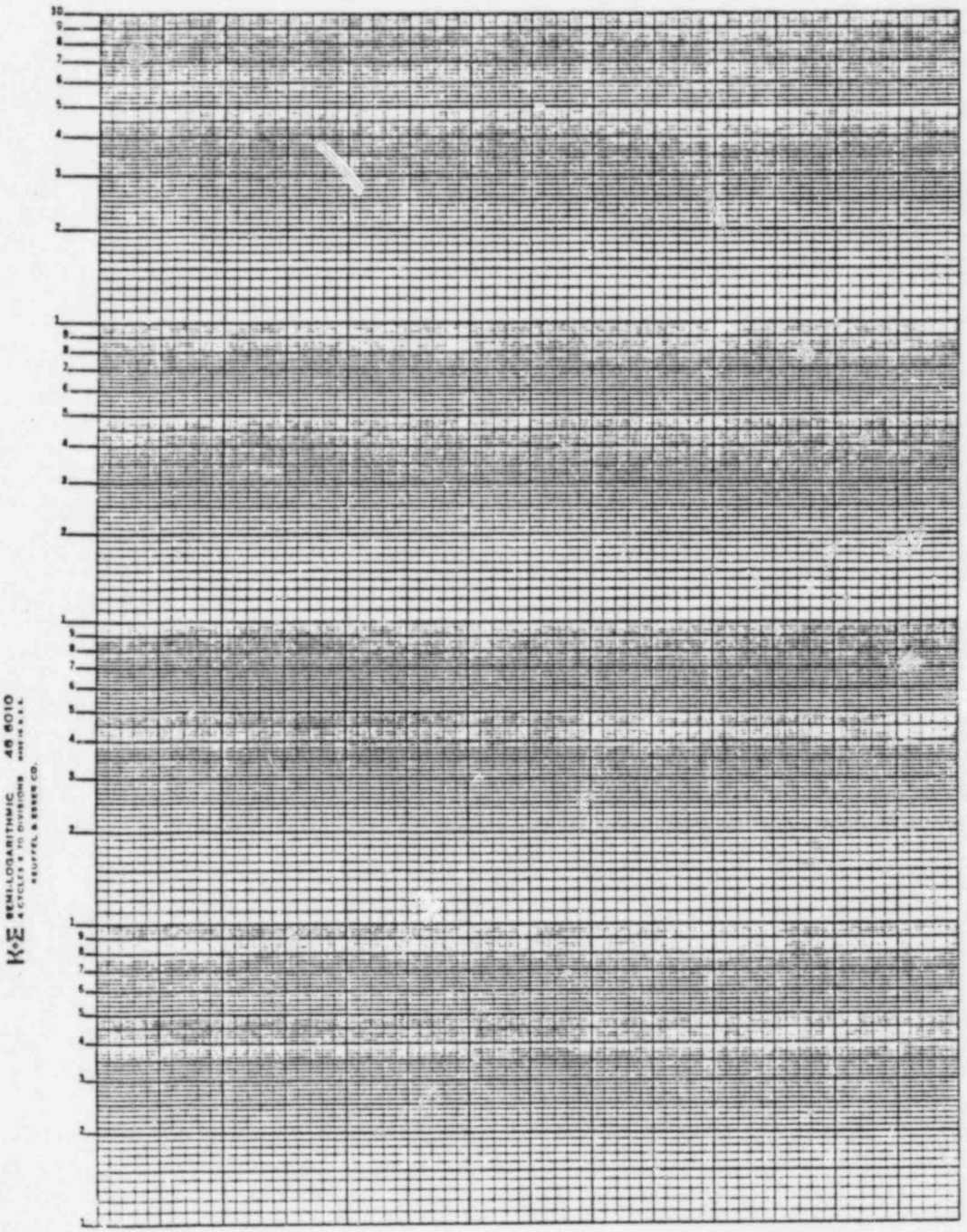
Projected Duration of Release _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Posted By: _____ Verified By: _____

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




K&E SEMI-LOGARITHMIC 46 6010
4 CYCLES X 70 DIVISIONS

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

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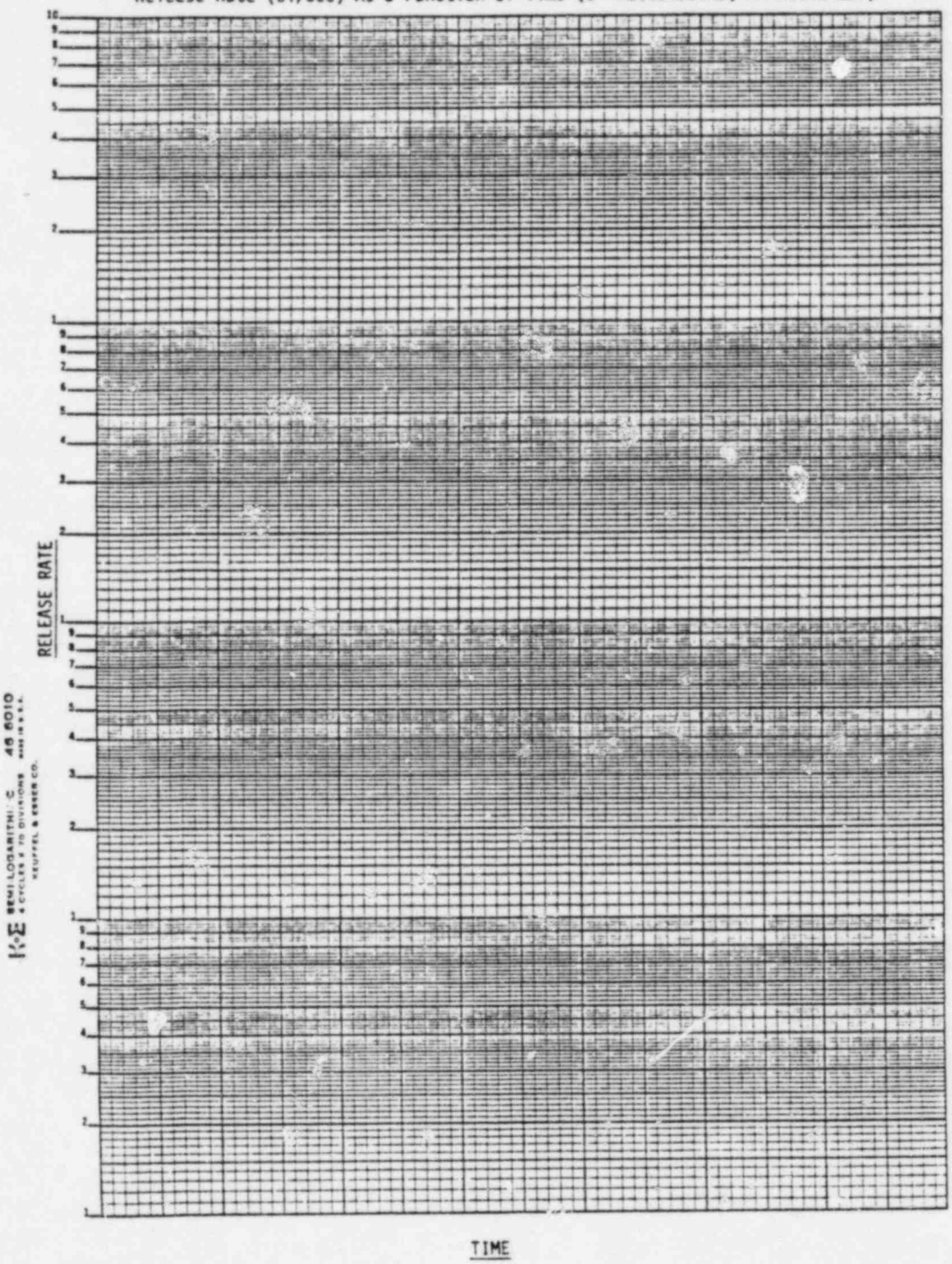
Projected Duration of Release _____

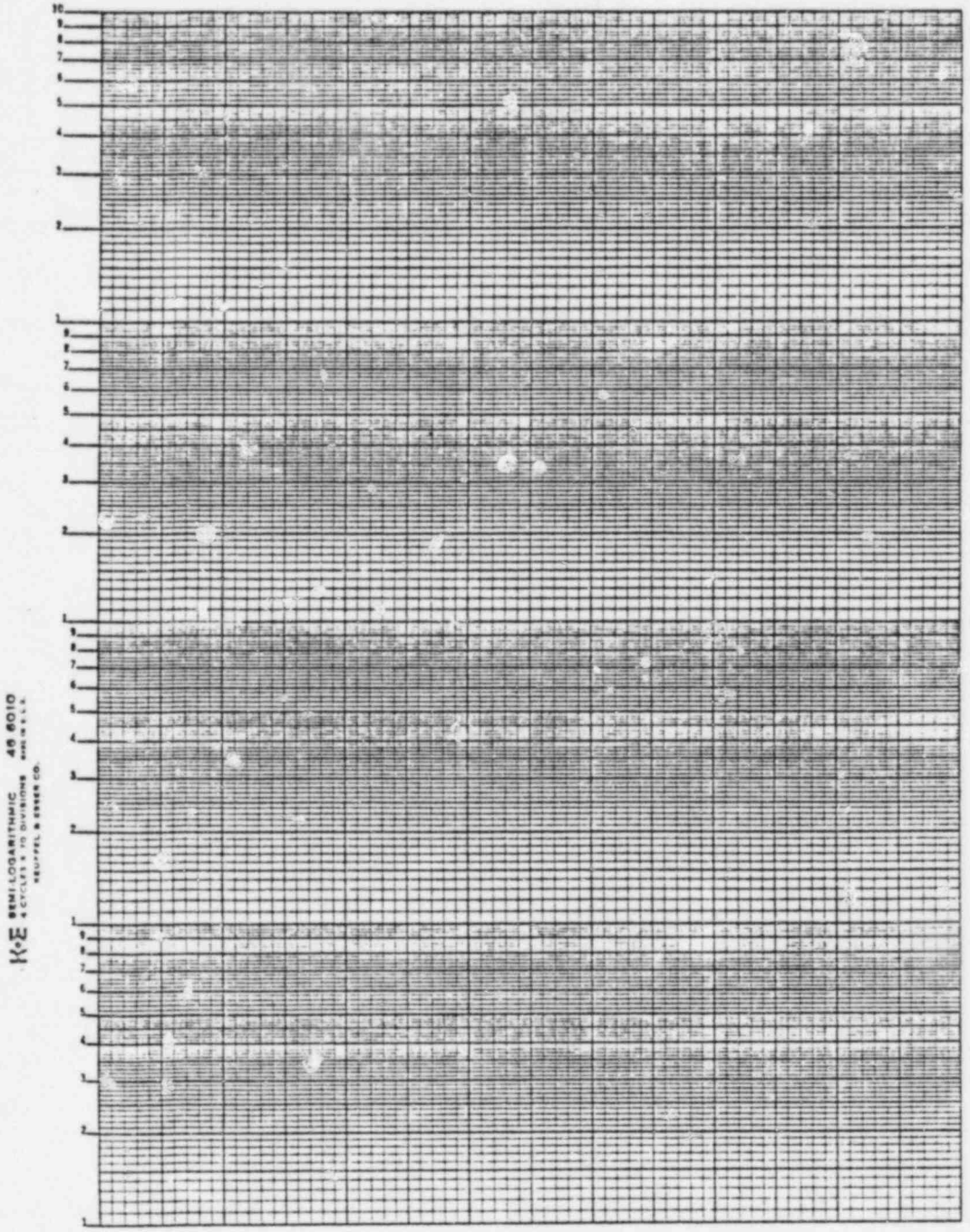
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




K+E SEMI LOGARITHMIC 46 6010

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

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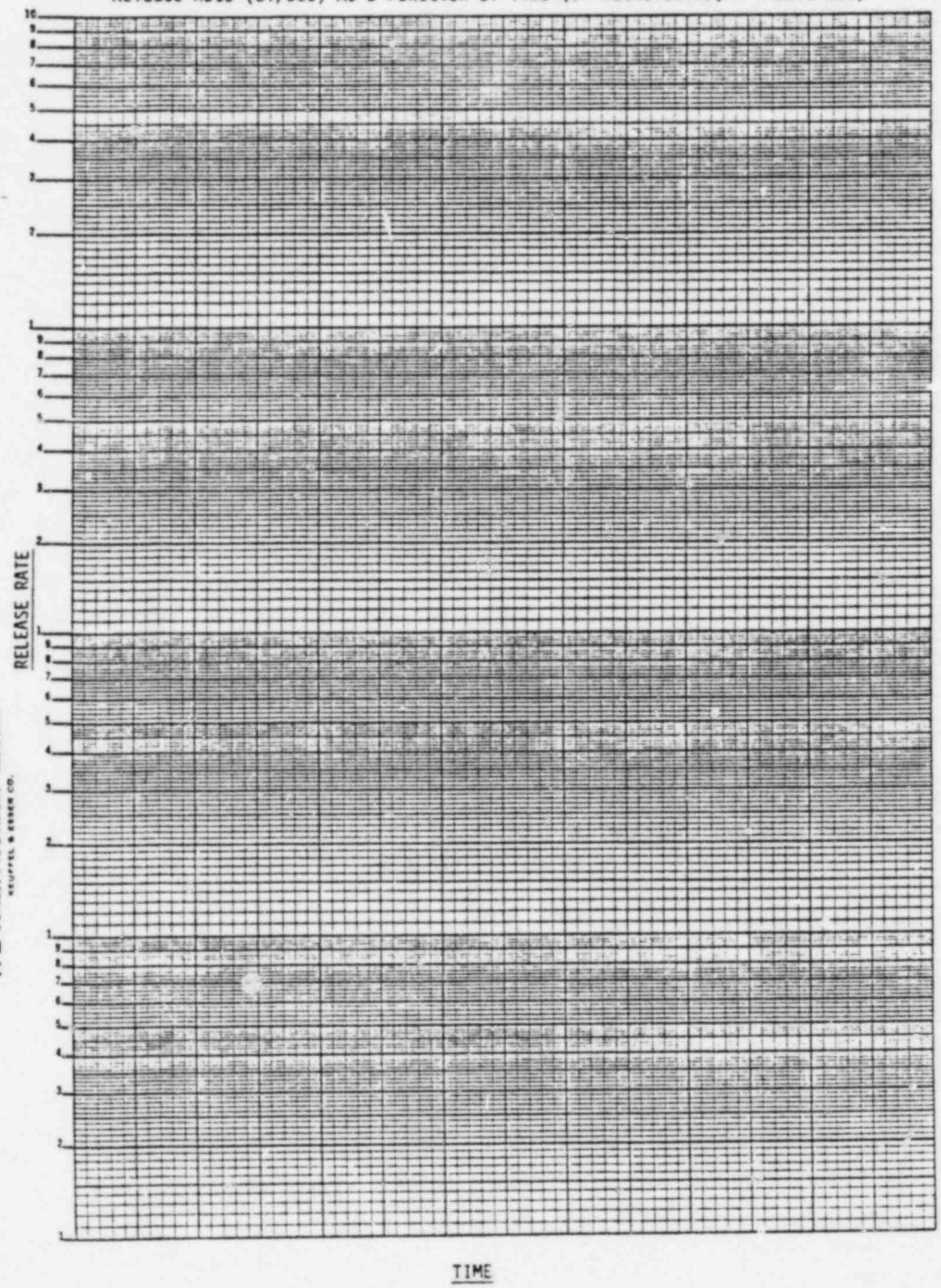
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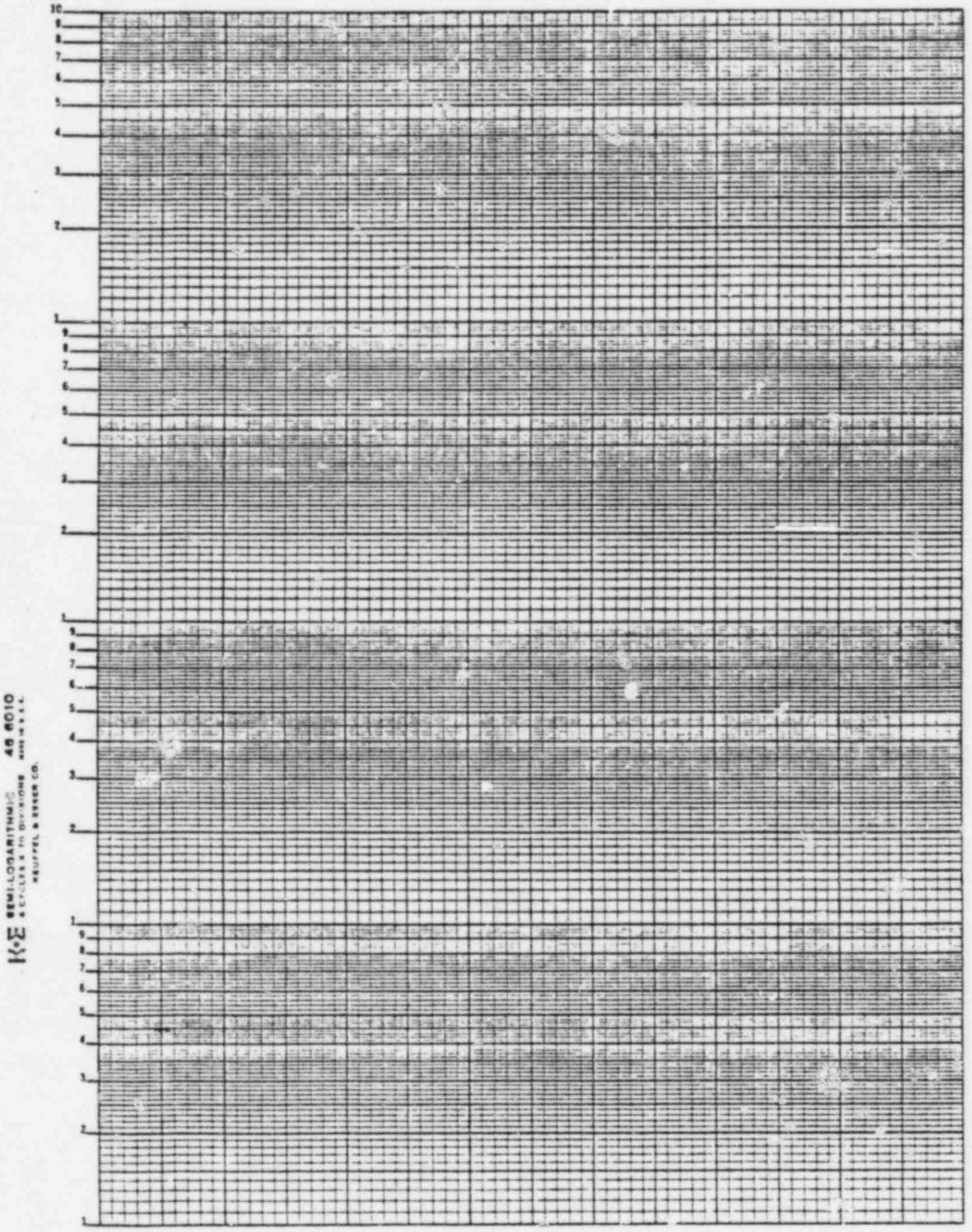
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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





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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

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Plant Status _____

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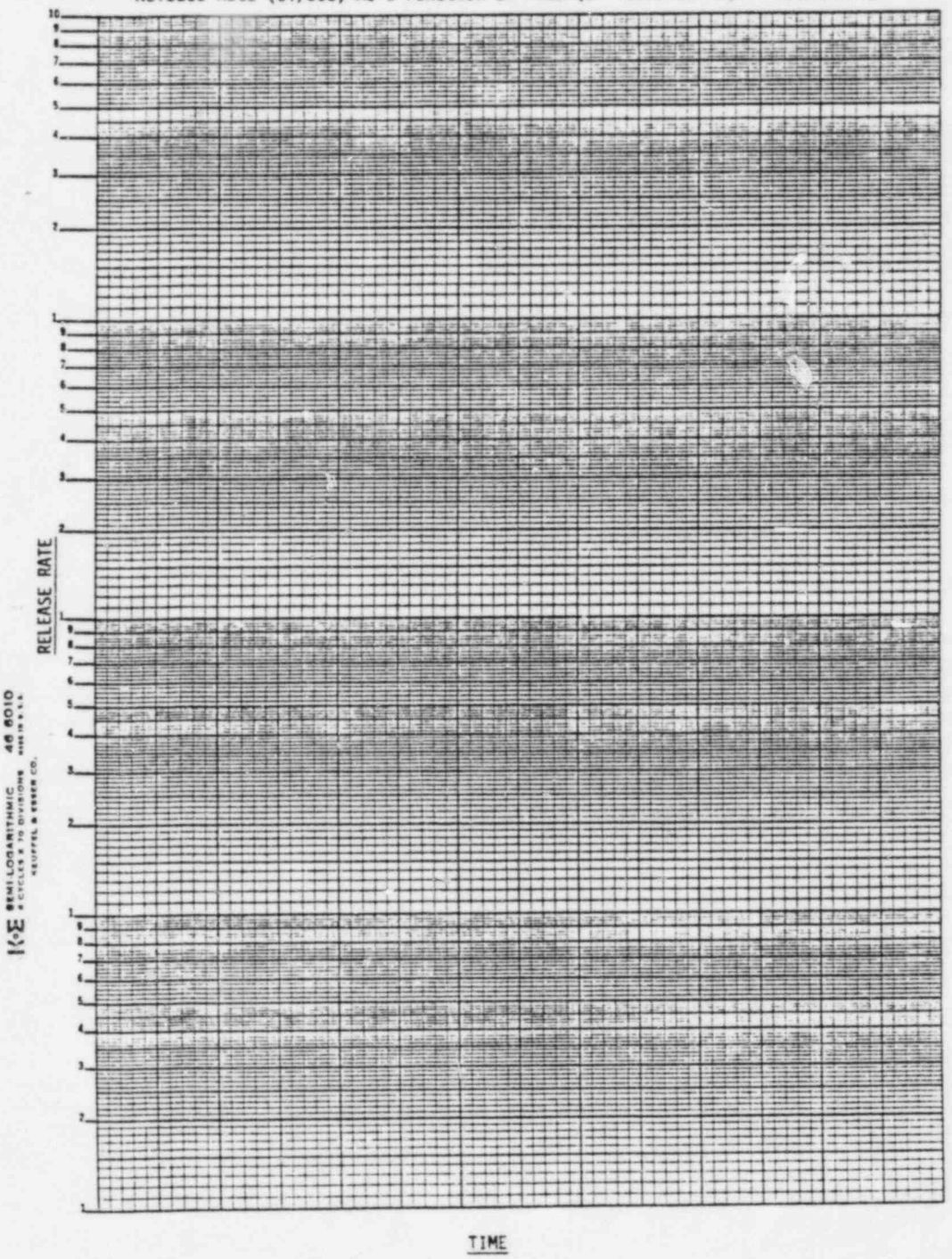
Projected Duration of Release _____

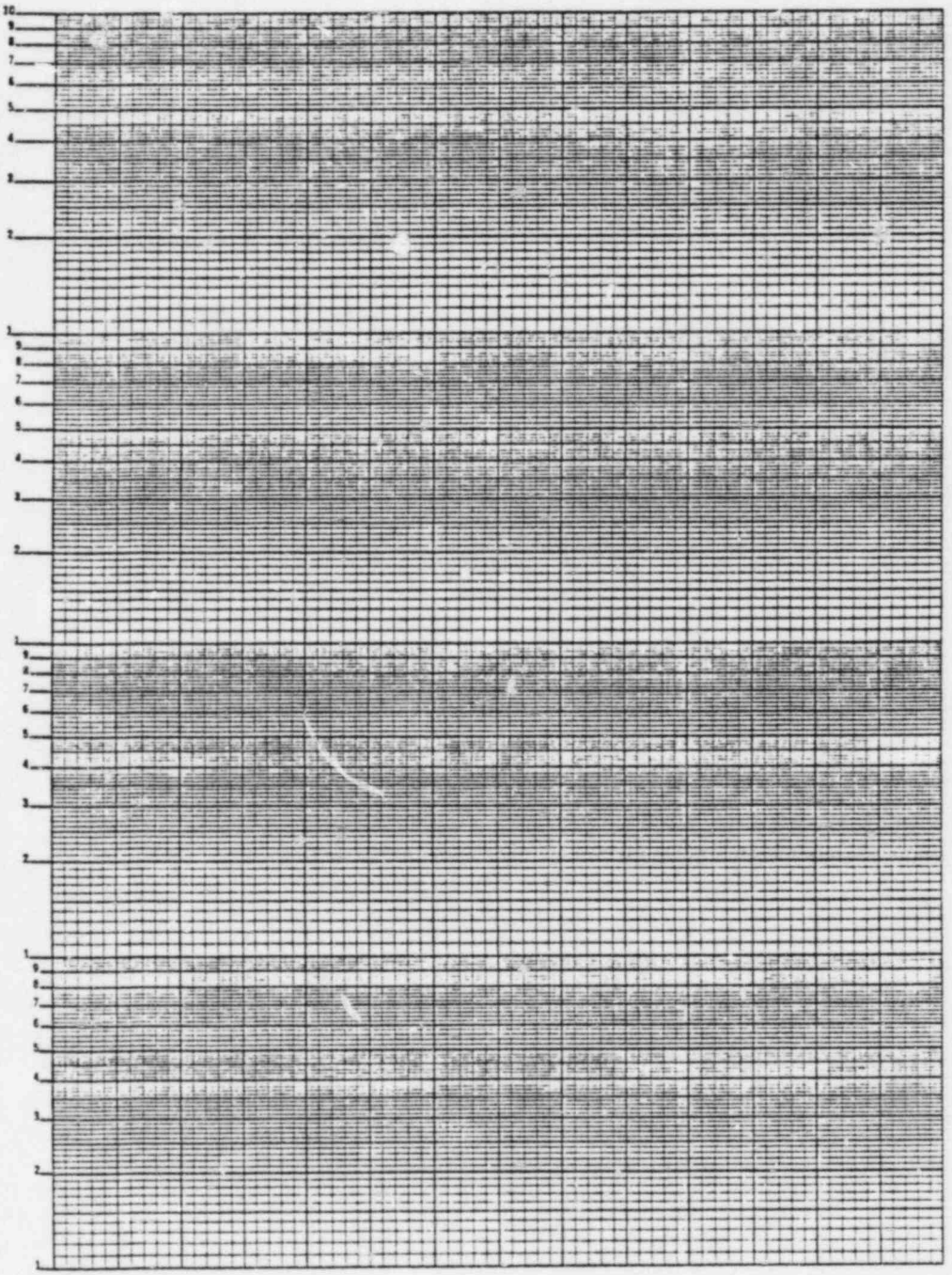
Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Posted By: _____

Verified By: _____

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




SEMI-LOGARITHMIC
46 6010

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

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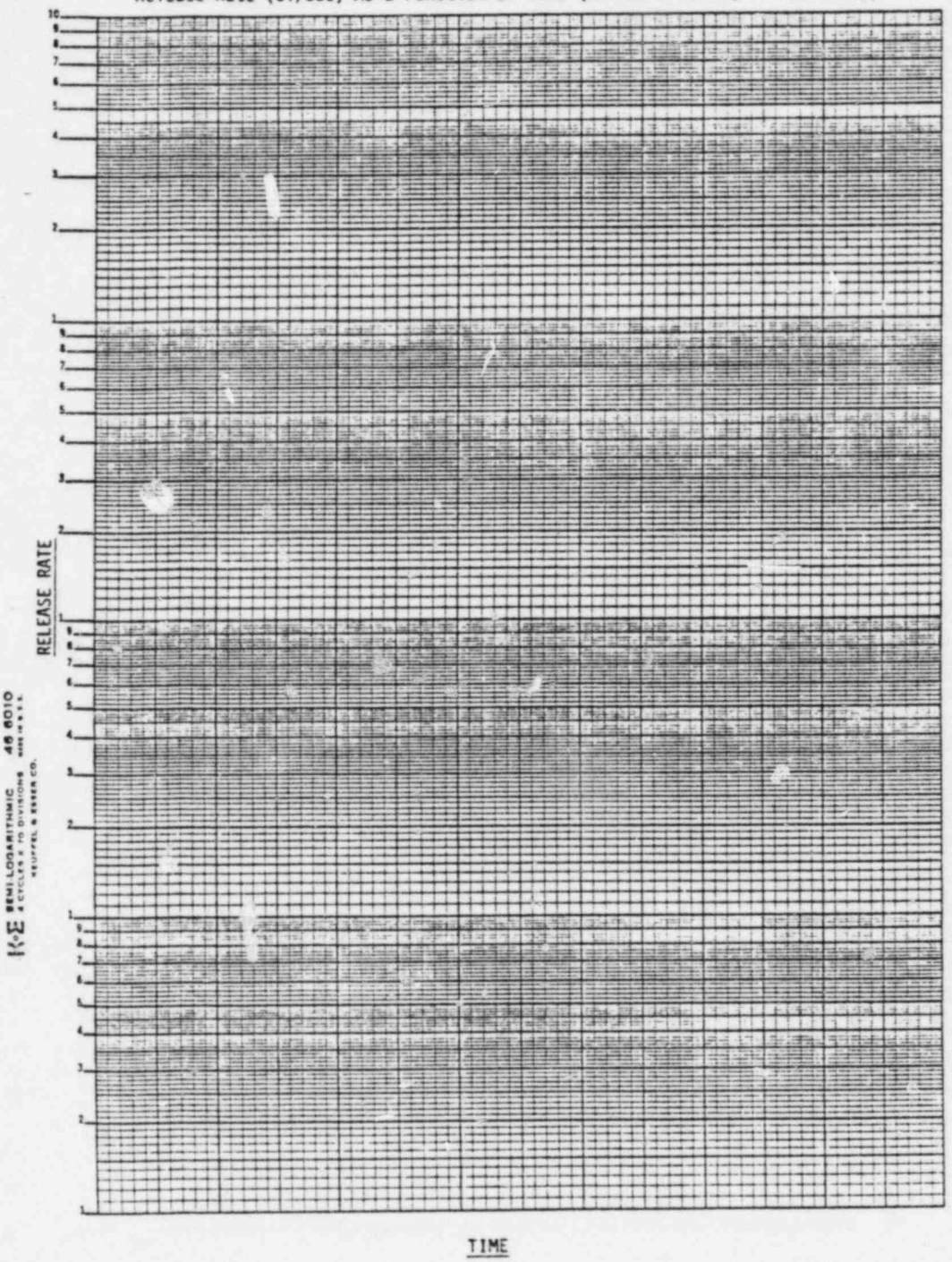
Projected Duration of Release _____

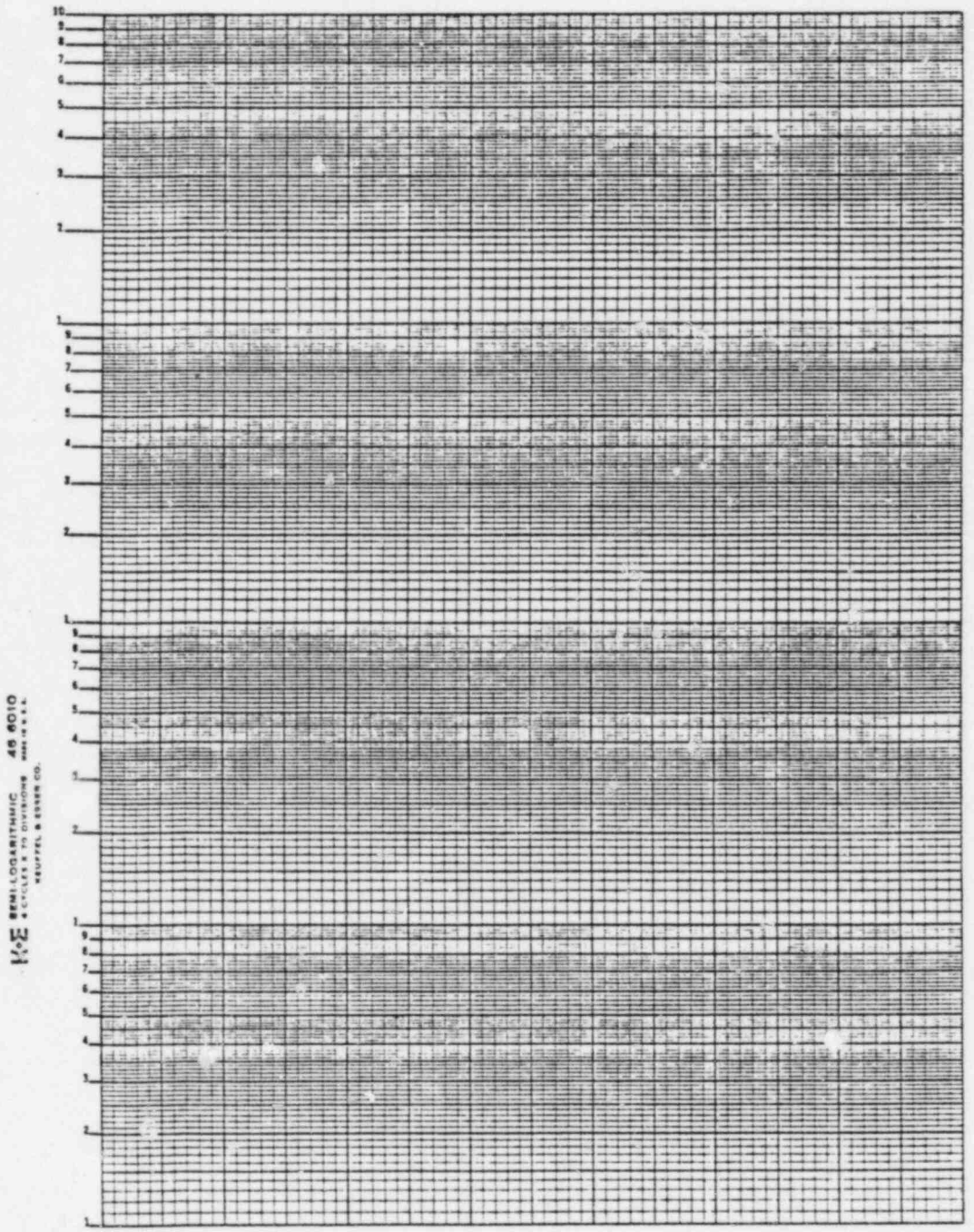
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




10
9
8
7
6
5
4
3
2
1
1
9
8
7
6
5
4
3
2
1
1
9
8
7
6
5
4
1
2
1
9
8
7
6
5
4
3
2
1

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ ( )

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

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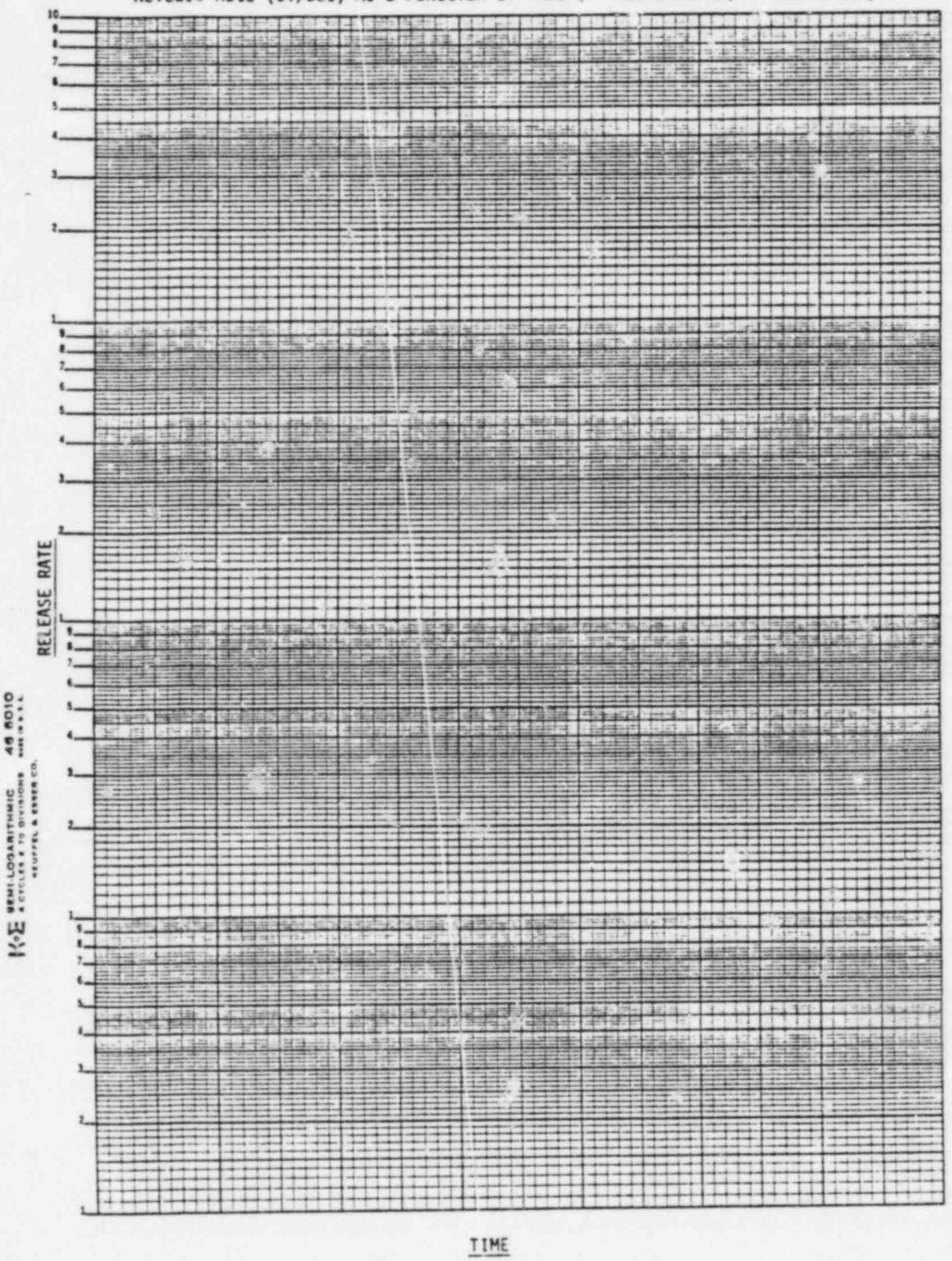
Projected Duration of Release _____

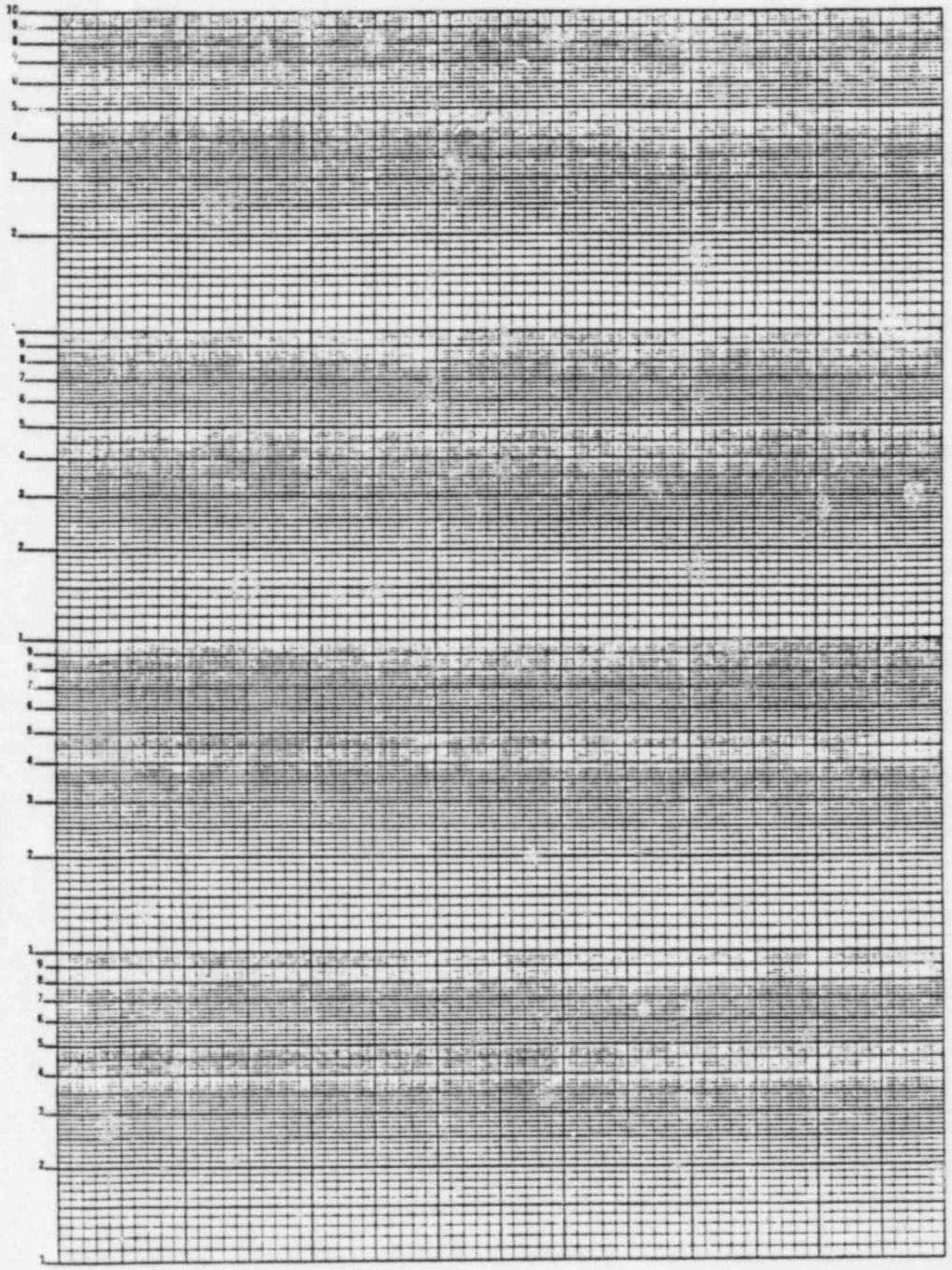
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




SEMI-LOGARITHMIC
46 6010

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Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

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Plant Status _____

_____

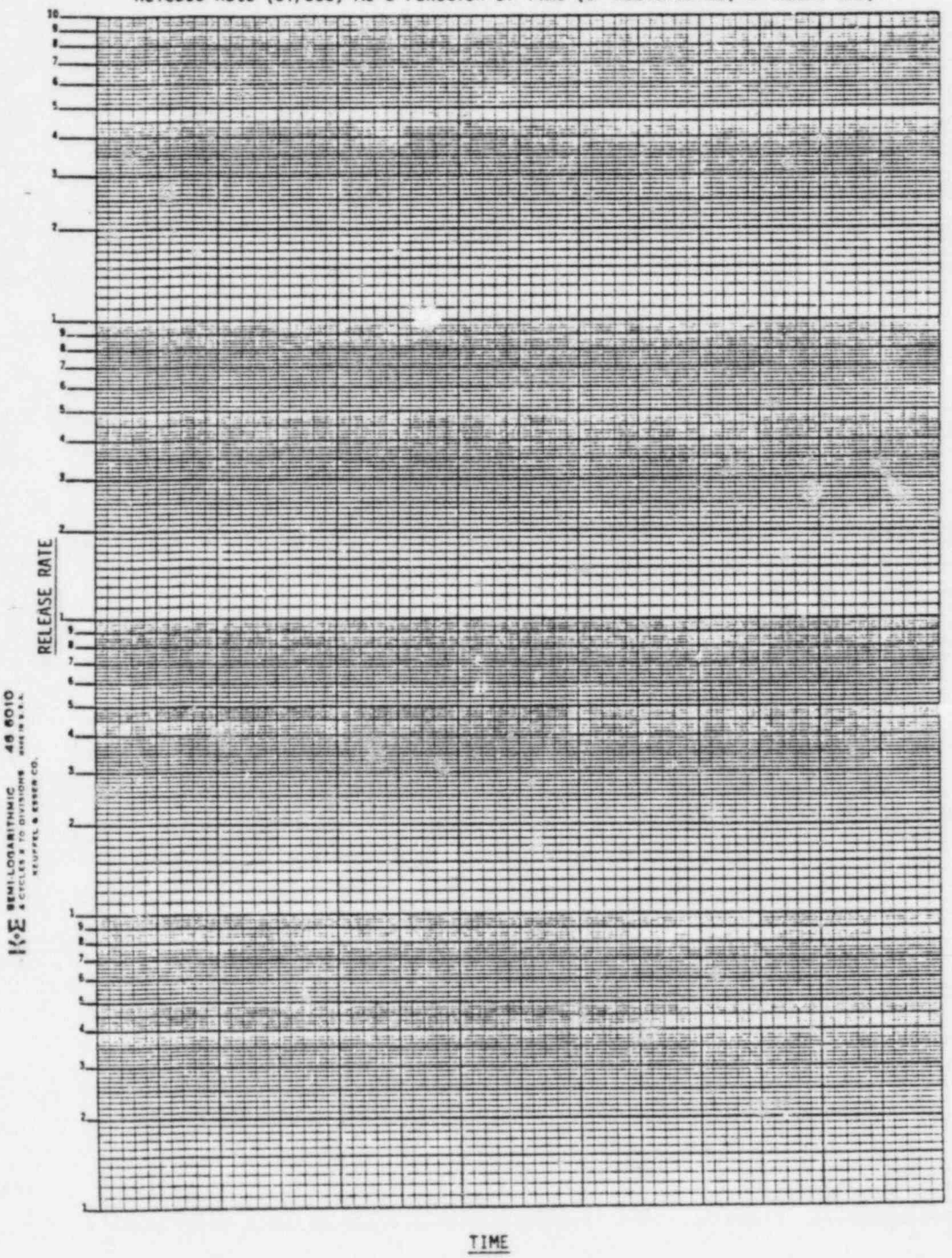
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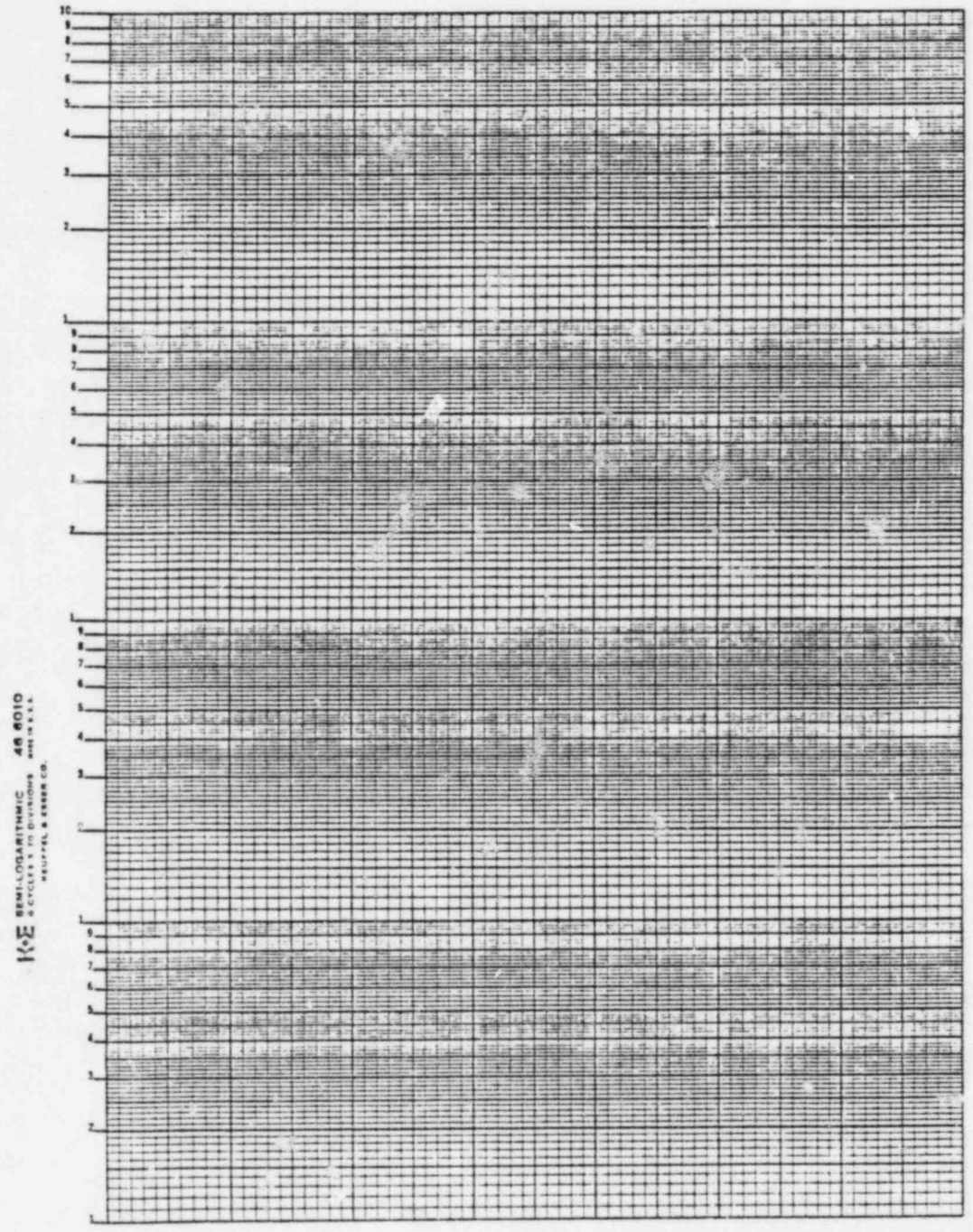
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




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FORM 372-22-3643

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
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Issue 8
Page 1 of 3

FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

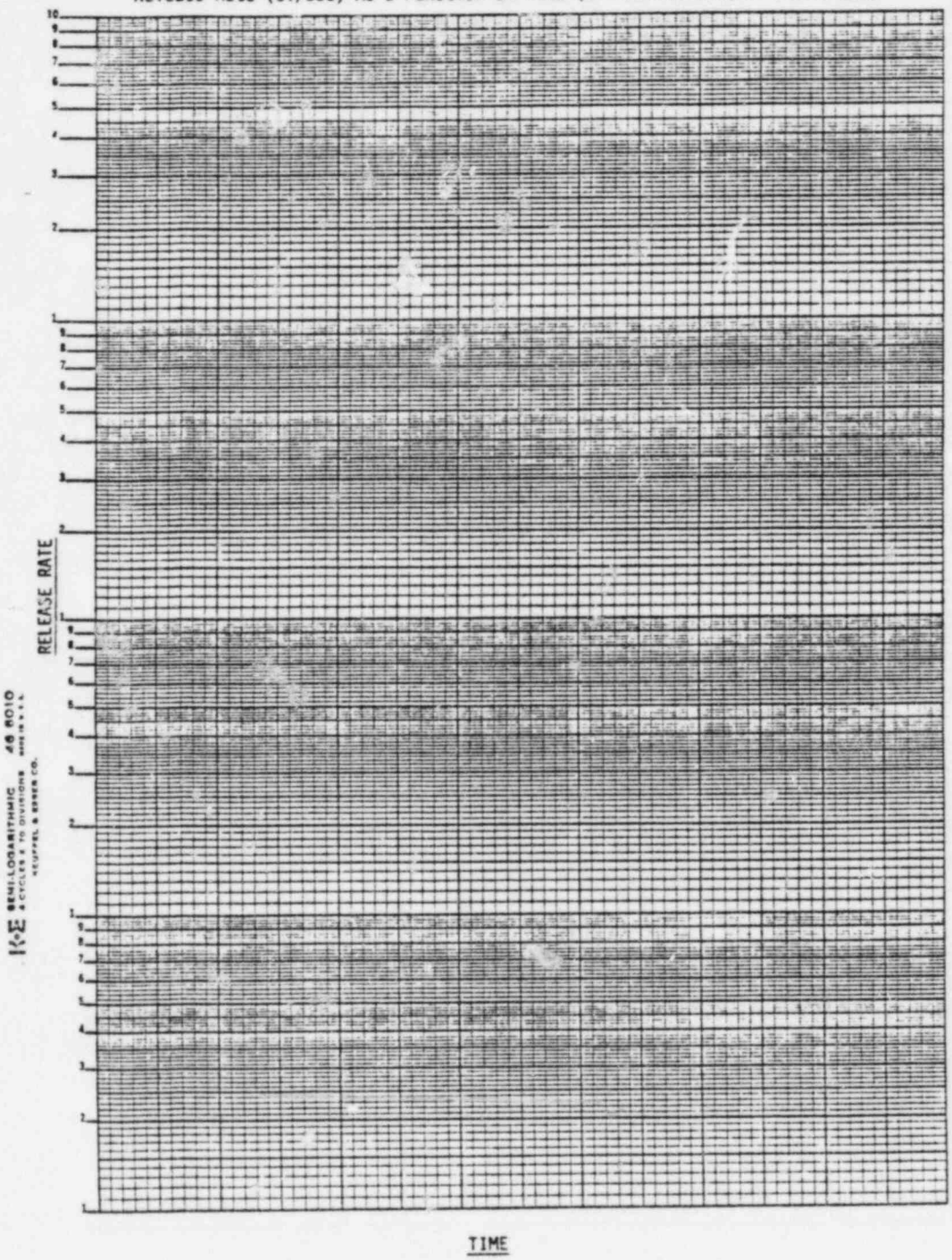
Projected Duration of Release _____

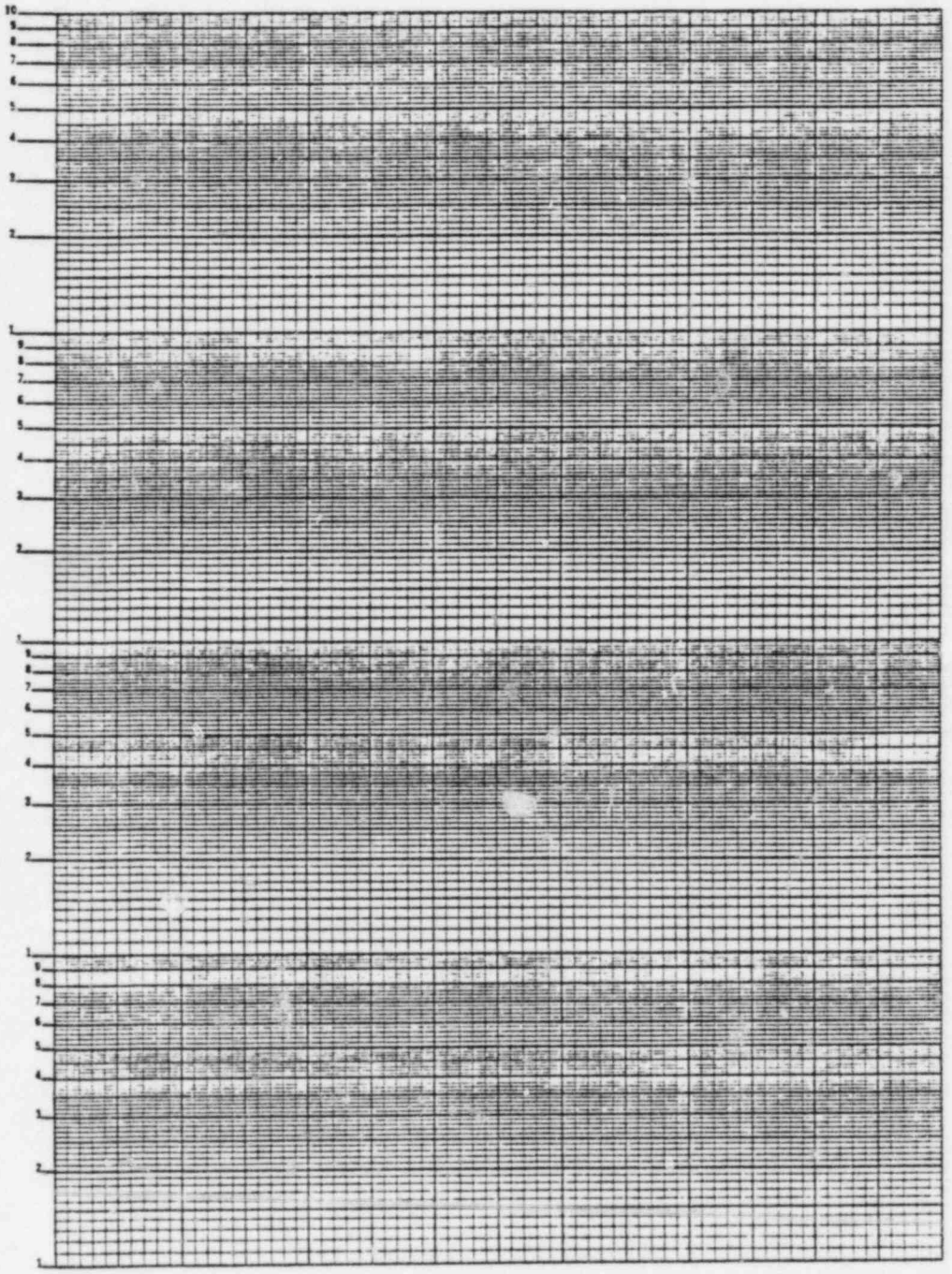
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




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FORWARD COMMAND POST STATUS BOARD

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Update Time _____

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Radioiodine Release Rate _____ (Ci/sec)

Release Location _____

Current Windspeed _____ (mph)

Current Wind Direction _____ °

Atmospheric Stability Class _____

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

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Projected EAB Thyroid Dose _____ (Rem)

Emergency Classification _____

Affected Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

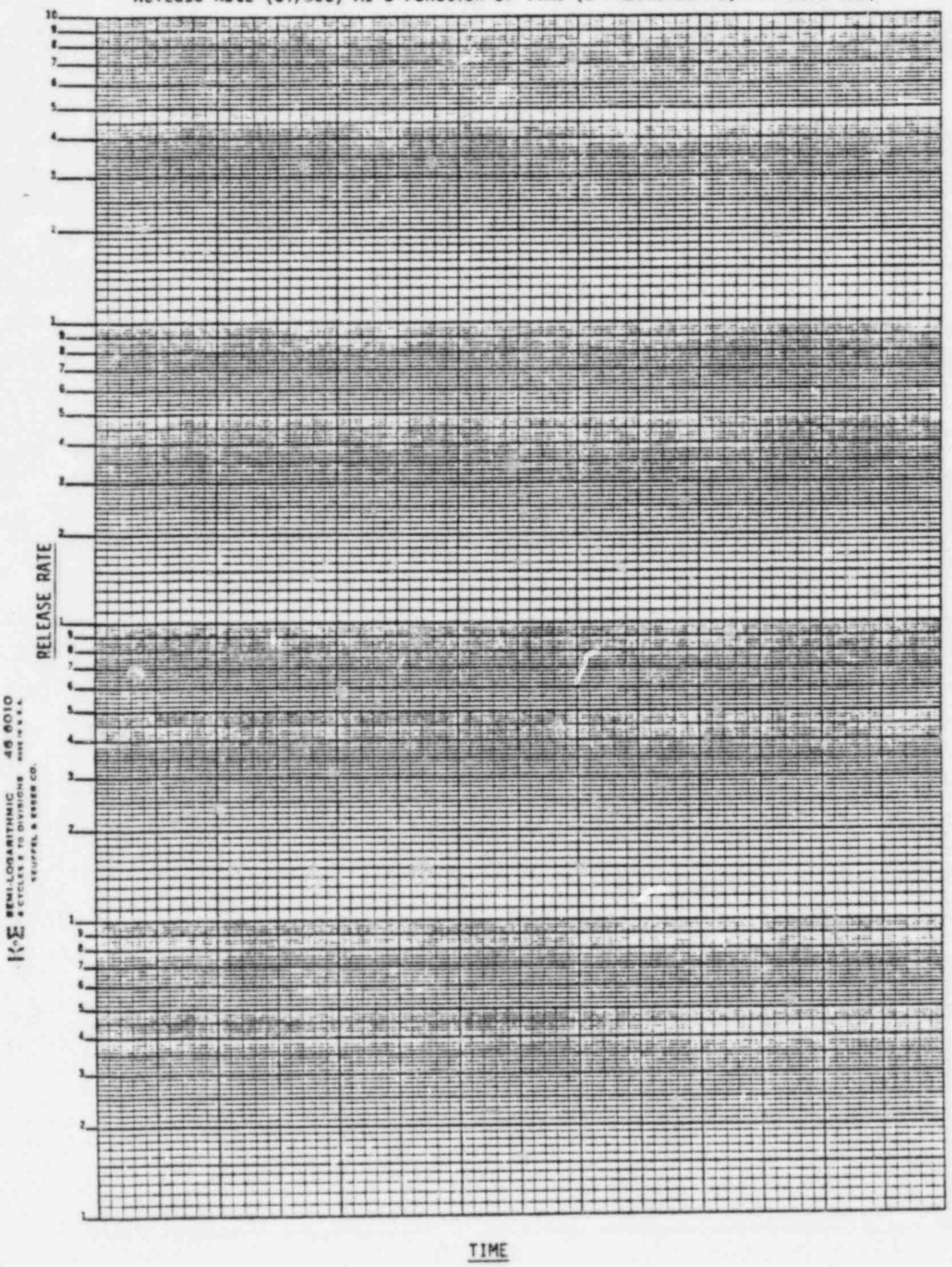
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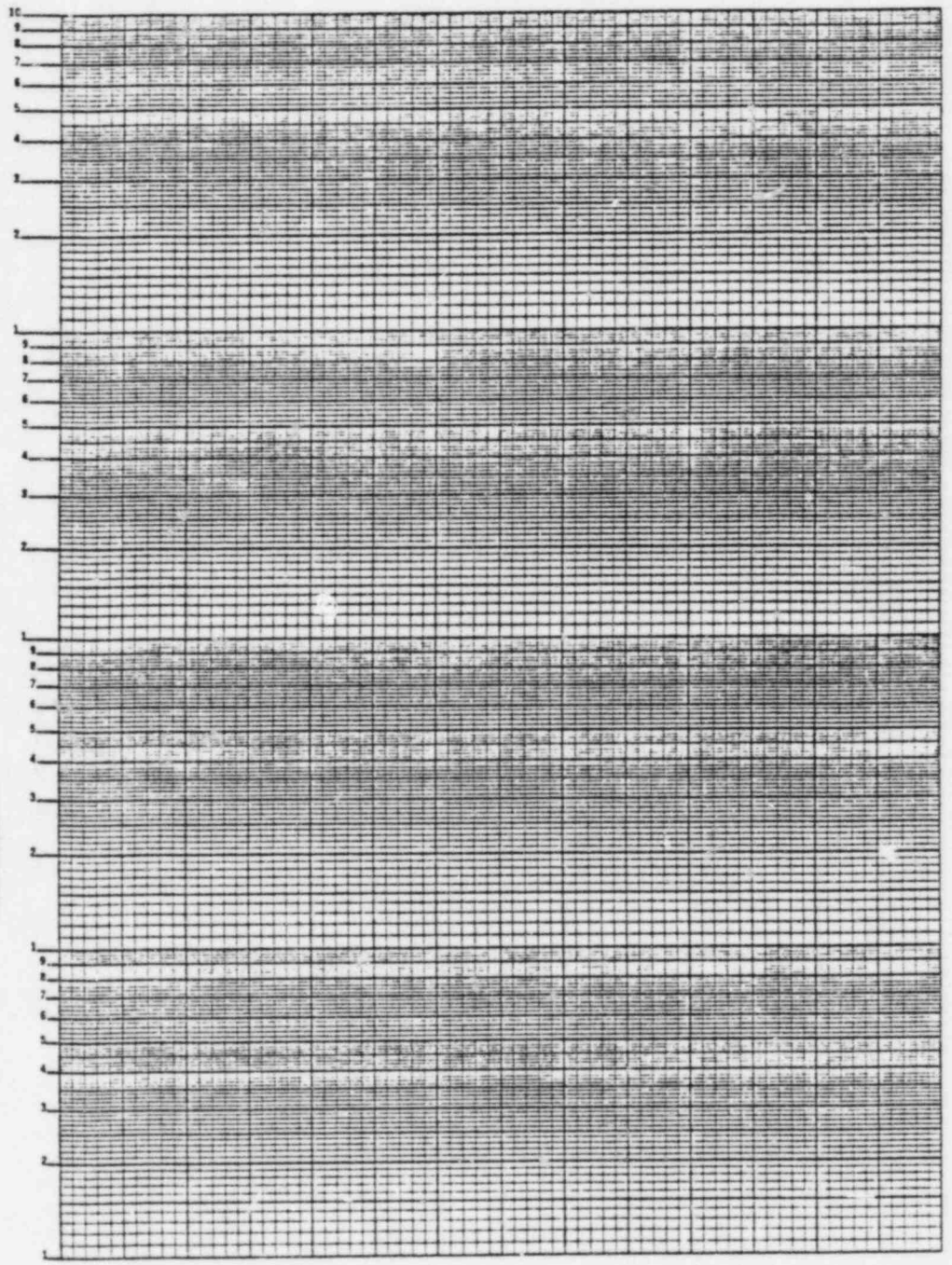
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Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




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FORM 372-22-3643

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FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-FCP
Datasheet 1
Issue 8
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FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

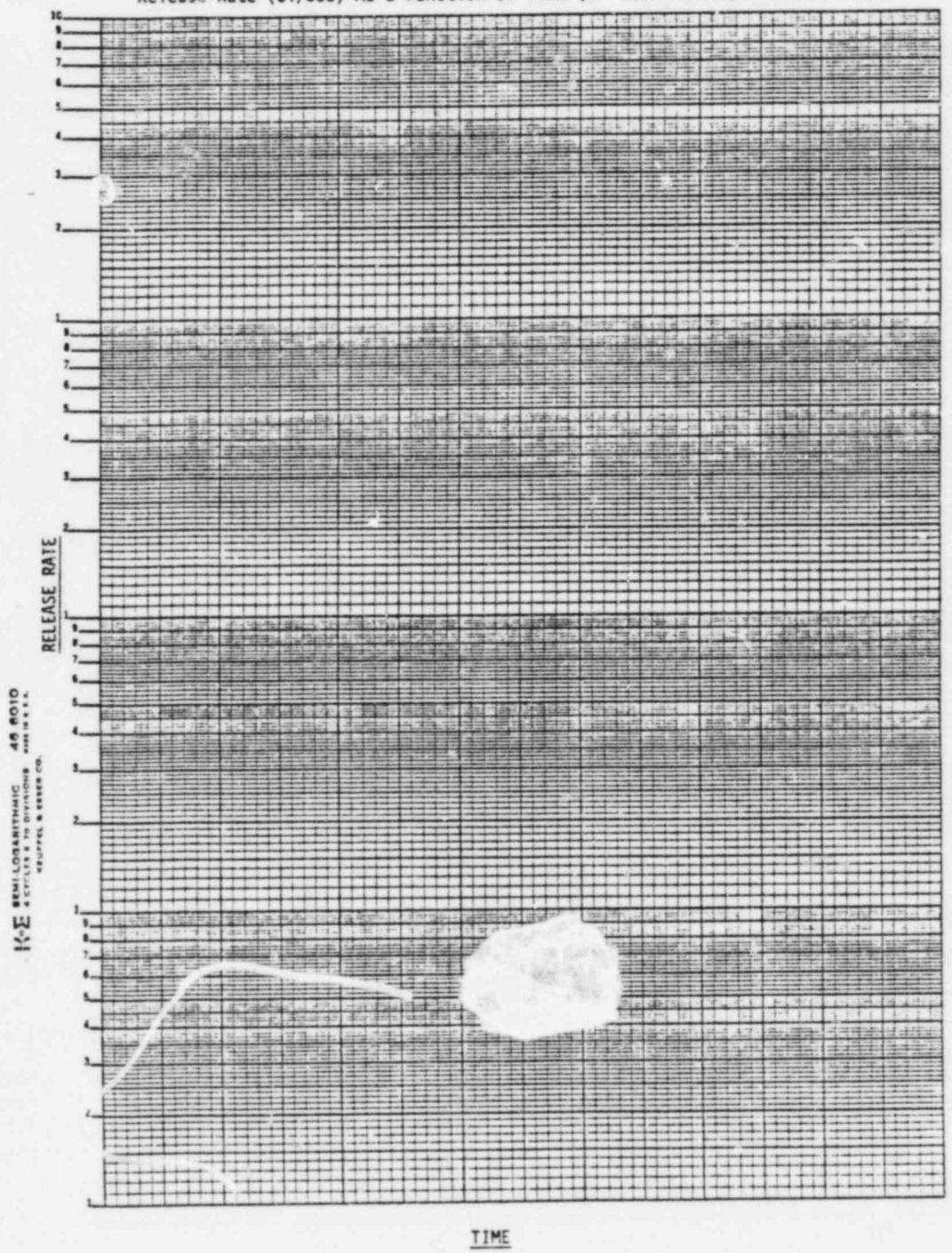
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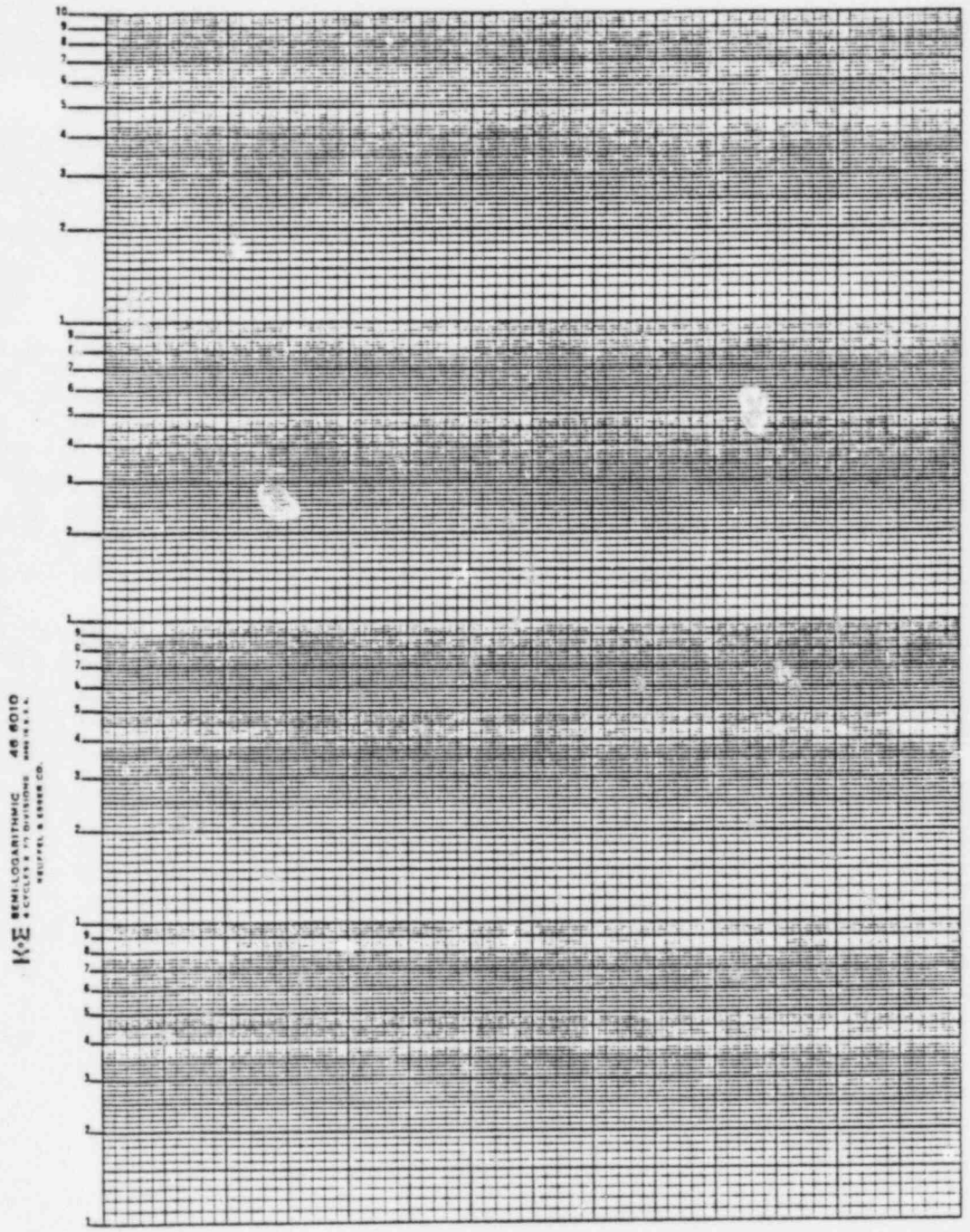
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




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FORT ST. VRAIN NUCLEAR GENERATING STATION

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FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

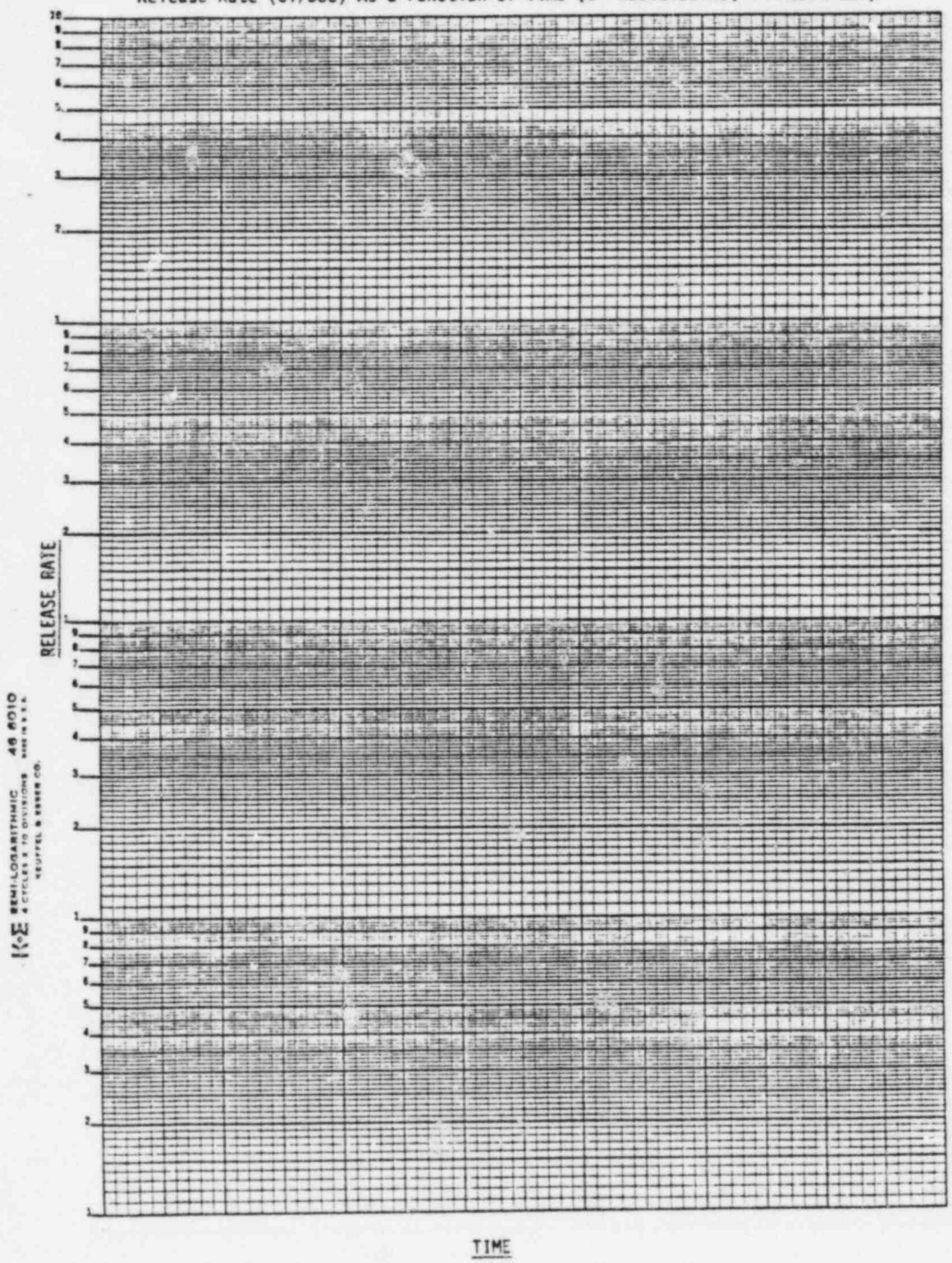
Projected Duration of Release _____

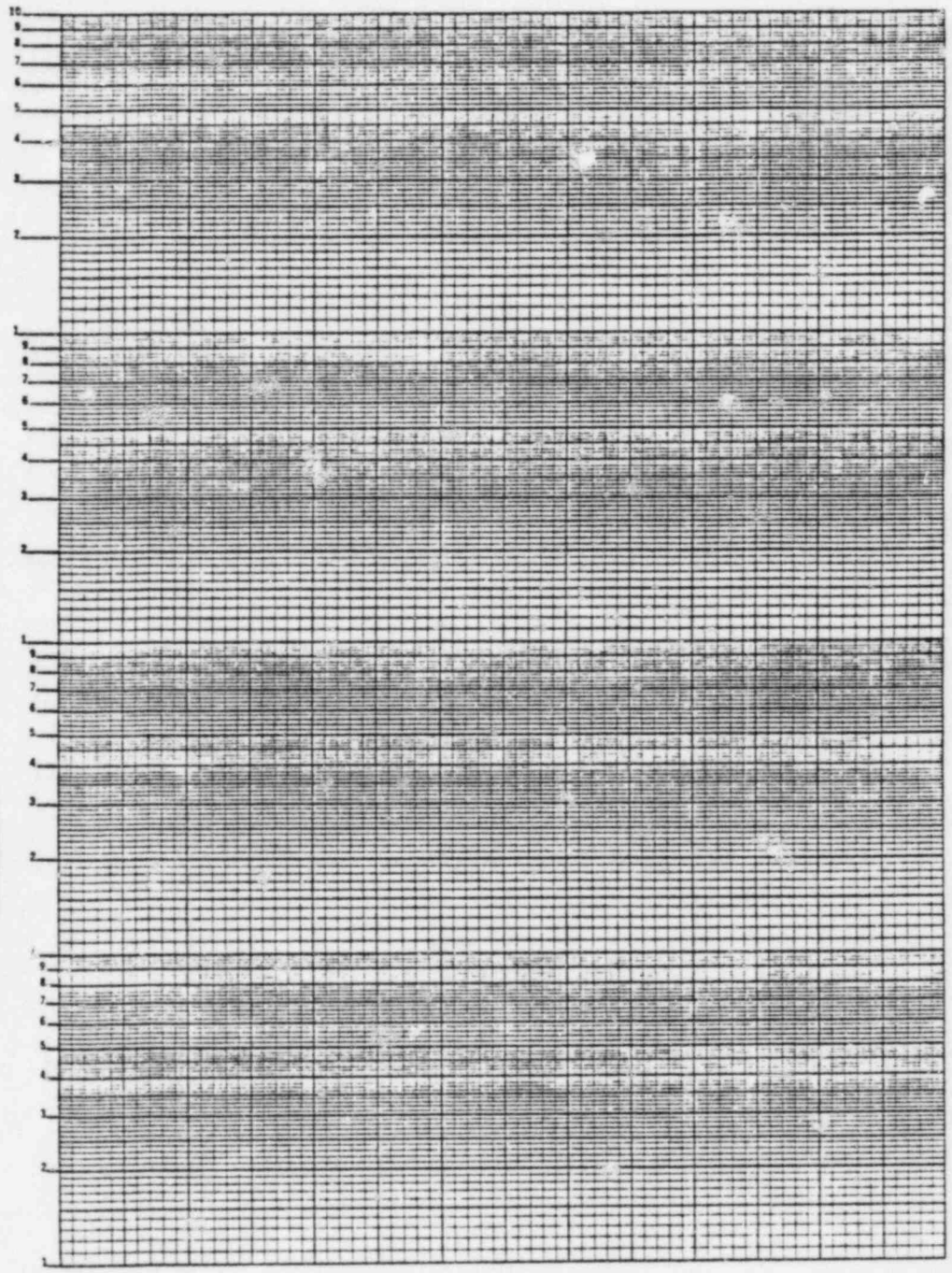
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




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RERP-FCP
Datasheet 1
Issue 8
Page 1 of 3

FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

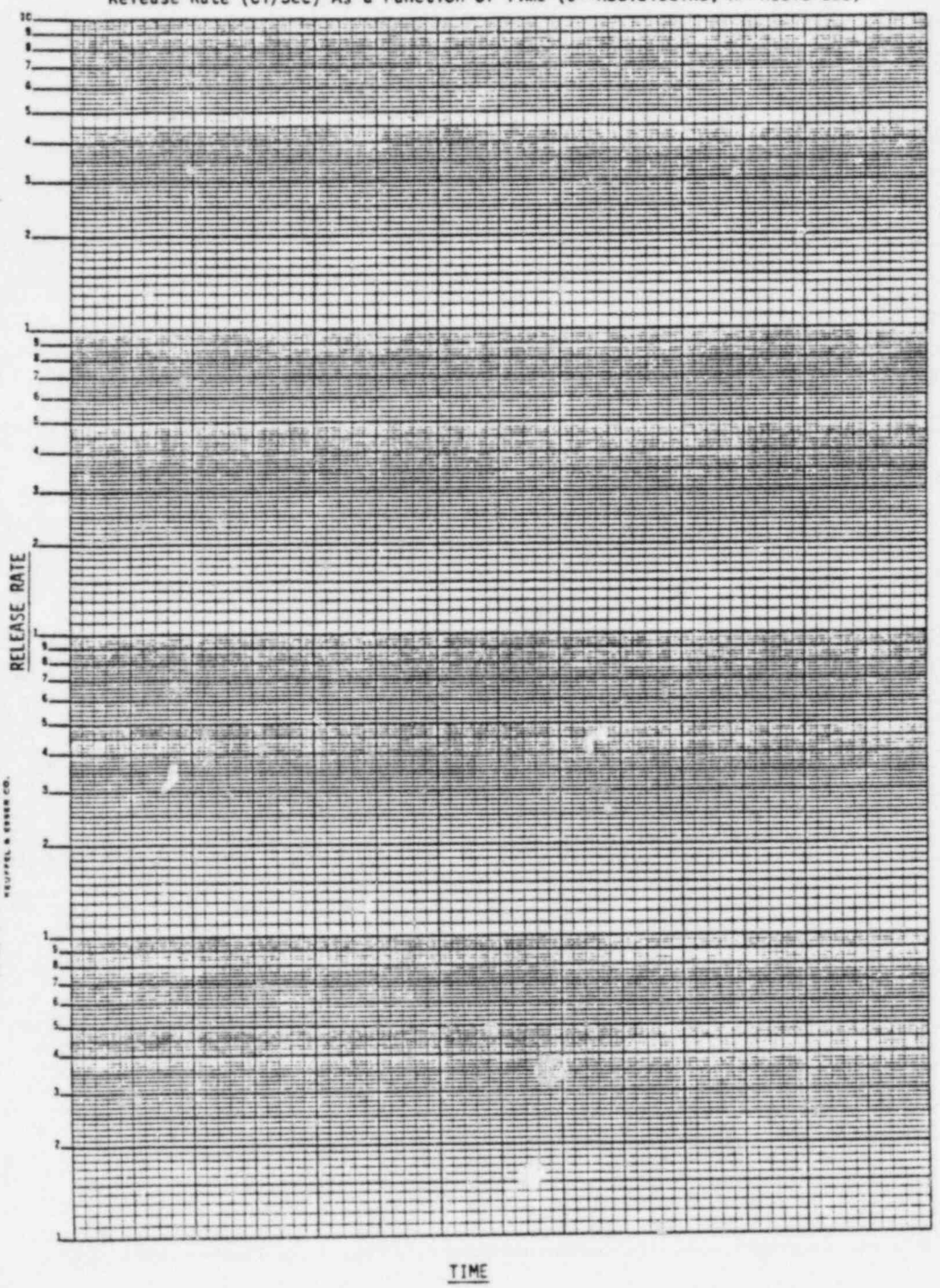
Projected Duration of Release _____

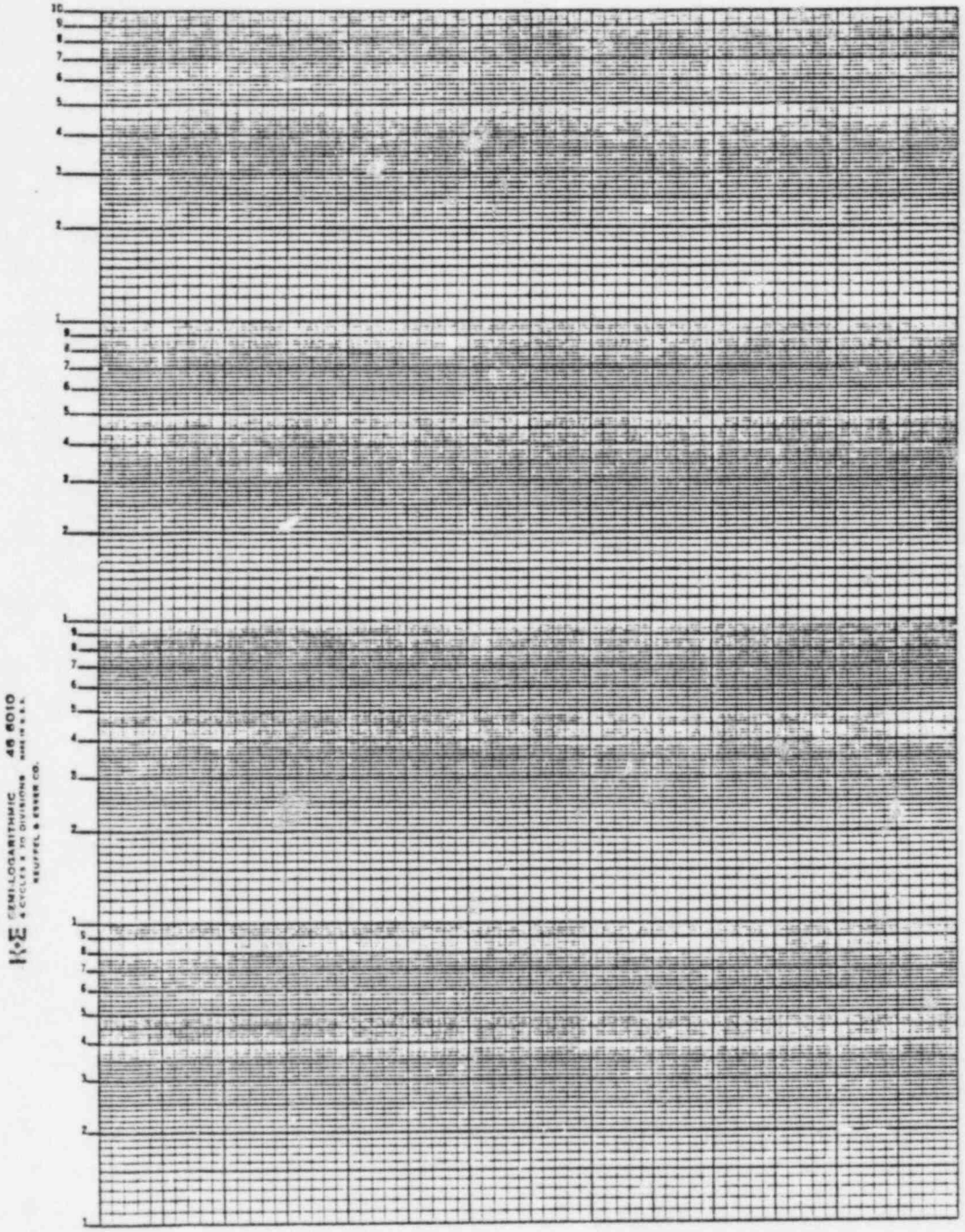
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




10
9
8
7
6
5
4
3
2
1
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FC-1M 372-22-3643

FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

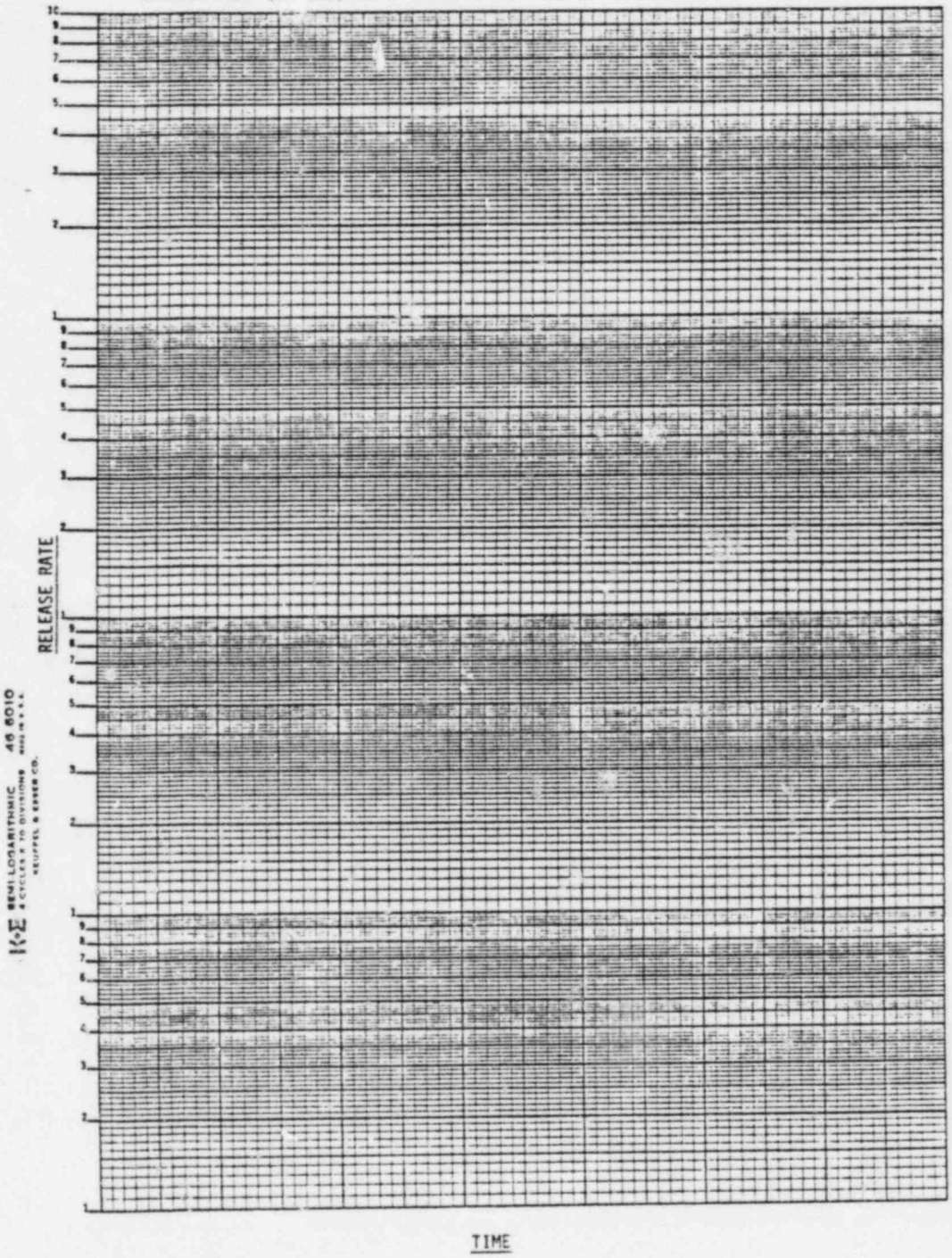
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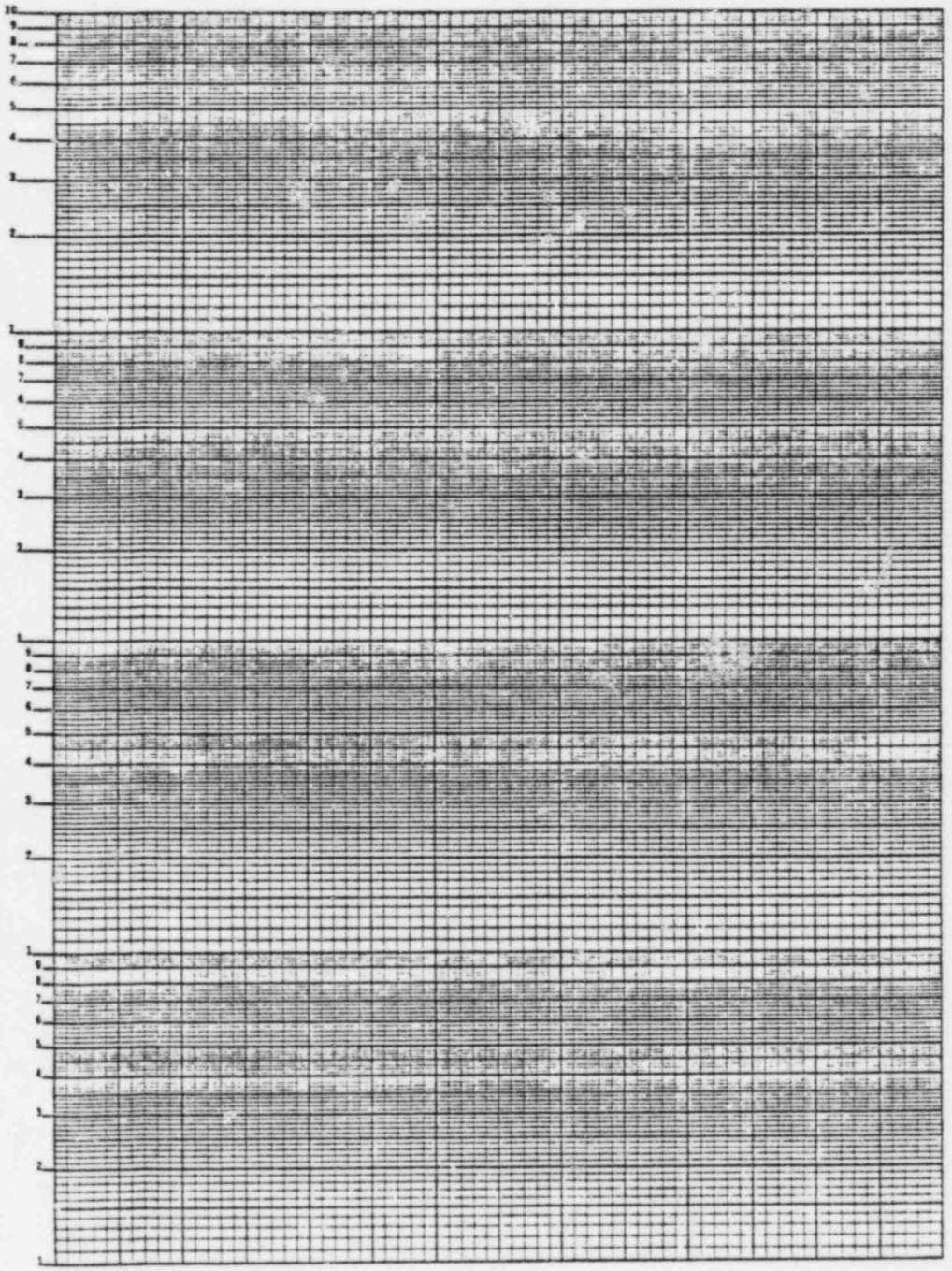
Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Posted By: _____

Verified By: _____

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




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FORT ST. VRAIN NUCLEAR GENERATING STATION

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Datasheet 1
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FORWARD COMMAND POST STATUS BOARD

Reactor Shutdown Time _____

Update Time _____

Noble Gas Release Rate _____ (Ci/sec)

Radioiodine 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 Areas _____

Recommended Protective Actions _____

_____

Plant Status _____

_____

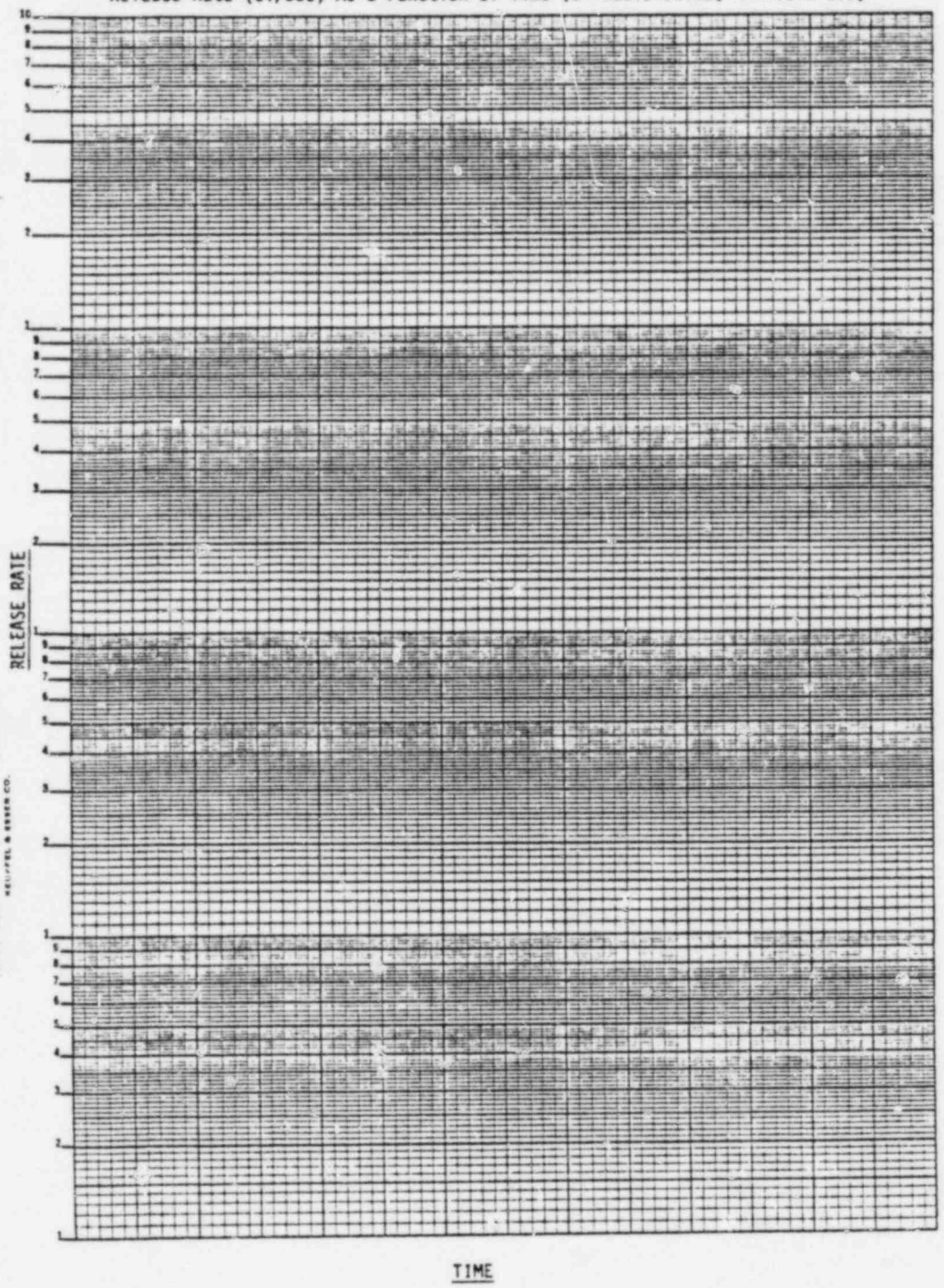
Projected Duration of Release _____

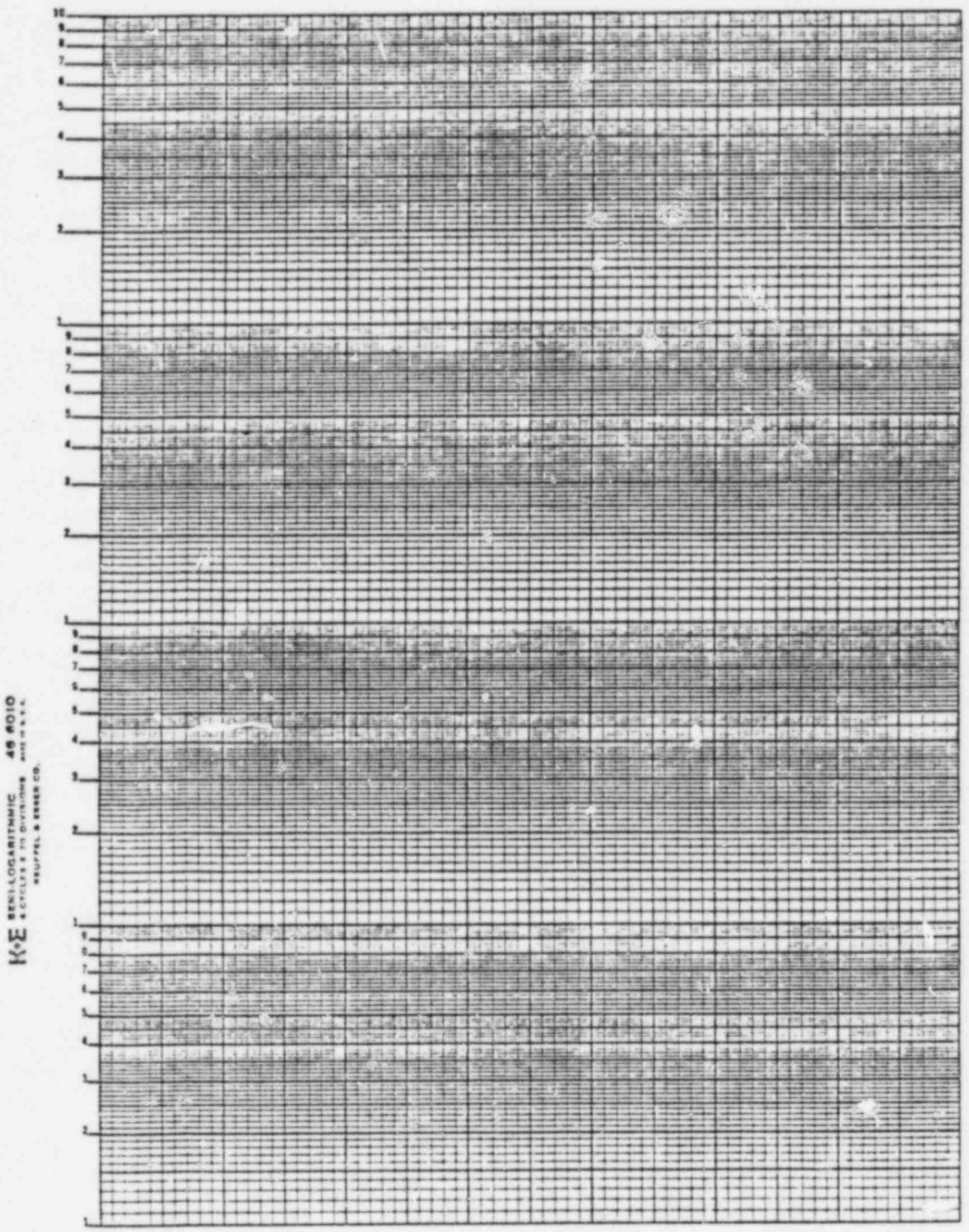
Posted By: _____

Location	Proj. Noble Gas Air Conc. (Ci/m³)	Proj. Iodine Air Conc. (Ci/m³)	Proj. WB Dose Rate (Rem/hr.)	Proj. Thyroid Dose Rate (Rem/hr.)	Field Measurements	
					Time	Dose Rates
EAB						

Verified By: _____

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




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CHECKLIST 1

CORPORATE EMERGENCY DIRECTOR'S CHECKLIST

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

Time

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. _____

	Time
ergency and assessment dition received from TSC.	_____
ng conducted.	_____
cy briefing conducted.	_____
PCC requested and received.	_____
ns established by ECP.	_____
d of plant condition and informed of PCC.	_____
n established by State EOC.	_____
praised of plant condition and location of PCC.	_____

ological Assessment (Actual) obtained

_____ Curies Released_____

_____ Dose Received_____

ction Guide_____

Radiological Assessment (Projected) obtained

_____ Curies Released_____

_____ Dose Received_____

ction Guide_____

l forecast obtained (12 hour). _____

CHECKLIST 1

CORPORATE EMERGENCY DIRECTOR'S CHECKLIST

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

		Time
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.	_____

		Time
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

Worksheet No.	Title	Number Copies
None	N/A	N/A

Datasheet No.

1	Forward Command Post Status Board	25

Checklist No.

1	Corporate Emergency Director's Checklist	2

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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: _____

Technical Clerk and Recorder_____ *

Date Received_____

Date Replaced_____

* Technical Clerk and Recorder 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: FSV EMERGENCY ORGANIZATION AND RESPONSIBILITIES

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982	EFFECTIVE DATE	1-3-83

Section	Description	Page
General		2
1.0	Criteria	2
2.0	Procedure	2
3.0	Responsibilities	11
4.0	References	12
5.0	Procedures Referenced	12
Figure 1	Onsite-Offsite Emergency Organization	1
Figure 2	Emergency Organization Fort St. Vrain Nuclear Generating Station	1
Figure 3	Executive Command Post Organization	1

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 responsiblity 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 Procedure

2.1 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; 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 substatiated data on emergency status i conditions as required. He also serves to co dinate company emergency response actions with those of state/local/federal agencies.

2.2.3 Media Rela ions

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; and
- Confers, on an on-going basis, with the Corporate Emergency Director after activation of the FCP.

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, liscensing 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. Intially, 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 responsiblities 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.

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 responsiblity 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.

4.0 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 CR-ALERT, Control Room Alert, Site Emergency, General Emergency 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

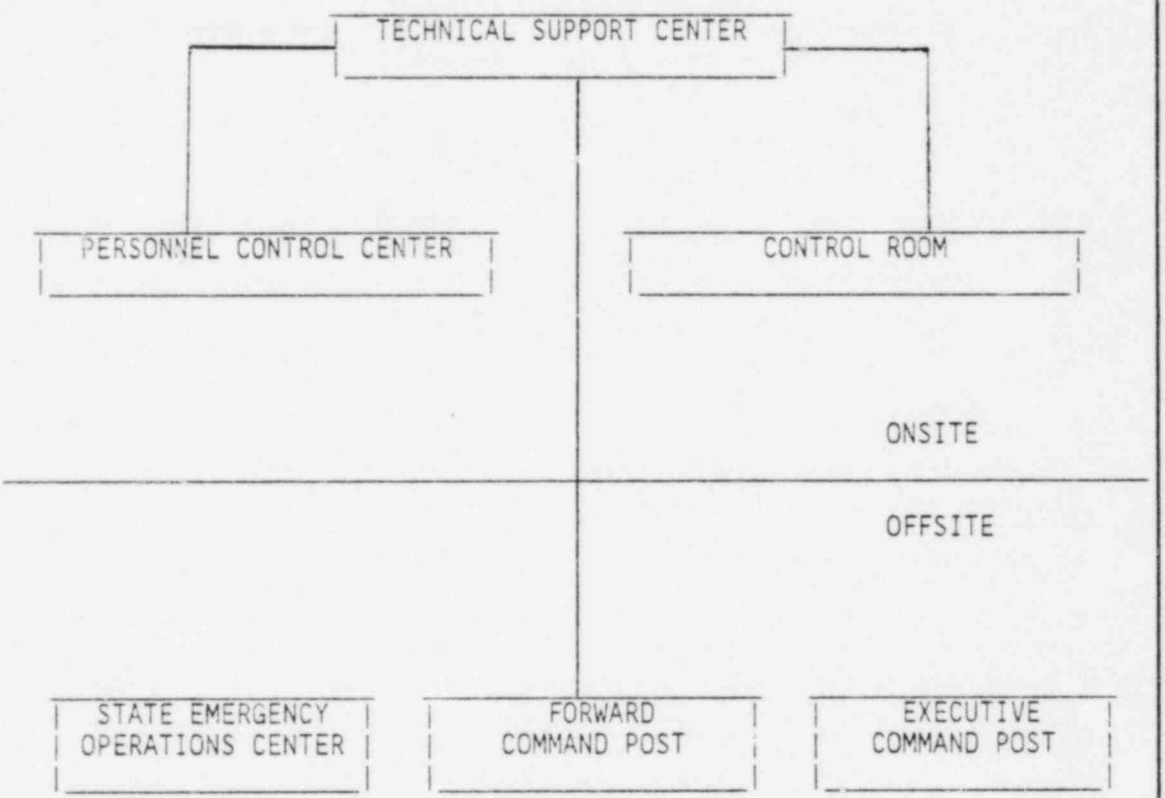
5.6 RERP-TSC, Technical Support Center Procedure

5.7 RERP-EXP, Emergency Exposure Guidelines

FIGURE 1

ONSITE-OFFSITE EMERGENCY ORGANIZATION

Fort St. Vrain Nuclear Generating Station



FORM 372 - 22 - 3643

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

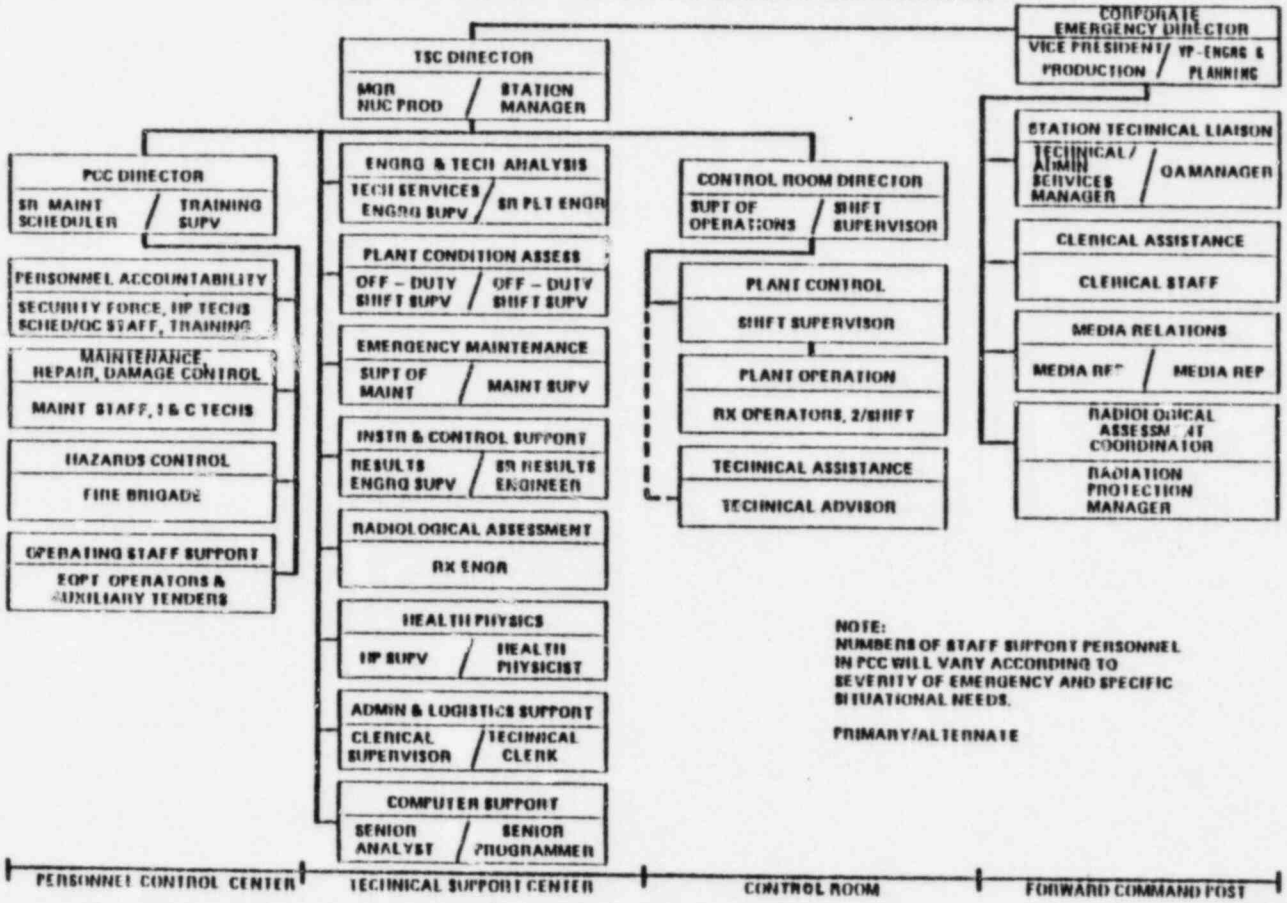


FIGURE 2

FORM 372 - 22 - 3643

EXECUTIVE COMMAND POST ORGANIZATION

Fort St. Vrain Nuclear Generating Station

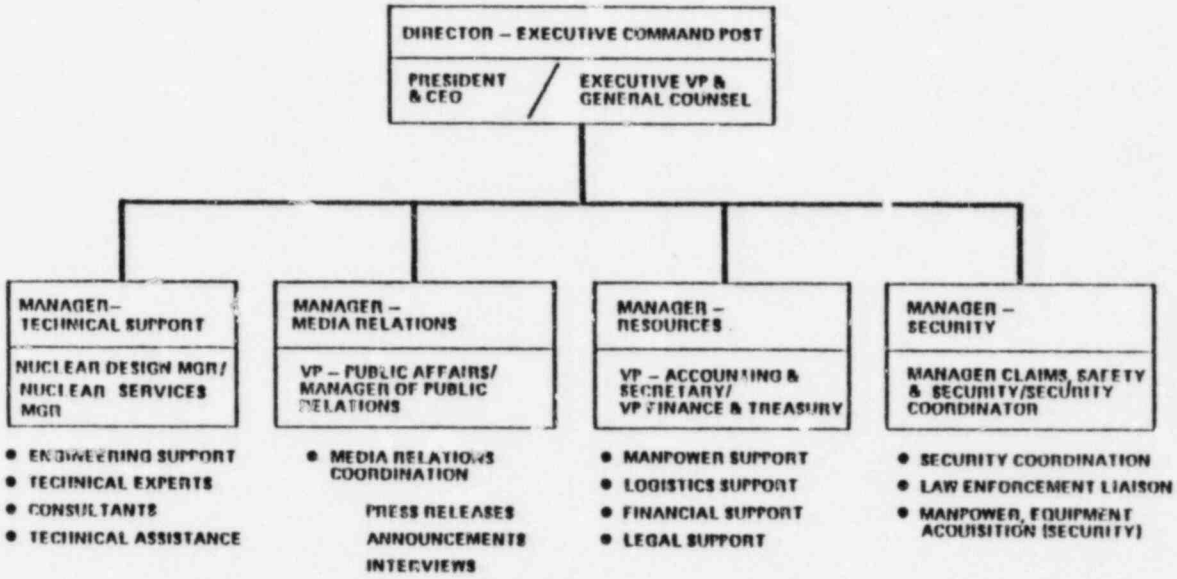


FIGURE 3

PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

RERP-ORG
Figure 3
Issue 3
Page 1 of 1

TITLE: STATE EMERGENCY OPERATIONS CENTER PROCEDURE

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

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Figure 2	Emergency Organization	1
Checklist 1	Checklist For State EOC	1
Attachment 1	Support Equipment/Material	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 TECHNICAL CLERK AND RECORDER, 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 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 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 State EOC Alternate Director, or the first person contacted by the VP, to ensure that the notifications are made. Refer to the RERP PHONE LIST for the State EOC for instructions, names, and phone numbers. The VP 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 accomodate 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

d) Colorado State Patrol

e) Colorado National Guard

f) Federal Emergency Management Agency

g) Public Service Company of Colorado

h) Others, as notified/required

2.4 Public Service Company of Colorado Staffing

2.4.1 The Assistant VP, Governmental Affairs - Checklist 1

a) Will perform personnel accountability to assure that the PSC staffing requirements at the State EOC can be met.

b) Establish communications with the Forward Command Post (FCP).

Primary

Telephone (open line)

Secondary

Backup State Radio System

c) Inform the FCP that the PSC staffing of the State EOC is manned and ready.

d) Advise FCP of status of other State EOC representatives.

e) Request location of Personnel Control Center (PCC).

f) Maintain communications flow between State EOC and FCP.

g) Clerical assistant(s) keep an on-going record (log) of all actions taken.

h) Coordinate company emergency response activities with those of state/local/federal agencies. PSC will channel contacts with federal agencies (except NRC) through DODES.

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

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 NPM.

2.4.3 Radiation Specialist

Assist the VP and Manager of Nuclear Engineering 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 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."

3.3 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.

4.0 References

4.1 FSV Radiological Emergency Response Plan

4.2 State of Colorado FSV Radiological Emergency Response Plan

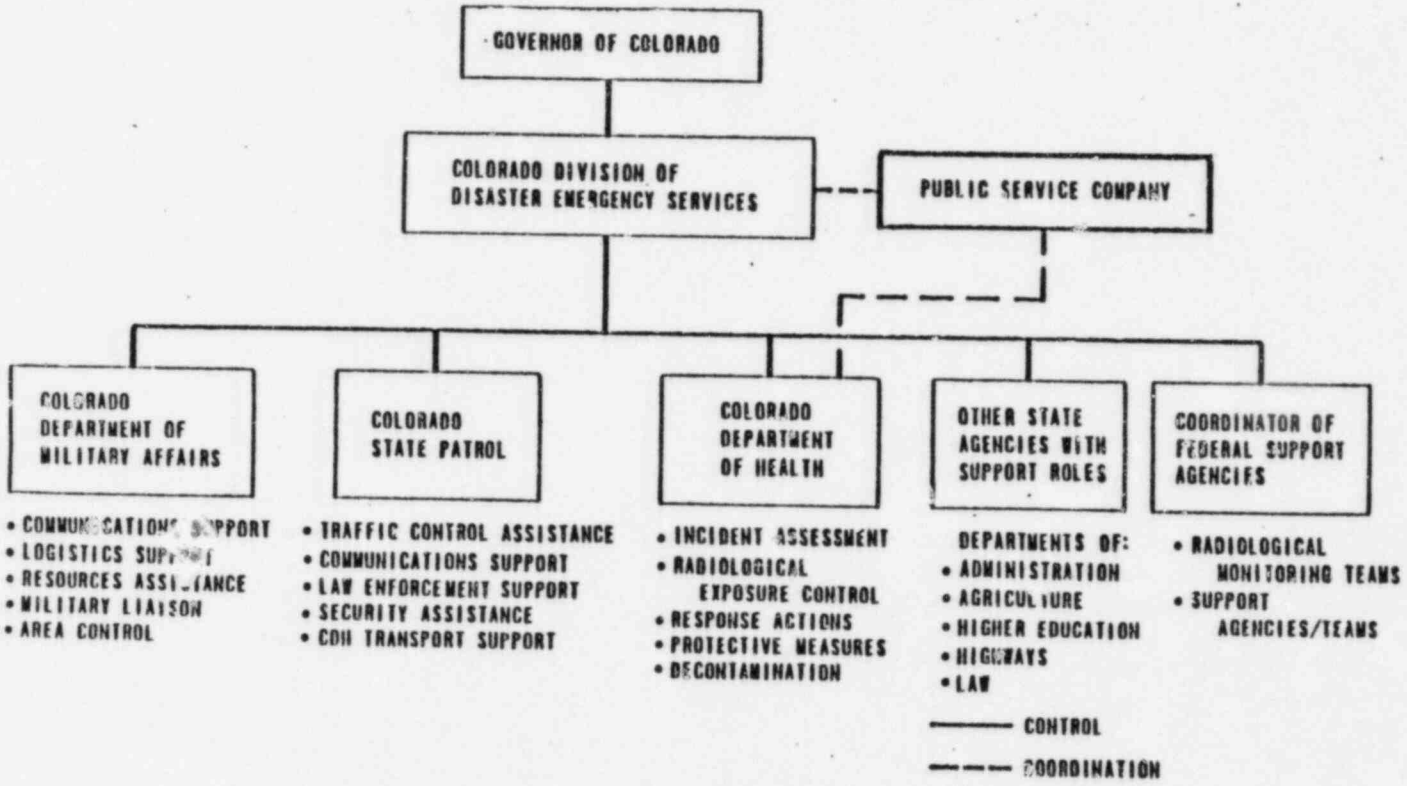
5.0 Referenced or Supporting Procedures

5.1 RERP-TSC, Technical Support Center Procedure

5.2 RERP-FCP, Forward Command Post Procedure

FORM 372-22-3643

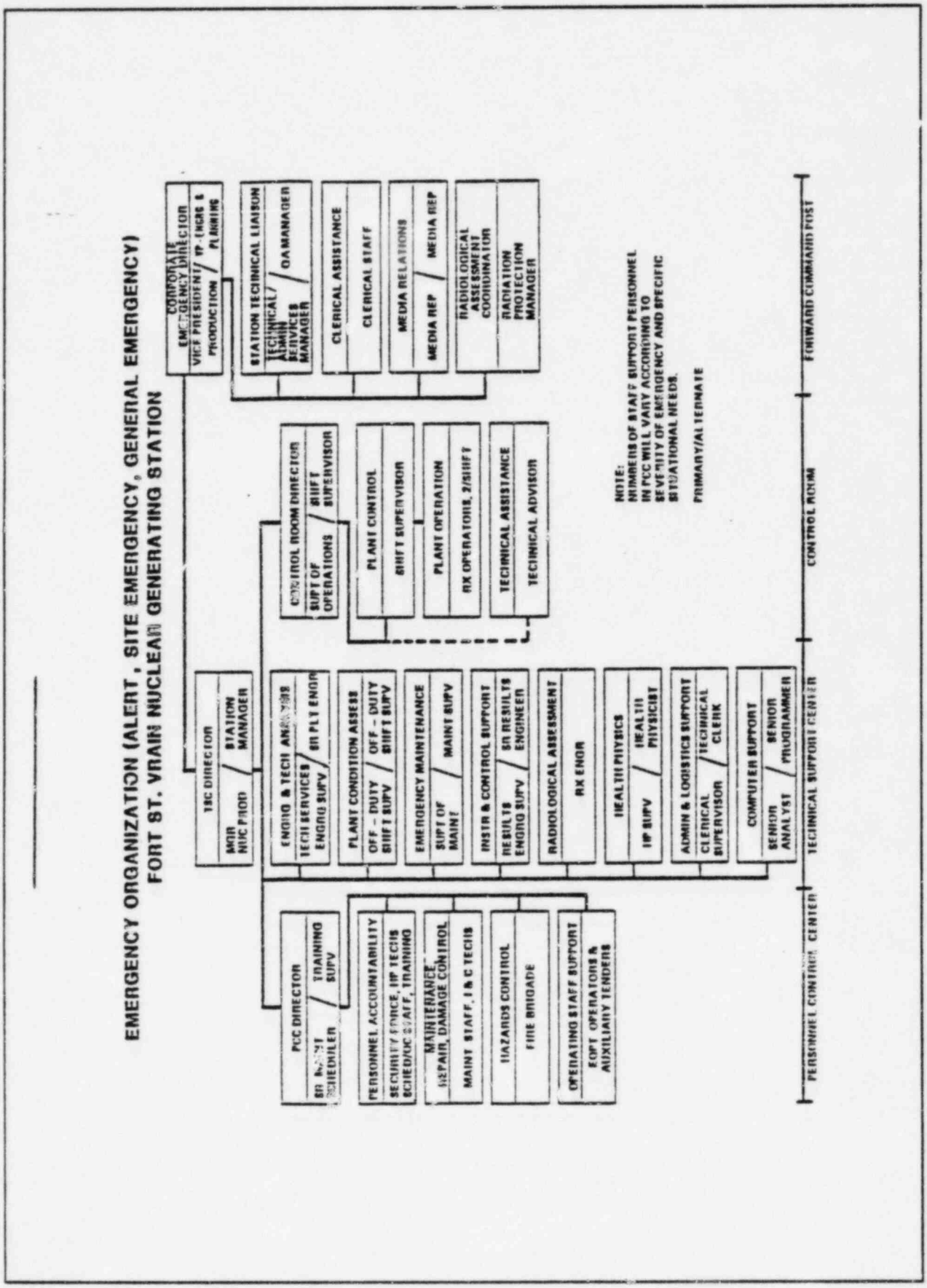
STATE EMERGENCY OPERATIONS CENTER ORGANIZATION
For: St. Vrain Nuclear Generating Station



PUBLIC SERVICE COMPANY OF COLORADO

FORT ST. VRAIN NUCLEAR GENERATING STATION

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



ASSISTANT VP, GOVERNMENTAL AFFAIRS CHECKLIST FOR STATE EOC

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

		Time
1.	Personnel Accountability	
	a. Media Relations Manager	
	b. Radiation Specialist	
	c. Clerical Assistant	
	d. 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

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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: _____

Technical Clerk and Recorder_____ *

Date Received_____

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ASSISTANT VP, GOVERNMENTAL AFFAIRS CHECKLIST FOR STATE EOC

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

		Time
1.	Personnel Accountability	_____
	a. Media Relations Manager	_____
	b. Radiation Specialist	_____
	c. Clerical Assistant	_____
	d. 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 CHECKLIST FOR STATE EOC

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

		Time
1.	Personnel Accountability	_____
	a. Media Relations Manager	_____
	b. Radiation Specialist	_____
	c. Clerical Assistant	_____
	d. 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.	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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FORMS USE REPORTING SHEET(Continued)

COMMENTS

Reported By:_____

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RADIOLOGICAL EMERGENCY RESPONSE PLAN - STATION

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
RERP-TSC	Technical Support Center Procedure	11	01-03-83
RERP CR-UE	Control Room Unusual Event Procedure	16	11-08-82
RERP-VC	Visitors Center Procedure	1	02-10-81
RERP-PHONE LIST		14	10-26-82

TITLE: TECHNICAL SUPPORT CENTER PROCEDURE

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

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Figure 2	EAB Map	1
Figure 3	Response Center Manning Requirements	1
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

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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 responsiblity 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 responsiblity.

2.3.2 Off-Duty Shift Supervisor

The off-duty Shift Supervisor makes a preliminary assessment of the plant status, focusing on significant plant problems and trends.

He also makes a preliminary assessment of the sequence of events that led to the emergency, and reports 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 3).

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

The Superintendent of Maintenance/Maintenance Supervisor 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 Results Engineering Supervisor/Senior Results Engineer

The Results Engineering Supervisor/Senior Results Engineer advises for the necessity for repair/installation/modification of instrument and control equipment.

2.3.6 Reactor Engineer (TSC Radiological Assessment)

The Reactor Engineer performs offsite dose projection calculations on an as needed basis (approximately every 15 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 Clerical Supervisor/Senior Clerk

The Clerical Supervisor/Senior Clerk 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 Analyst/Senior Programmer

a) The Senior 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 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 Reactor Engineer (TSC Radiological Assessment)

a) Continue making offsite dose projections at approximately fifteen (15) 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 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 termination of the emergency to the Corporate Emergency Director at the FCP. The authority and responsibility to declare 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; and

- Confers, on an on-going basis, with the Corporate Emergency Director after activation of the FCP.

3.2 Engineering and Technical Analysis

Engineering and Technical Analysis personnel are responsible for direction of core physics analysis, electrical and mechanical engineering activities, liscensing 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 CR-ALERT, Control Room ALERT, SITE EMERGENCY, GENERAL EMERGENCY Procedure

5.2 RERP-FCP, Forward Command Post Procedure

5.3 RERP-PCC, Personnel Control Center Procedure

5.4 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 Resposibilities

5.12 RERP PHONE LISTS

FIGURE 1

GEOGRAPHICAL AREA IDENTIFICATION DESIGNATIONS

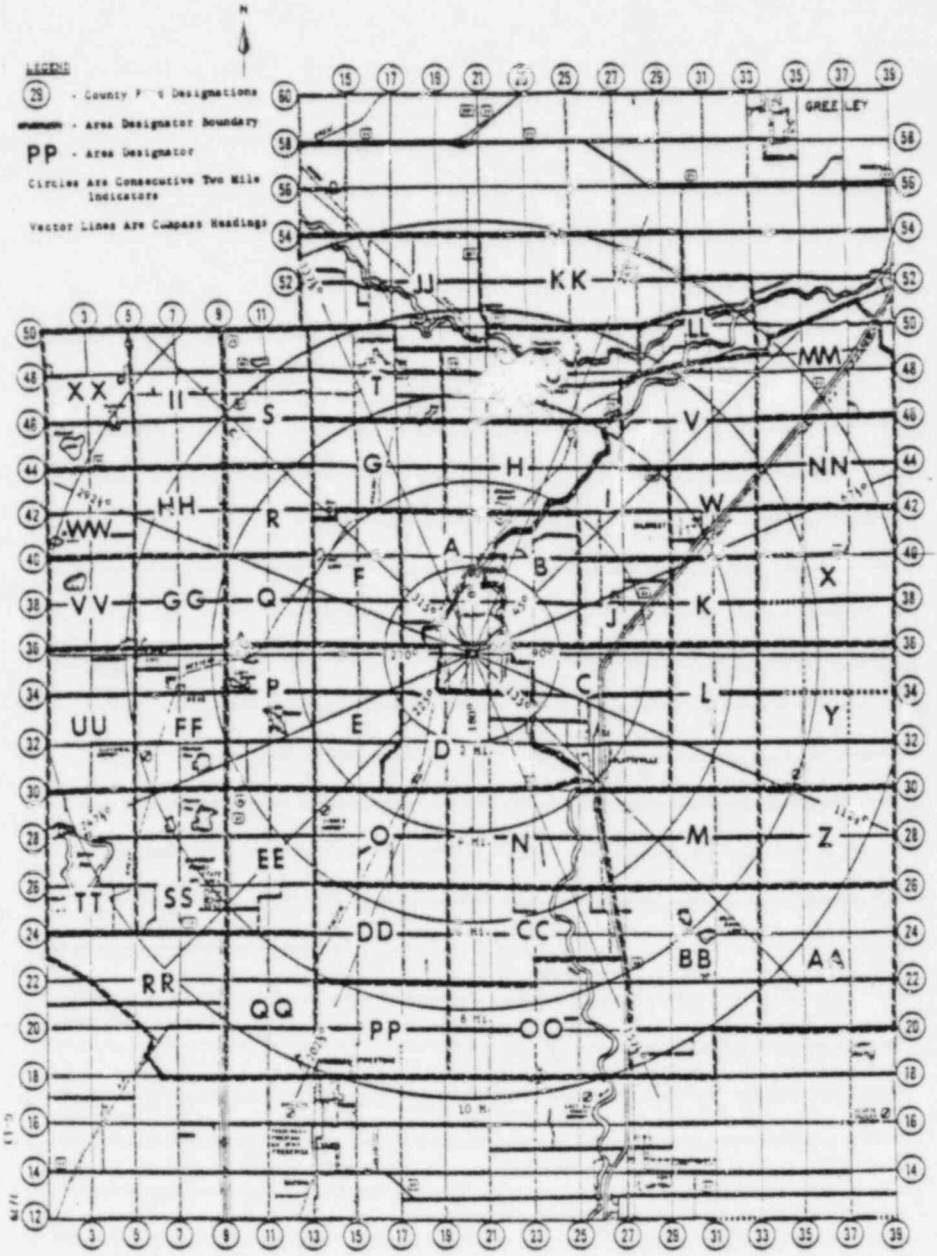
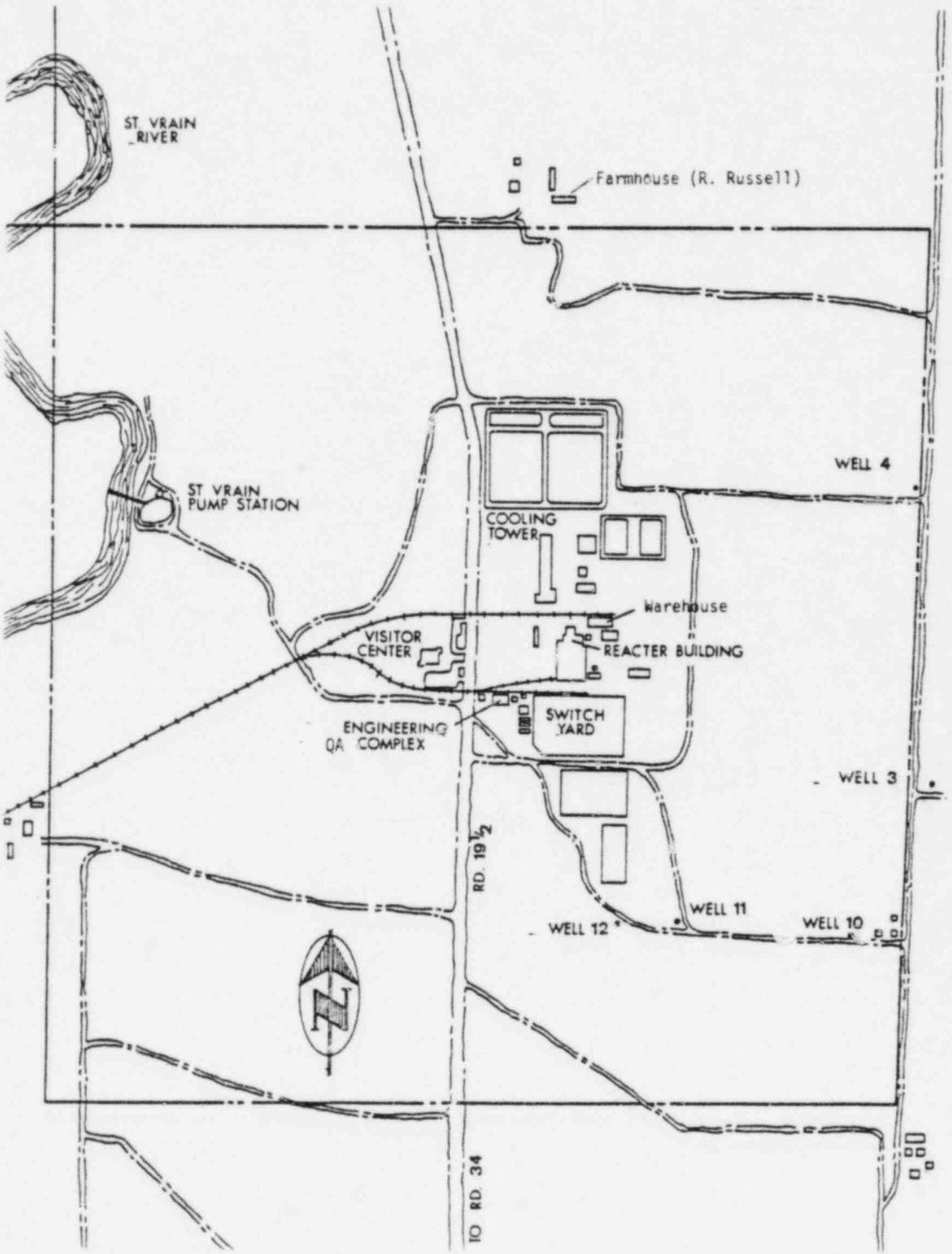
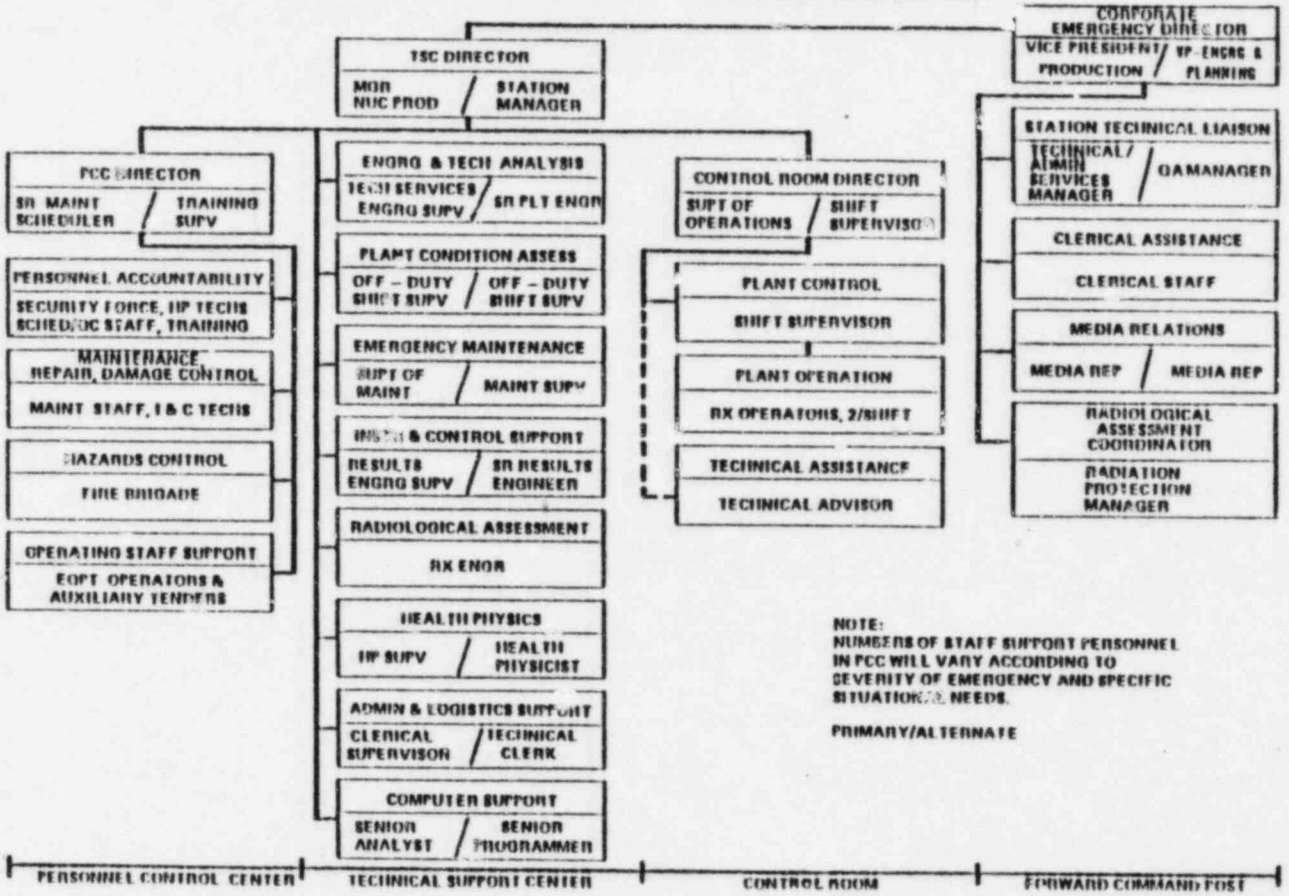


FIGURE 2

EXCLUSION AREA MAP



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



FORM 372-22-3643

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

   Wind speed _____ mph from direction _____ degrees.

   Stability Category _____ Sectors Affected _____.

   Current release rate _____Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector____.

   at a distance of _____miles.

   "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 Ventilaiton	
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 1C-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. _____

4. Secondary flow I _____ Klb/hr. II _____ Klb/hr.

5. Status of aux. boilers.

ASSESSMENT OF PLANT/CORE STATUS
TECHNICAL SERVICES ENGINEERING SUPERVISOR/SENIOR PLANT ENGINEER

Remarks

Time	Description

TSC DIRECTOR CHECKLIST

		TIME
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.	Radiological Assessment (Actual) obtained.	
	Release Rate	
	Curies Release	
	Dose Rate	
	Dose Received	
	Protective Action Guide	
5.	Radiological Assessment (Projected) obtained from the CR or FCP	
	Release Rate	
	Curies Released	
	Dose Rate	
	Dose Received	
	Protective Action Guide	
6.	Personnel Accountability Status obtained	
	Visitor's Center notified	
	Initial (from Shift Supervisor - may pass through the CR Director)	
	Continuing (from PCC Director)	

7. Injury Reports Obtained

   No. of Injured _____

   Hospital Called _____

   Relatives _____

   Emergency Transport _____

8. PCC Evacuation Recommended _____

9. Estimates of emergency repairs to equipment/ instruments/systems obtained _____

10. Requests for Additional Personnel Made

    Site Personnel _____

    Other PSC _____

    Contract _____

11. Personnel Exposure Histories Maintained

    In-Plant _____

    PCC _____

12. In-Plant Survey Teams Status

    Dispatched _____

    Report Received _____

13. Site Survey Teams Status

    Dispatched _____

    Report Received _____

14. Exposure criteria for emergency workers being followed (see RERP-EXP) _____

Work/Datasheet Checklist Control List

Worksheet No.	Title	Number Copies
None	N/A	N/A

Datasheet No.

1	Assessment Fact Sheet - TSC Director	10
2	Assessment of Plant/Core Status	5

Checklist No.

1	TSC Director Checklist	2

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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: _____

Technical Clerk and Recorder_____ *

Date Received_____

Date Replaced_____

* Technical Clerk and Recorder 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.

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

   Wind speed _____ mph from direction _____ degrees.

   Stability Category _____ Sectors Affected _____.

   Current release rate _____Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector_____.

   at a distance of _____miles.

   "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 FACT SHEET

TSC Director

1. Date of Event _____ Time of Event _____

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   ALERT SITE AREA EMERGENCY GENERAL EMERGENCY

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   _____

   _____

4. Radiological Assessment

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   _____

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   Estimated Curies released _____ at time _____.

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   "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)

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   _____

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).

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If not, who has not been notified? _____

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   _____

   _____

4. Radiological Assessment

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   Stability Category _____ Sectors Affected _____.

   Current release rate _____ Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector_____.

   at a distance of _____miles.

   "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).

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_____

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b) Description of Injuries _____

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d) How many have been sent to hospital? _____

Which Hospitals? _____

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If not, who has not been notified? _____

9. Plant Evacuation

Non-essential plant personnel evacuated from _____

(location) at _____ (time).

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TSC Director

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   _____

   _____

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   Stability Category _____ Sectors Affected _____.

   Current release rate _____ Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector____.

   at a distance of _____miles.

   "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).

_____

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Non-essential plant personnel evacuated from _____

(location) at _____ (time).

ASSESSMENT FACT SHEET

TSC Director

1. Date of Event _____ Time of Event _____

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3. Description of Event

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   _____

   _____

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   Stability Category _____ Sectors Affected _____.

   Current release rate _____Ci/sec.

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   at a distance of _____miles.

   "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 _____

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_____

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 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

   Wind speed _____ mph from direction _____ degrees.

   Stability Category _____ Sectors Affected _____.

   Current release rate _____ Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector____.

   at a distance of _____miles.

   "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 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

   Wind speed _____ mph from direction _____ degrees.

   Stability Category _____ Sectors Affected _____.

   Current release rate _____Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector____.

   at a distance of _____miles.

   "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

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If not, who has not been notified? _____

9. Plant Evacuation

Non-essential plant personnel evacuated from _____

(location) at _____ (time).

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

   Wind speed _____ mph from direction _____ degrees.

   Stability Category _____ Sectors Affected _____.

   Current release rate _____ Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector____.

   at a distance of _____miles.

   "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) _____.

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a) Number of injured persons _____.

b) Description of Injuries _____

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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).

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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

   Wind speed _____ mph from direction _____ degrees.

   Stability Category _____ Sectors Affected _____.

   Current release rate _____ Ci/sec.

   Estimated Curies released _____ at time _____.

   Estimated dose (rem) W.B. _____ Thyroid _____ in Sector____.

   at a distance of _____ miles.

   "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 Ventilaiton	
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. _____

4. Secondary flow I _____ Klb/hr. II _____ klb/hr.

5. Status of aux. boilers.

_____

_____

_____

_____

_____

_____

ASSESSMENT OF PLANT/CORE STATUS
TECHNICAL SERVICES ENGINEERING SUPERVISOR/SENIOR PLANT ENGINEER

Remarks

Time	Description

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 Ventilaiton	
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. _____

4. Secondary flow I _____ Klb/hr. II _____ klb/hr.

5. Status of aux. boilers.

_____

_____

_____

_____

_____

_____

ASSESSMENT OF PLANT/CORE STATUS
TECHNICAL SERVICES ENGINEERING SUPERVISOR/SENIOR PLANT ENGINEER

Remarks

Time	Description

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 Ventilaiton	
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. _____

4. Secondary flow I _____ Klb/hr. II _____ klb/hr.

5. Status of aux. boilers.

_____

_____

_____

_____

_____

_____

ASSESSMENT OF PLANT/CORE STATUS
TECHNICAL SERVICES ENGINEERING SUPERVISOR/SENIOR PLANT ENGINEER

Remarks

Time	Description

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 Ventilaiton	
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. _____

4. Secondary flow I _____ Klb/hr. II _____ klb/hr.

5. Status of aux. boilers.

_____ _____

_____

_____

_____

_____

_____

ASSESSMENT OF PLANT/CORE STATUS
TECHNICAL SERVICES ENGINEERING SUPERVISOR/SENIOR PLANT ENGINEER

Remarks

Time	Description

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 Ventilaiton	
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. _____

4. Secondary flow I _____ Klb/hr. II _____ klb/hr.

5. Status of aux. boilers.

_____

_____

_____

_____

_____

_____

ASSESSMENT OF PLANT/CORE STATUS
TECHNICAL SERVICES ENGINEERING SUPERVISOR/SENIOR PLANT ENGINEER

Remarks

Time	Description

TSC DIRECTOR CHECKLIST

		TIME
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.	Radiological Assessment (Actual) obtained.	
	Release Rate	_____
	Curies Release	_____
	Dose Rate	_____
	Dose Received	_____
	Protective Action Guide	_____
5.	Radiological Assessment (Projected) obtained from the CR or FCP	
	Release Rate	_____
	Curies Released	_____
	Dose Rate	_____
	Dose Received	_____
	Protective Action Guide	_____
6.	Personnel Accountability Status obtained	
	Visitor's Center notified	_____
	Initial (from Shift Supervisor - may pass through the CR Director)	_____
	Continuing (from PCC Director)	_____

7. Injury Reports Obtained

   No. of Injured _____

   Hospital Called _____

   Relatives _____

   Emergency Transport _____

8. PCC Evacuation Recommended _____

9. Estimates of emergency repairs to equipment/ instruments/systems obtained _____

10. Requests for Additional Personnel Made

    Site Personnel _____

    Other PSC _____

    Contract _____

11. Personnel Exposure Histories Maintained

    In-Plant _____

    PCC _____

12. In-Plant Survey Teams Status

    Dispatched _____

    Report Received _____

13. Site Survey Teams Status

    Dispatched _____

    Report Received _____

14. Exposure criteria for emergency workers being followed (see RERP-EXP) _____

TSC DIRECTOR CHECKLIST

		TIME
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.	Radiological Assessment (Actual) obtained.	
	Release Rate	_____
	Curies Release	_____
	Dose Rate	_____
	Dose Received	_____
	Protective Action Guide	_____
5.	Radiological Assessment (Projected) obtained from the CR or FCP	
	Release Rate	_____
	Curies Released	_____
	Dose Rate	_____
	Dose Received	_____
	Protective Action Guide	_____
6.	Personnel Accountability Status obtained	
	Visitor's Center notified	_____
	Initial (from Shift Supervisor - may pass through the CR Director)	_____
	Continuing (from PCC Director)	_____

7. Injury Reports Obtained

   No. of Injured _____

   Hospital Called _____

   Relatives _____

   Emergency Transport _____

8. PCC Evacuation Recommended _____

9. Estimates of emergency repairs to equipment/ instruments/systems obtained _____

10. Requests for Additional Personnel Made

    Site Personnel _____

    Other PSC _____

    Contract _____

11. Personnel Exposure Histories Maintained

    In-Plant _____

    PCC _____

12. In-Plant Survey Teams Status

    Dispatched _____

    Report Received _____

13. Site Survey Teams Status

    Dispatched _____

    Report Received _____

14. Exposure criteria for emergency workers being followed (see RERP-EXP) _____

Work/Datasheet Checklist Control List

Worksheet No.	Title	Number Copies
None	N/A	N/A

Datasheet No.		
1	Assessment Fact Sheet - TSC Director	10
2	Assessment of Plant/Core Status	5

Checklist No.		
1	TSC Director Checklist	2

FORMS USE REPORTING SHEET

Technical Clerk and Recorder:

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: _____

Technical Clerk and Recorder_____ *

Date Received_____

Date Replaced_____

* Technical Clerk and Recorder 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.

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RADIOLOGICAL EMERGENCY RESPONSE PLAN - PLANT

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
	Table of Contents	3	10-08-82
	Introduction	3	10-08-82
Section 1	Definitions	3	10-08-82
Section 2	Scope and Applicability	4	01-03-83
Section 3	Summary of the Radiological Emergency Response Plan	3	10-08-82
Section 4	Emergency Conditions	4	01-03-83
Section 5	Organizational Control of Emergencies	4	01-03-83
Section 6	Emergency Measures	4	01-03-83
Section 7	Emergency Facilities and Equipment	3	10-08-82
Section 8	Maintaining Emergency Preparedness	3	10-08-82
Section 9	Recovery	3	10-08-82
Section 10.A	Agreement Letters and Summary of Referenced Interfacing Emergency Plans	4	01-03-83
Section 10.B	Sample Dose Calculations	3	10-08-82
Section 10.C	Maps of Exclusion Area, Low Population Zone, Environmental Dosimetry, Population Densities	3	10-08-82
Section 10.D	Titles of Written Procedures that Implement or Supplement the Plan	4	01-03-83
Section 10.E	Listings of Emergency Kits, Protective Equipment and Supplies Stored and Maintained for Emergency Purposes	4	01-03-83

RADIOLOGICAL EMERGENCY RESPONSE PLAN - PLANT

NO.	SUBJECT	ISSUE NUMBER	EFFECTIVE DATE
Section 10.F	Cross Reference to NUREG-0654, Rev. 1	4	01-03-83

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 2

ISSUANCE AUTHORIZED BY			
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

2.0 Scope and Applicability

This RERP is applicable to the Fort St. Vrain Nuclear Generating Station which is owned and operated by the Public Service Company of Colorado and is located near Platteville, Colorado. The plant RERP describes: (1) onsite emergency organizational and operational roles, functions, and responsiblities; (2) notification, communication, and coordination between station and offsite emergency centers and authorities; and, (3) specifies the level and extent of station and PSC involvement in overall emergency response actions and activities. The RERP describes advance planning developed for radiological emergency situations. Specific procedures to implement the RERP are contained in station operating, emergency, radiochemistry, health physics, security, administrative, and station RERP implementing procedures.

Successful response to a Fort St. Vrain Nuclear Generating Station emergency situation cannot be achieved by uncoordinated action on the part of station or state/local governmental emergency forces. Effective emergency response operations are, and must be, an amalgam of station and governmental action. The necessity of joint planning and action for effective emergency response is recognized and reflected in the overall preparedness actions stipulated in this document and its counterpart, the State of Colorado Radiological Emergency Response Plan (State RERP).

As a result, the approach and emergency response actions contained in this plant Radiological Emergency Response Plan and those set forth in the State RERP are not only compatible, but complement one another. When combined, the plant and state/local RERPs constitute a single and integrated response plan and program for dealing with radiological emergencies at the Fort St. Vrain Nuclear Generating Station.

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 4

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

4.0 Emergency Conditions

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

4.1 Classification

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

4.1.1 NOTIFICATION OF UNUSUAL EVENT

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

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

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

4.1.2 ALERT

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

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

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

4.1.3 SITE AREA EMERGENCY

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

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

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

4.1.4 GENERAL EMERGENCY

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

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

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

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

4.2 Offsite Accident Assessment

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

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

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

4.3 Spectrum of Possible Accidents and Initiating Events

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

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

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

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

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-1

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

NOTIFICATION OF UNUSUAL EVENT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Indication or alarms on radiological effluent monitors not functional.	11. Data Logger Alarm/ Alarm Summary indication of non-operational alarm or indication on: a) RT-7324-1,2 and RT 4803; or b) RT-7325-1,2, RT 4802, and RT 7343?-1; or c) RT 7343?-2 and RT 4801; or d) RT 6212 and RT 6213 NOTE: THIS WILL BE IN EFFECT UPON COMPLETION OF CN-1307D		

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

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
1. Rapid, severe fuel particle coating failure.	1. Coolant Inventory of a) greater than 2.4 (Ci)(Mev) Beta-Gamma lb b. circulating I-131 activity equivalent greater than 24Ci c. plate out I-131 greater than 1×10^4 Ci. d. SR 5.2.6 or SR 5.2.11 results.	• Inform State and/or local authorities of ALERT status/cause as declared	• Provide assistance, if requested (fire, security, medical, etc.)
2. Rapid, gross failure of one steam generator reheat section with loss of offsite power.	2. Loop 1 Hot Reheat Header (HRH) activity high (5mrem/hr); or, Loop 2 HRH activity high (5mrem/hr), accompanied by 230 KV OCB trips and RAI undervoltage/ loss of power alarm.	• Augment resources by activating TSC, PCC, and ICP. • Assess and respond.	• Augment resources by activating ICP and State/local EOCs.
3. Primary coolant pressure decay (to a value greater than 100 psi less than normal pressure, accompanied by area and stack radiation monitor alarms).	3. PAL 9335 PAL 9347 PAL 9359 and area monitor or stack monitor alarm.	• Dispatch onsite monitoring teams with associated communications. • Provide periodic plant status updates to offsite authorities as conditions warrant (at least every 15 minutes.)	• Place key emergency personnel (including monitoring teams and associated communications) on standby status.

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
4. High radiation levels or high airborne contamination which indicates severe degradation in control of radioactive materials. (Increase by factor of 1,000 over normal.) e.g., lifting PCRV relief valve or abnormal release to cooling tower blowdown.	4. RT 7312 CAM(s) alarm RT 6212 RT 6213 RT 93252-12 Area Monitors Alarms with corresponding meter readings on area or process monitors.	•Provide meteorological assessments to offsite authorities and, if releases are occurring, dose estimates for actual releases. •Terminate by verbal summary to offsite authorities followed by written summary within 8 hours. or •Escalate to a more severe class.	•Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections if actual releases substantially exceed technical specification limits. •Maintain ALERT status until verbal termination. or •Escalates to a more severe class.
5. Loss of offsite power and vital onsite AC power for up to 30 minutes.	5. 230 KV OCB trips and RAT undervoltage/loss of power alarm accompanied by 4 Kv bus undervoltage, 480V bus undervoltage, and Diesel Trouble alarms.		
6. Loss of all vital DC power for up to 30 minutes.	6. DC bus 1 less than 10 volts, and DC bus 2 less than 10 volts.		
7. Loss of primary coolant forced circulation for between 2 and 5 hours.	7. All he flow indicators read zero.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
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 sub-critical condition by scram of the control rods.	9. a) Indication of insufficient rods inserted; or, b) neutron count rate not decreasing.		
10. Serious fire which could lead to substantial degradation of plant safety systems.	10.a) any of various alarms on Fire Control Alarm Panel; b) Fire Pump 1A auto start; or, c) verbal reports.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

Initiating Events	EAL (Alarm, Instrument Reading, etc.)	PSC Actions	State/Local Actions
11. Radiological effluents exceed 10 times technical specification instantaneous limits.	11. RI 7324-1 indicating a) greater than or equal to 2.5×10^{-2} micro Ci/cc mixed noble gas b) RI 7324-2 indicating greater than or equal to 2.5×10^{-2} micro Ci/cc mixed noble gas c) RI 7325-1 indicating greater than or equal to 7.0×10^{-8} micro Ci/cc - I-131 d) RI 7325-2 indicating greater than or equal to 7.0×10^{-8} micro Ci/cc - I-131 e) RI 73437-1 indicating greater than or equal to 7.0×10^{-8} micro Ci/cc - I-131 f) RI 4801 indicating greater than or equal to 7.0×10^{-8} micro Ci/cc - I-131		
12. Ongoing security compromise.	12.a) As observed or reported; b) Guard Station Trouble alarm; or, c) Guard Station Acknowledge alarm.		

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-2

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

ALERT

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-3

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

SITE AREA EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-4

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

GENERAL EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TABLE 4.1-4

EMERGENCY ACTION LEVELS (EALs) & CORRESPONDING ACTIONS

GENERAL EMERGENCY

FORT ST. VRAIN NUCLEAR GENERATING STATION

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

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 5

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

5.0 Organizational Control of Emergencies

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

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

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

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

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

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

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

5.2.1 Direction and Coordination

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

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

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

1. PSC onsite and offsite emergency functions;

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

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

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

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

6. Continuity of emergency organization resources.

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

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

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

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

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

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

5.2.2 Plant Staff Emergency Assignments

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

a. Technical Support Center

1. Plant Condition Assessment

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

2. Engineering & Technical Analysis

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

3. Health Physics/Radiological Monitoring

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

4. Radiological Assessment

Assess offsite radiological doses and consequences, determine potentially affected offsite areas, and confer with the Technical Support Center Director and the Radiological Assessment Coordinator at the FCP regarding plant status, offsite dose computations, and protective actions (Reactor Engineer).

5. Emergency Maintenance

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

6. Emergency I&C Support

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

7. Administrative & Logistics Support

Provide needed technical documents, communications and analytical equipment, clerical assistance, and food, transportation/housing support. (Primary: Clerical Supervisor; Alternate: Technical Clerk and Recorder)

8. Computer Services

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

b. Personnel Control Center

1. Personnel Accountability

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

2. Operating Staff Support

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

3. Maintenance, Repair & Damage Control

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

4. Hazards Control

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

5. Security

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

c. Control Room

1. Plant Control

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

2. Plant Operation

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

3. Technical Assistance

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

5.3 Augmentation of Onsite Emergency Organization

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

5.3.1 PSC Headquarters Support

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

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

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

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

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

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

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

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

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

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

5.3.2 Local Services Support

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

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

5.3.3 Contract Support

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

5.4 Coordination with Participating Government Agencies

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

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

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

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

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

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

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

1. State Division of Disaster Emergency Services

2. Weld County Sheriff's Office

3. Colorado State Patrol

4. Colorado Department of Health

Radiological monitoring, and health units, as required.

Public information representative.

5. Public Service Company of Colorado

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

6. Others, as notified/required.

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

The responsibilities of PSC personnel assigned to the FCP include:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

FORM 372-22-3643

FIGURE 5.1-1

NORMAL STATION ORGANIZATION

FORT ST. VRAIN NUCLEAR GENERATING STATION

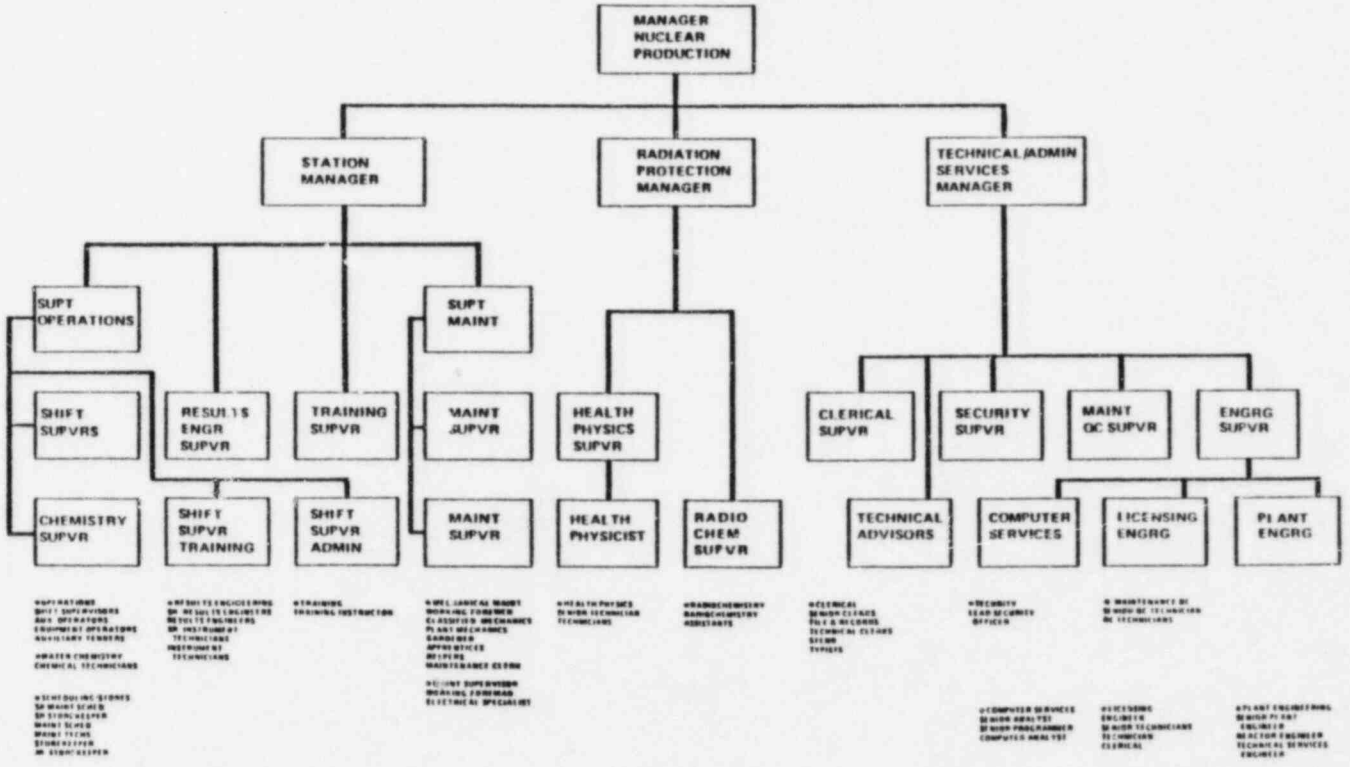
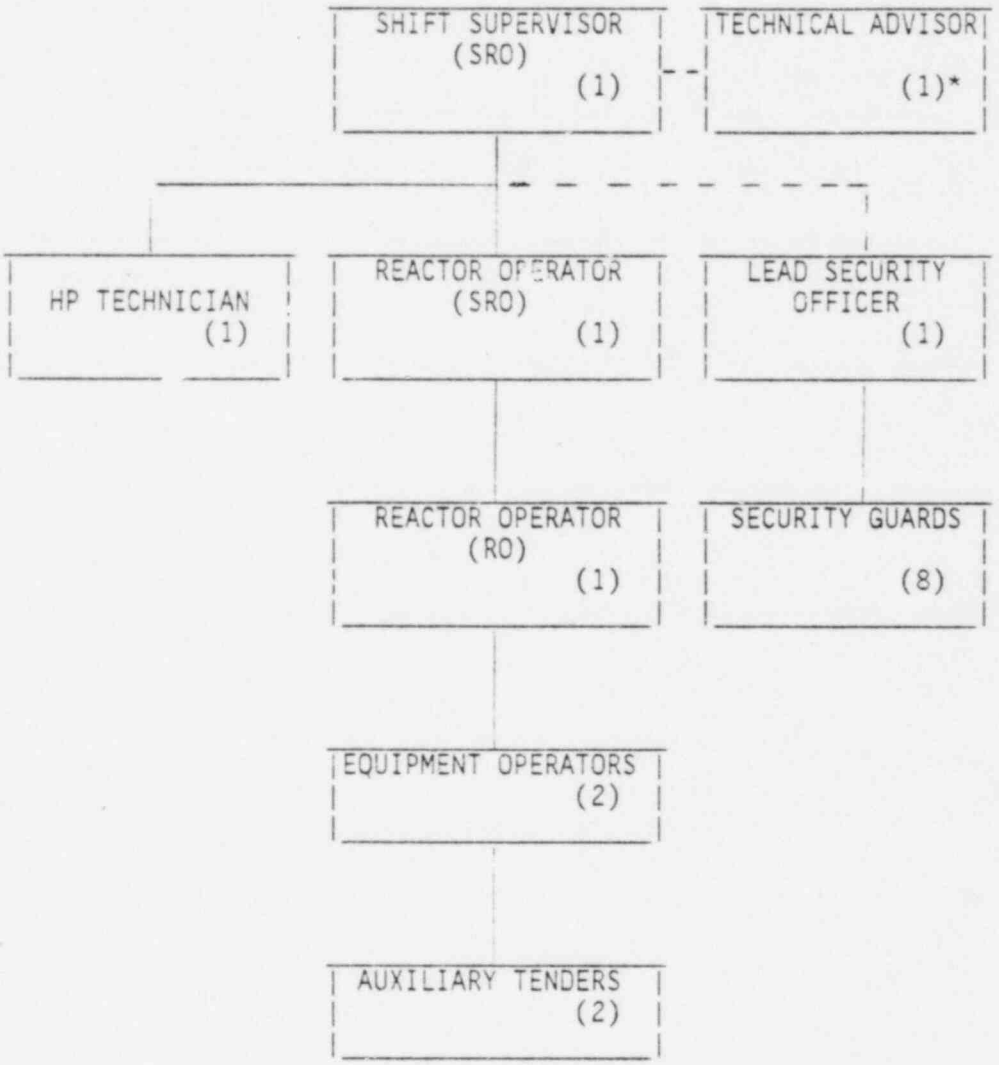


FIGURE 5.1-1

Figure 5.1-2

NORMAL SHIFT ORGANIZATION

Fort St. Vrain Nuclear Generating Station



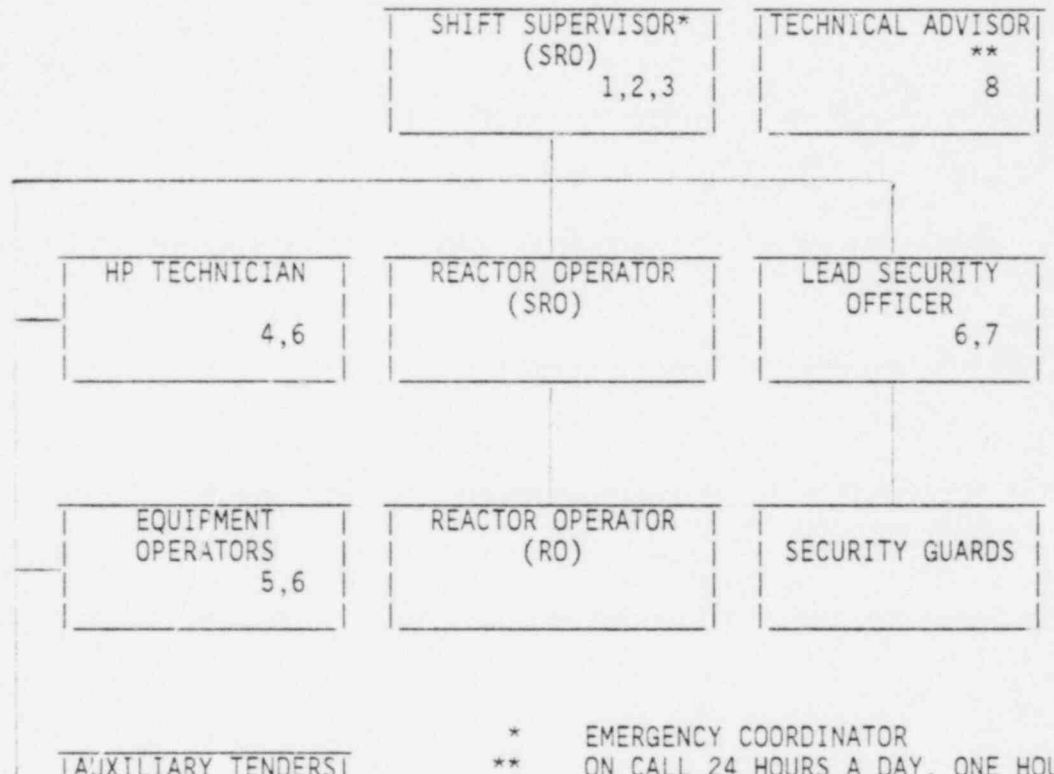
NOTES:

SRO	SENIOR REACTOR OPERATOR.
RO	REACTOR OPERATOR.
HP	HEALTH PHYSICS TECHNICIAN
*	TECHNICAL ADVISOR IS ON CALL 24 HOURS PER DAY AND WILL REPORT TO THE CONTROL ROOM WITHIN 1 HOUR.
--------	LINE OF AUTHORITY
-- -- --	COMMUNICATION

Figure 5.2-1

EMERGENCY ORGANIZATION
(NOTIFICATION OF UNUSUAL EVENT)

Fort St. Vrain Nuclear Generating Station



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

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

FORM 372-22-3643

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

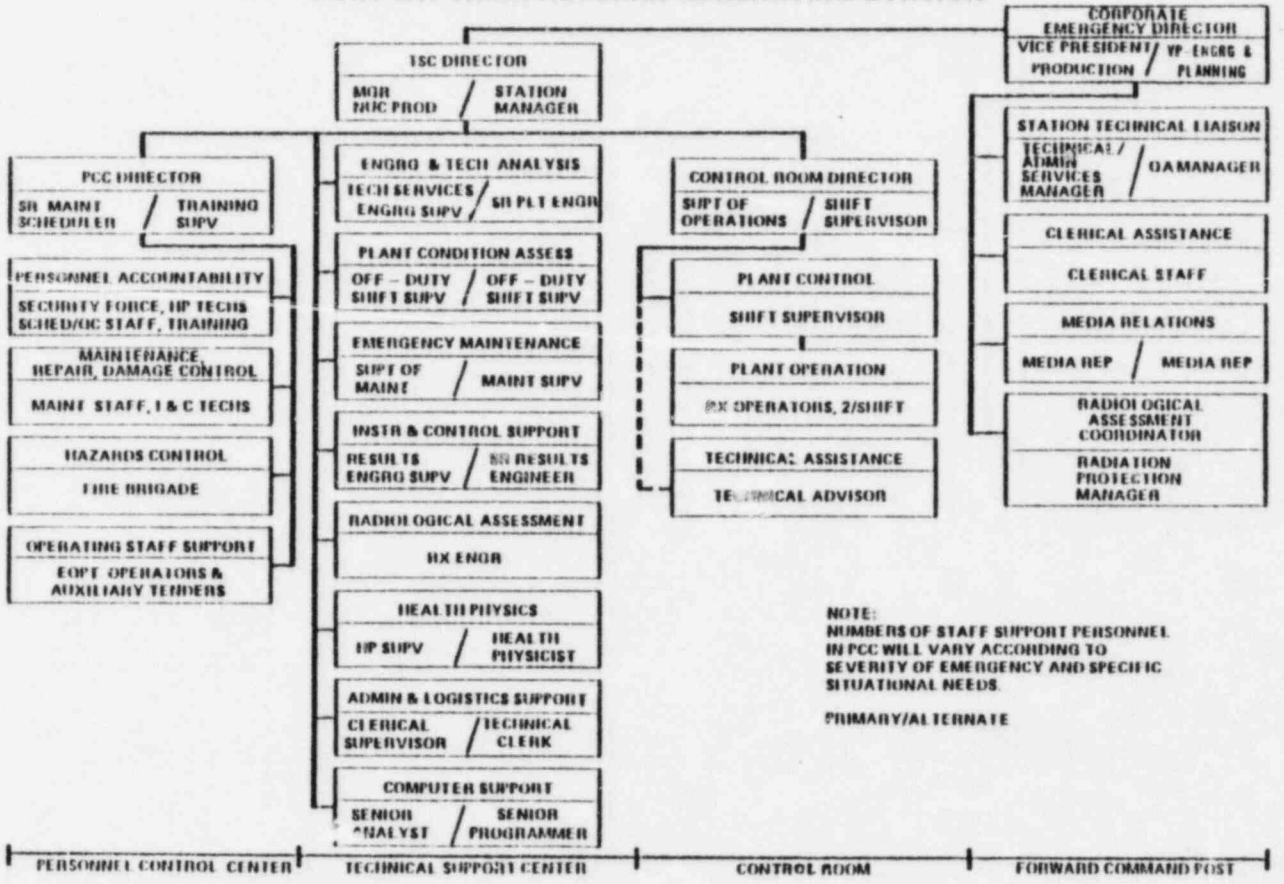


FIGURE 5.2-2

Figure 5.2-3

ONSITE-OFFSITE EMERGENCY ORGANIZATION

Fort St. Vrain Nuclear Generating Station

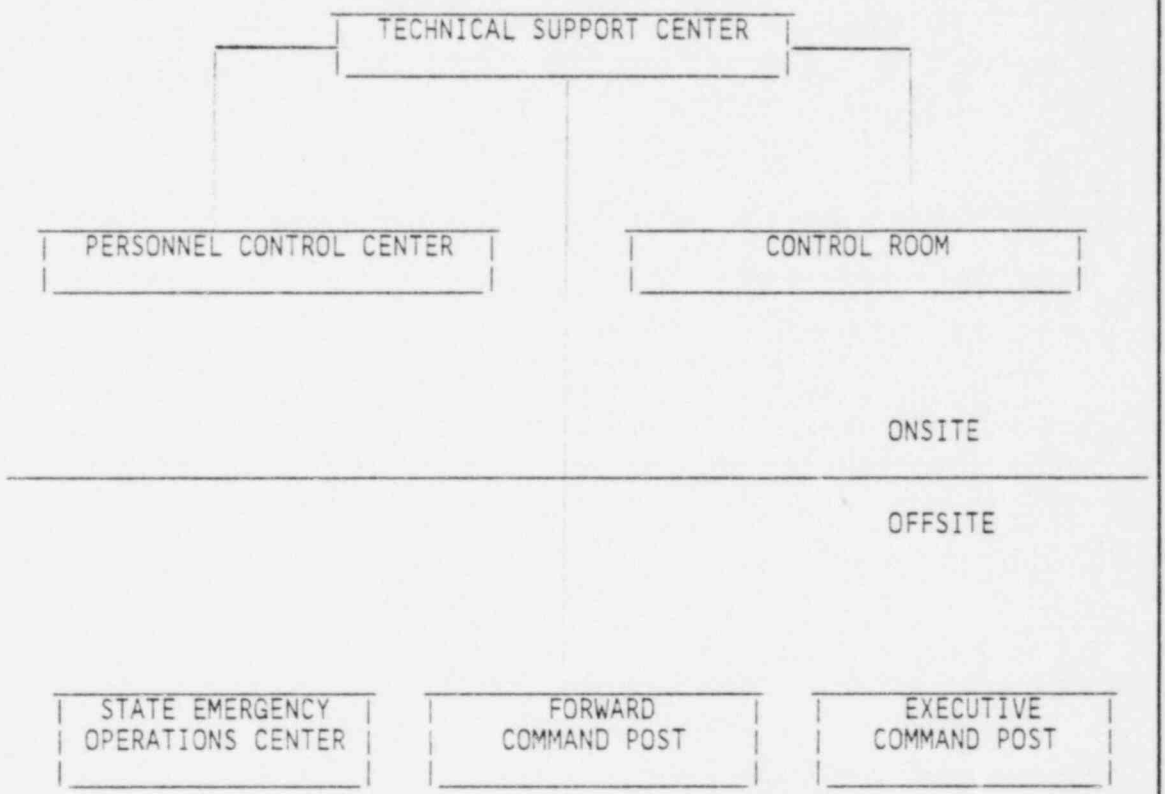
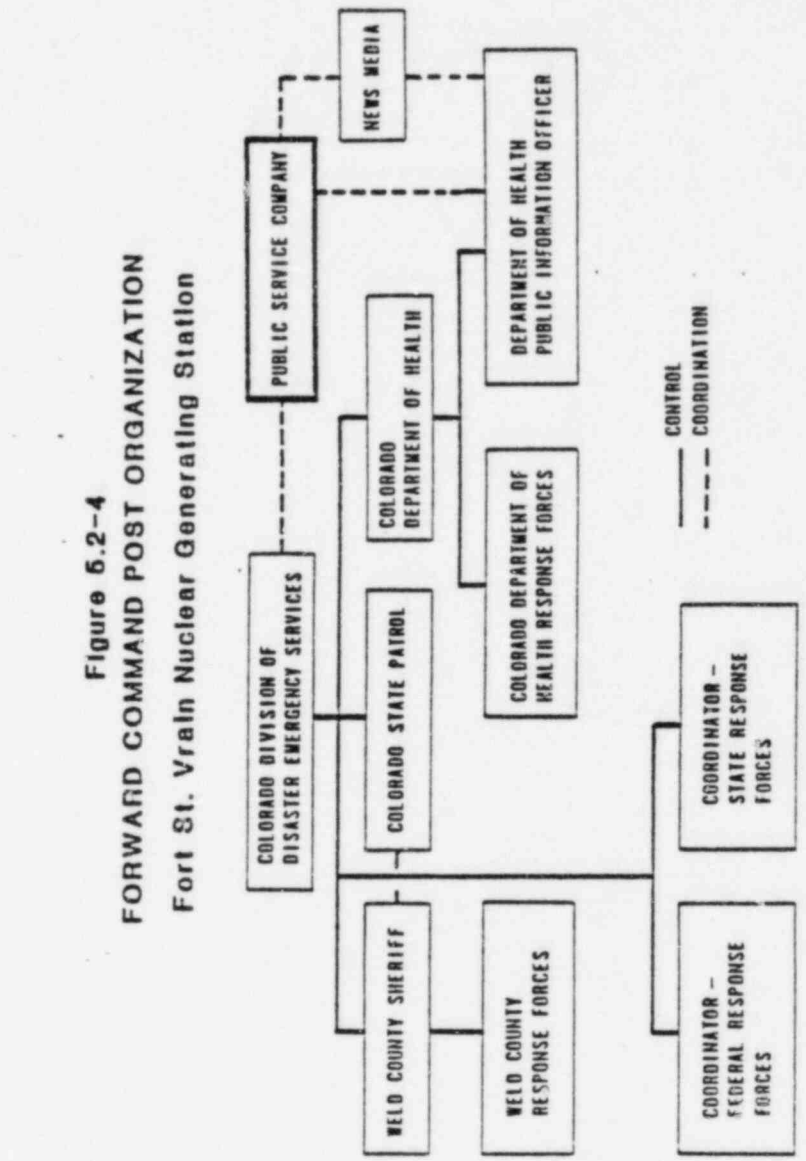


FIGURE 5.2-4

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



FORM 372-22-3643

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

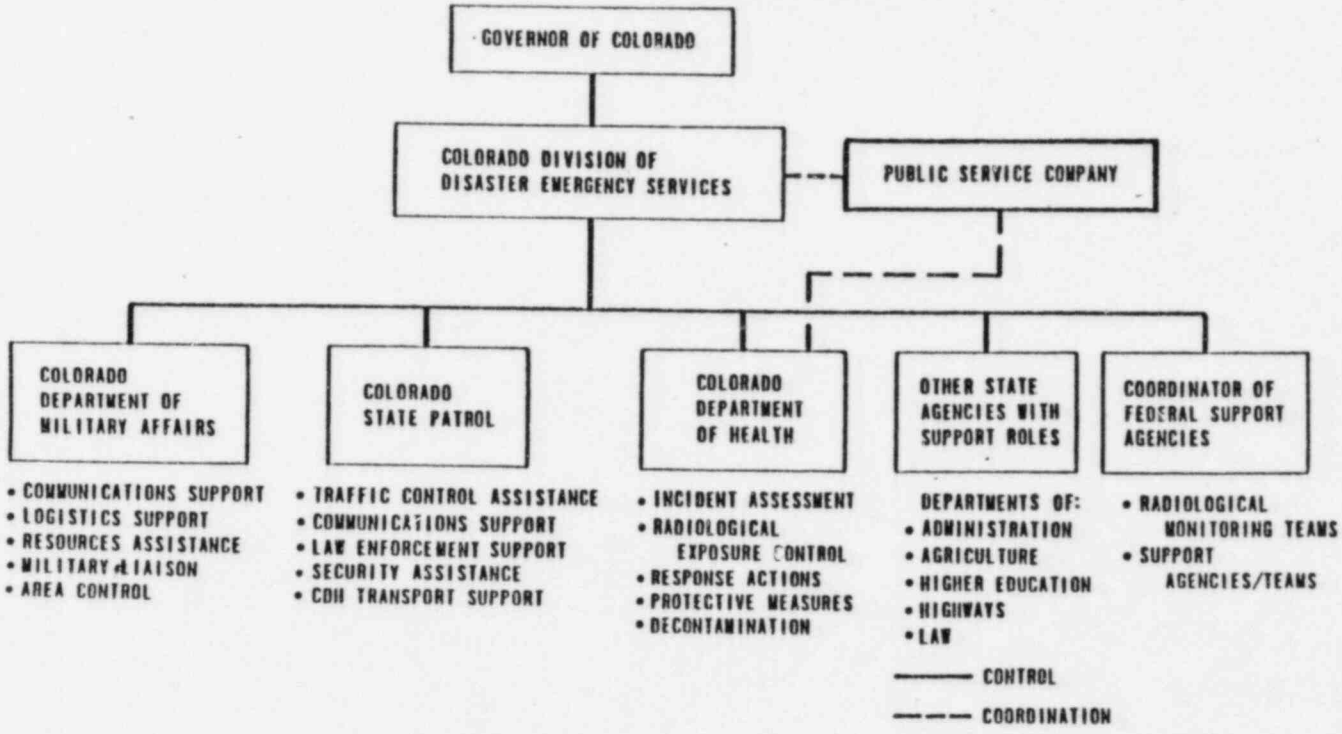


FIGURE 5.2-5

FORM 372-22-3643

Figure 5.2-6

EXECUTIVE COMMAND POST ORGANIZATION

Fort St. Vrain Nuclear Generating Station

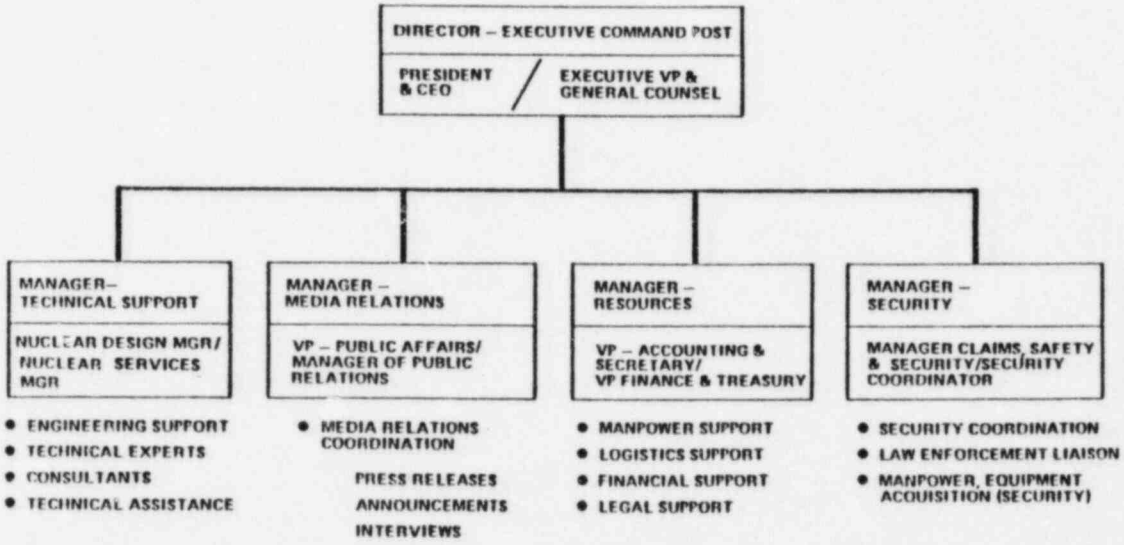


FIGURE 5.2-6

FIGURE 5.2-7

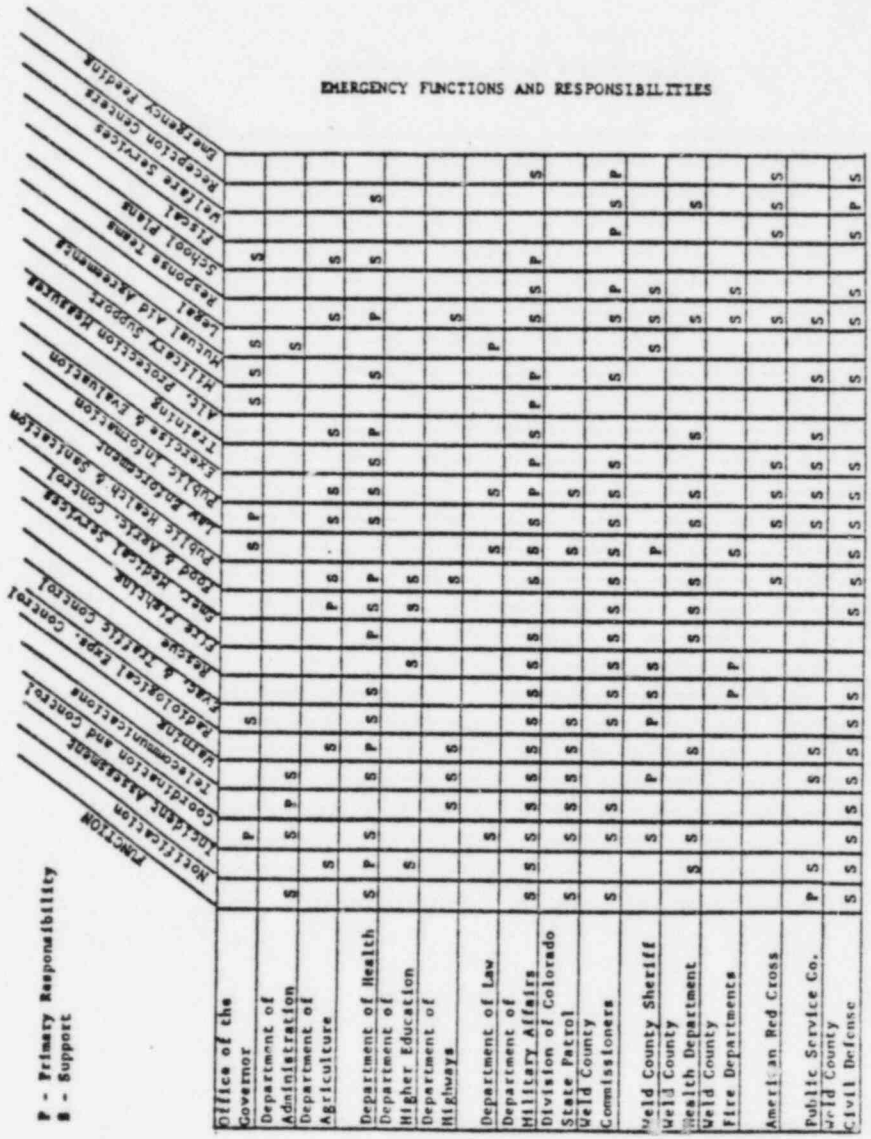


FIGURE 5.2-7
EMERGENCY FUNCTIONS
AND RESPONSIBILITIES MATRIX

Fort St. Vrain Nuclear Generating Station

TABLE 5.3-1

LOCAL AGENCY AND CONTRACT SUPPORT SERVICES

Fort St. Vrain Nuclear Generating Station

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

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

Contract Agency	Support Service
General Atomic Corporation San Diego, California	NSSS, Reactor Physics, and Systems Modification Assistance
Stone & Webster Engineering Corp. Denver, Colorado	Engineering/Construction/ System Modification Assistance
Stearns-Roger Engineering Corp. Glendale, Colorado	Construction Assistance
Nuclear Power Consultants, Inc. Rockville, Maryland	Engineering/Quality Assurance Assistance
S.M. Stoller Corporation Boulder, Colorado	Core Physics Analysis
Proto-Power Management Corp. Groton, Connecticut	Technical Assistance - Nuclear/Balance of Plant Systems

TABLE 5.3-1 (Continued)

LOCAL AGENCY AND CONTRACT SUPPORT SERVICES

Fort St. Vrain Nuclear Generating Station

Contract Agency	Support Service
NUS Corporation Portland, Oregon	Safety-Training Assistance
Controls For Environmental Pollution, Inc. Santa Fe, New Mexico	Chemical-Radiochemical Laboratory Analysis

Contract Agency	Support Service
Colorado State University Fort Collins, Colorado	Environmental Monitoring Assistance
St. Luke's Hospital Denver, Colorado	Medical Treatment/Decontamination Assistance
Dr. Keith J. Schiager Fort Collins, Colorado	Health Physics Consultant
Dr. Hilding G. Olson Fort Collins, Colorado	Nuclear Engineering Consultant
Donald T. Klodt Denver, Colorado	Metallurgical Consultant

TABLE 5.4-1

SUMMARY OF STATE/LOCAL INVOLVEMENT

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

TABLE 5.4-1 (Continued)

SUMMARY OF STATE/LOCAL INVOLVEMENT

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

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 6

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

6.0 Emergency Measures

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

6.1 Activation of Emergency Organization

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

Upon incident assessment and classification, offsite notification will consist of three telephone contacts as indicated in Figure 6.1-1. The Nuclear Regulatory Commission (Region IV) is notified via "hot line". The

state and local emergency response organization is notified by a telephone call to the Weld County Communications Center. The PSC emergency organization is notified by a single call to the Public Service Company Operator at corporate headquarters. After call authentication, the Weld County Communications Center notifies the Weld County Sheriff's Office which is assigned responsibility for notifying the affected population. The Public Service Company operator notifies the appropriate fanout list set forth in emergency plan notification procedures. The initial emergency message for NOTIFICATION OF UNUSUAL EVENT (Figure 6.1-2) is based upon an agreement between the Governor of Colorado and PSC. The initial emergency message for ALERT, SITE AREA EMERGENCY, and GENERAL EMERGENCY classes, together with followup messages for these accident levels are contained in Figures 6.1-3 and 6.1-4.

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

Technical Support Center

Command (Onsite)

Plant Condition Assessment

Recommendation of Corrective Actions

Radiological Consequence (Dose Projections)

Health Physics Assessment

Notification/Communications

Onsite Protective Action

Offsite Communications

Control Room

Assessment of Plant Operating Conditions

Implementing Corrective Actions

Fire Fighting Direction

Personnel Accountability (Initial)

Personnel Control Center

Personnel Accountability (Continued)

Emergency Repair/Damage Control

Onsite/Inplant Surveys

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

Search and Rescue/First Aid

Fire Brigade

Security

Forward Command Post (PSC functions only)

Command (PSC Overall)

Government Notification/Communications

Radiological Assessment Coordination

Logistics Support

Media Relations

6.2 Assessment Actions

The assessment of plant conditions, radiation levels, and offsite consequences is initially coordinated by the Shift Supervisor (Emergency Coordinator). Upon relief of the Shift Supervisor by the Superintendent of Operations and activation of the Technical Support Center (TSC) and the Personnel Control Center (PCC), these duties will be assumed by the emergency organization described in Section 5.0. The different types of assessment actions are described in Table 6.2-1. Assessment will continue

throughout the emergency period. Continued assessment may result in reclassification of the incident and consequent alteration in emergency response actions.

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

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

The site has a permanent meteorological installation which indicates and records wind speed and direction and temperature differentials on a continuous basis in the Control Room. Additional readout capability is provided in the TSC via plant computer links. In the event that meteorological information in both the Control Room and TSC is unavailable, arrangements and procedures have been developed to secure necessary meteorological information from the 10 meter National Oceanic and Atmospheric Administration (NOAA) tower located onsite to the North of the plant.

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

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

- Notes present weather conditions (wind speed and direction, atmospheric stability, cloud cover, and

precipitation) and calls the Stapleton Airport National Weather Service to obtain a forecast for the next 12 hours to anticipate changes in weather conditions that might affect dispersion and alter the zones affected.

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

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

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

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

Air concentration levels are verified by field monitoring teams consisting of an HP technician and an assistant deployed in captive vehicles with portable emergency

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

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

6.3 Corrective Actions

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

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

- Fire Fighting

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

- Damage Control, Repair, and Decontamination

  For minor emergencies, station personnel will handle cleanup, repair, and damage control. For more major site emergencies, the support of company

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

6.4 Protective Actions

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

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

6.4.1 Protective Cover, Evacuation, and Personnel Accountability

a. Onsite

Protective actions for onsite personnel will be taken whenever a radiological emergency has occurred, or may occur, which will result in concentrations of airborne activity or radiation levels in excess of normal limits for a specified area or areas, that cannot be readily controlled. In addition, protective actions will be taken for onsite personnel in other emergency situations such as fires, floods, and tornadoes where personnel safety is threatened. Notification of onsite personnel will be by actuation of plant alarm systems, telephone calls, and Gai-tronics announcements as applicable. Notification will be accomplished as soon as assessment actions permit a determination of the emergency class and corresponding actions. Personnel will be notified of appropriate actions to be taken at their respective emergency stations.

1. Personnel Accountability

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

2. Security and Access Control

The security program at the Fort St. Vrain Nuclear Generating Station is designed to meet the access control requirements of 10 CFR 73.55. Support personnel reporting to the station during an emergency will assemble at the Personnel Control Center. The PCC Director will coordinate the entry of required personnel through normal security routine.

Provisions to restrict access to areas of the site outside the fenced protected area have been made. The PCC Director will assign designated security personnel to control traffic access to the owner-

controlled area. Access control will be performed with the aid and cooperation of the Weld County Sheriff's Department.

3. Evacuation

The PCC Director will assure survey of the designated PCC to determine habitability, establish a controlled area at the appropriate PCC location (either the GA Field Office, Engineering/QA complex, Warehouse, or Stearns-Roger Craft Shops dependent upon prevailing wind direction), and prepare to receive personnel, should plant evacuation be required.

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

If a plant evacuation was deemed appropriate, there are four Personnel Control Centers within the Owner Protected Area to evacuate to. These PCCs are the QA/Engineering Complex, GA Field Office, Warehouse, and Stearns-Roger Craft Shops. Complete Emergency Kits, including radiological monitoring equipment and field radios are stored at the QA/Engineering Complex and the Warehouse. In the event that the Field Office or Craft Shops are utilized as the PCC, emergency kits will be transferred to that facility.

The selection of a PCC is largely dependent upon the prevailing wind condition and the accessibility of that location. Personnel will be monitored for contamination, and accountability checks will be made by PCC staff as appropriate. Personnel onsite, but

outside of the protected (fenced) area, will be notified of the emergency and directed to buildings in areas unaffected by the event. Should evacuation of the site become necessary, privately owned vehicles will be used. Tenants on PSC property are notified by telephone of actions considered necessary to their protection (PCC procedure emergency call list).

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

4. Rescue Operations

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

b. Offsite

The Emergency Coordinator will recommend appropriate initial protective actions to offsite authorities, to include either evacuation or sheltering, as alternatives,

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

Protective actions for offsite areas are initiated by state/local emergency response organizations as detailed in the State RERP. The State of Colorado has adopted the USEPA Protective Action Guides (3) for initiating actions to protect the general public. Plans for activating state/local emergency response agencies and performing various protective actions and services are specified in the State RERP. Estimated sector evacuation times are shown in Appendix C, Figure 10.C-2. These evacuation times were formally published in detail in PSC report "Evaluation Time Study of the 10-Mile Radius Area About the Fort St. Vrain Nuclear Generating Station," as transmitted to the U.S. Nuclear Regulatory Commission April 1, 1981 (P-81110). These estimates have been modified in RERP implementing procedure RERP-PAG, "Protective Action Guideline Recommendations" to account for use of the tone alert Early Warning Alert (EWA) System. Approximate initiation times for these protective actions are shown in Table 6.4-1.

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

implement notification means is a State of Colorado responsibility (State RERP, Annex C).

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

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

6.4.2 Use of Onsite Protective Equipment and Supplies

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

6.4.3 Contamination Control Measures

a. Plant Site

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

1. Radioactive Contamination of Personnel

- Controls have been established to insure that levels of removable contamination outside radiologically controlled areas will be maintained at less than allowable limits of 10dpm/100cm^2 alpha activity and 100dpm/100cm^2 beta-gamma activity.

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

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

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

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

2. Radioactive Contamination of Equipment

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

- Equipment and tools will be unconditionally released for use

outside the area only if removable contamination and radiation levels are less than allowable limits previously stated.

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

b. Offsite

For areas beyond the site boundary, Colorado Department of Health radiation monitoring teams will identify levels and control access. For areas where public access normally occurs, criteria for offsite areas will be applied. Criteria and measures for contamination control in offsite areas are detailed in the State RERP.

6.5 Aid to Affected Personnel

6.5.1 Emergency Personnel Exposure Criteria

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

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

6.5.2 Decontamination and First Aid

Provisions have been made to assist personnel who are injured, or who may have received high radiation doses. There are personnel onsite who are trained in first aid and decontamination procedures. In addition, onsite decontamination areas are equipped with decontamination facilities

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

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

6.5.3 Medical Transportation

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

6.5.4 Medical Treatment

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

REFERENCES

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

(2) USNRC, Regulatory Guide 1.145, Atmospheric Dispersion Models For Potential Accident Consequence Assessments at Nuclear Power Plants, August 1979.

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

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

FIGURE 6.1-1

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

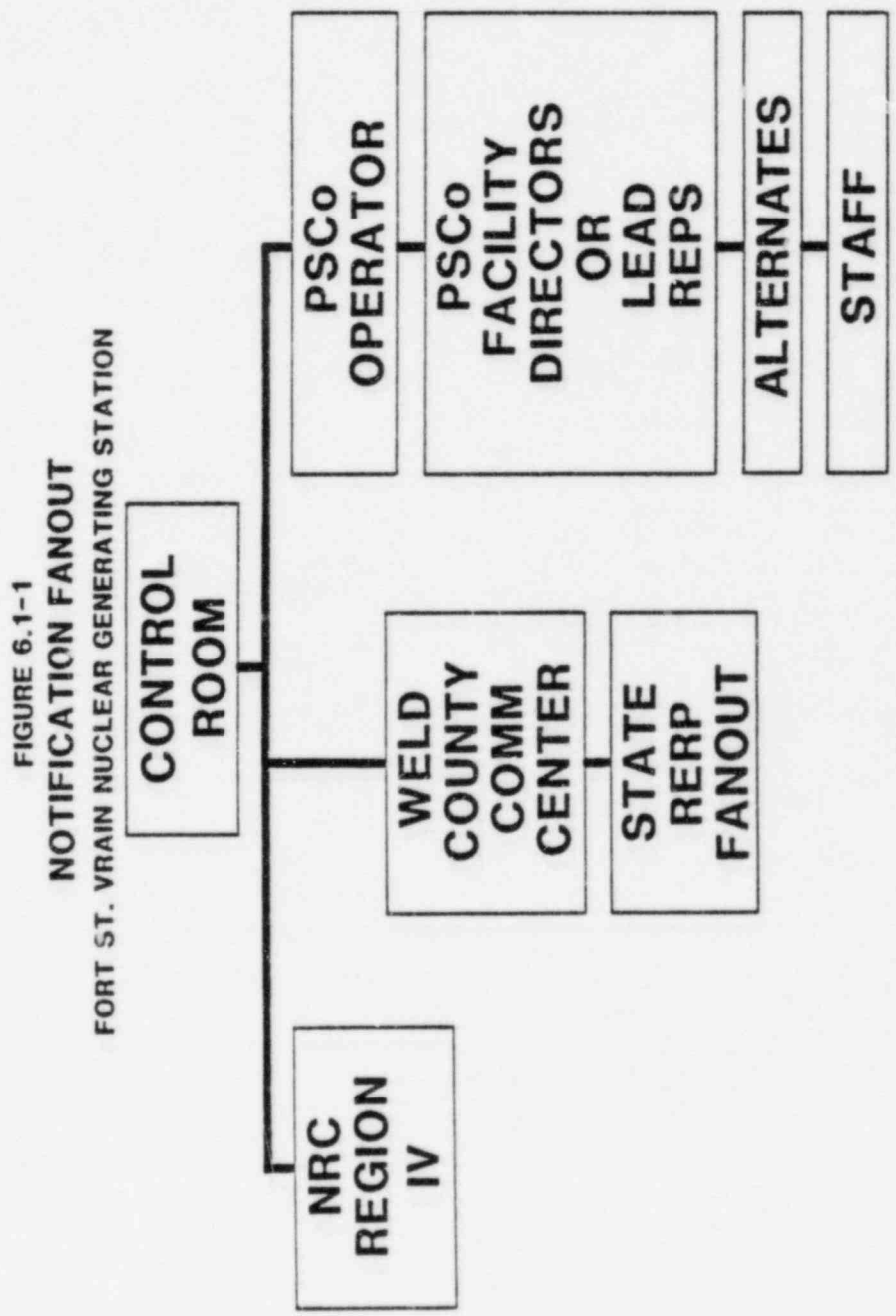


Figure 6.1-2

INITIAL MESSAGE CONTENT

(NOTIFICATION OF UNUSUAL EVENT)

Fort St. Vrain Nuclear Generating Station

NOTIFICATION BY PUBLIC SERVICE COMPANY OF COLORADO

NUMBER WILL RING AT THE STATE EOC OFFICE DURING NORMAL WORKING HOURS.	CALL (1) (2)	NUMBER WILL RING AT THE COLORADO STATE PATROL DISPATCHER DURING OFF NORMAL HOURS.

1. Name and Identity of Caller_____

2. Date of Incident_____ Time of Incident _____

3. General Category of Incident

   _____ Unplanned radiological release _____ Fire

   _____ Fuel Failure _____ Spent Fuel Incident

   _____ Natural Phenomenon

   _____ Earthquake _____ Flood _____ Tornado _____ Winds

   _____ Unusual Hazard

   _____ Aircraft _____ Explosion _____ Toxic Material _____ Other

4. Description of Incident: _____

_____

_____

_____

_____

_____

FORM 372-22-3643

5. Actions Taken: _____

_____

_____

_____

_____

6. Status:

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

_____ Under control by on-site staff. Will keep State 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 incident involve off-site releases or the potential for off-site release that would affect the general health and safety of the public as the result of Fort Saint Vrain conditions?

_____ Yes _____ No

9. If yes, provide a general description: _____

_____

_____

_____

_____

_____

_____

_____

BELOW FOR USE BY RECIPIENTS:

10. Received by _____ Date _____ Time _____

11. Verification of call to be made to

Call verified by _____ Date _____ Time _____

_____

_____

FIGURE 6.1-3

INITIAL EMERGENCY MESSAGE

(ALERT, SITE AREA EMERGENCY, GENERAL EMERGENCY)

Fort St. Vrain Nuclear Generating Station

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

OR

(c) A radioactive release IS, Repeat IS, taking place and we recommend that evacuation of areas _____ be considered.

4. (For ALERT level emergencies indicate whether or not activation of offsite facilities is required).

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

FIGURE 6.1-4

FORT ST. VRAIN NUCLEAR GENERATING STATION

FOLLOW-UP MESSAGE AND ASSESSMENT INFORMATION

NOTE: This information is to be supplied to the NRC and Colorado Department of Health when requested.

1. Date and Time of Incident_____
2. Class of emergency (ALERT) (SITE AREA EMERGENCY) (GENERAL EMERGENCY)
3. Type of release (airborne, waterborne, surface)_____
4. Current release rate: Noble gas___ Ci/sec; Iodine___ Ci/sec
5. Estimated curies released: Noble gas___ Ci; Iodine___ Ci
6. Wind Velocity _____MPH, from _____degrees. Air Temp _____°F.
7. Stability category_____, Form of Precip. _____
8. Dose rate at EAB: WB_____rem/hr; Thyroid_____rem/hr
9. Projected dose at EAB: WB_____rem; Thyroid_____rem
10. Estimated accumulated dose at EAB: WB_____rem; Thyroid_____rem
11. Estimate of any surface radioactive contamination_____
12. On-site response actions underway_____

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

Projected Dose (rem)	Recommended Protective Action
Whole Body less than 1 Thyroid less than 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.

14. Prognosis for worsening of event _____

15. Date and time of report _____

TABLE 6.2-1

ASSESSMENT ACTIONS

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

TABLE 6.2-2

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

General Public

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

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

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

TABLE 6.2-2 (Continued)

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

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

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

TABLE 6.4-1

Initiation Times for Protective Actions for the General Public

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

TABLE 6.4-2

Use of Protective Equipment and Supplies

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

TABLE 6.5-1

Exposure Criteria for Emergency Workers*

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

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

** Respiratory protection will be provided as necessary.

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

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

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 10.A

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

APPENDIX A

AGREEMENT LETTERS

AND

SUMMARY OF REFERENCED INTERFACING

EMERGENCY PLANS

STATEMENT OF CONCURRENCE AND AGREEMENT

We the undersigned, do hereby concur in the provisions of the Radiological Emergency Response Plan as revised in April 1980 for the Fort St. Vrain Nuclear Generating Station.

By affixing our signature, we each do make and enter into a mutual agreement to perform and/or cause to be performed by our subordinate organizations and employees the roles and responsibilities set forth in this plan for each of our political entities, company and/or organization to the best of our ability.

STATE OF COLORADO

Governor — Date: 11/25/80

WELD COUNTY, COLORADO

Chairman, Board of County Commissioners — Date: 11/21/80

Sheriff — Date: 11/20/80

PUBLIC SERVICE COMPANY OF COLORADO

President — Date: 11/7/80

FEDERAL EMERGENCY MANAGEMENT AGENCY

Director, Region Eight — Date: 10/23/80

AMERICAN RED CROSS, COLORADO DISASTER OFFICE

Disaster Coordinator — Date: 9/18/80

TABLE 10.A-1

LIST OF INTERFACING PLANS

AGENCY	DOCUMENT TITLE
State of Colorado, Division of Disaster Emergency Services (DODES)	Fort St. Vrain Radiological Emergency Response Plan (State RERP)
Weld County	Weld County Emergency Operations Plan
Larimer County	Larimer County Emergency Operations Plan
Colorado Department of Health	(in State RERP, Annex DD)
Platteville Fire Protection District	Fort St. Vrain Emergency Response Plan
Weld County Sheriff's Department	Sheriff's Office Actions Fort St. Vrain Response Plan
Colorado State Patrol	Emergency Response Plan for a Radiological Emergency at Fort St. Vrain Nuclear Electric Generating Station
Weld County Civil Defense	( )
Weld County Health Department	Health Department's Response to Emergency at Fort St. Vrain
Fort Lupton, Colorado	Disaster Emergency Response Plan
Weld County School District RE-1	Disaster Plan 1982-1983
Colorado National Guard	Operations Plan: Fort St. Vrain
USNRC	( )
FEMA	( )

This is to state that Public Service Company of Colorado, 550 15th Street, Denver, Colorado, and St. Luke's Hospital, 601 East 19th Avenue, Denver, Colorado, have agreed that in the event of a radiation accident involving employees at Public Service Company's Fort St. Vrain Nuclear Generating Station, near Platteville, Colorado, Public Service Company radiation accident employees will be accepted by Saint Luke's Hospital for treatment as either In-Patients or Out-Patients as the injury or exposure may require in accordance with the provisions stated in "The Saint Luke's Hospital Plan for the Care of Radiation Accident Victims from Fort St. Vrain Station, Public Service Company of Colorado" which is hereby incorporated by reference and marked Exhibit A.

Public Service Company of Colorado

By _____
O. R. Lee, Vice President,
Electric Production

Saint Luke's Hospital

By: David W. Hall
(Title)
Asst. Administrator

INTRODUCTION

The Public Service Company of Colorado, in establishing a nuclear reactor powered generating system at Fort St. Vrain generating system at Fort St. Vrain, Colorado, recognizes that a potential for radiation accidents will exist during refueling, maintenance, radioactive waste handling, inspections, non-routine operations, and routine operation of reactor plant systems. It is a matter of historical fact that utility employees may receive accidental radiation exposure, usually in small amounts, particularly to the hands and arms and on occassion, radioactive particles may penetrate the skin and become embedded. These types of simple exposure and contamination can be satisfactorily managed by health technicians trained in first aid and decontamination procedures on site.

It is, however, possible that severe radiation injury can occur. Criticality accident probability, though small, remains a consideration. It is also possible for radioactive metal fragments to produce penetrating wounds. In these instances, hospitalization will be required to permit definitive therapy. St. Luke's Hospital and the members of the medical and surgical staff of the Public Service Company of Colorado have had a good working relationship. These physicians are well trained and will use their best efforts to handle any emergency procedures which might arise subsequent to a radiation accident. They are, in addition, familiar with St. Luke's Hospital and its varied services.

The hospital administration, board of managers, and medical staff have agreed to participate in a program designed to manage victims of a radiation accident. It is our collective opinion that expertise in handling this type of emergency situation should be developed in the community hospital and not localized solely to the medical school complex. The St. Luke's Hospital Department of Pathology will provide total lymphocyte counts and assess the presence of chromosome breakage. The Department of Nuclear Medicine has monitoring equipment for surveying and scanning the victims and its personnel are trained in decontamination procedures and in the handling of radioactive isotope spills. A consulting hematologist is available to supervise the patients during their stay.

The head of the Department of Gastroenterology will provide consultation on the management of any serious gastrointestinal problems. The hospital administration has available a portable clean room with laminar air flow and filtration for use in those instances where reverse sterile precautions become necessary. The Nursing Service office has agreed to jointly undertake the training of personnel to provide efficient nursing care for the accident victims. Both a Radiation Safety Officer and a Health Physicist are available for participation in the program. Arrangements have been made for the use of the Whole Body Counter by the Public Health Department should this be deemed necessary.

Of the following numbered paragraphs, numbers two through five are primarily the responsibility of the Public Service Company of Colorado. Parts six through eighteen are primarily the responsibility of the St. Luke's Hospital, Denver, Colorado.

FLOW SHEET FOR HANDLING RADIATION ACCIDENT VICTIMS

Accident Occurs

↓

*Life saving procedures begun if indicated

↓

*Survey for contamination and decontamination on site - Avoid spread of contamination

↓

*Administer First Aid

↓

*Evaluate need for further medical assistance

↓

*Notify Public Service Company Medical Department or Company Physician (PSC Medical Department will notify Hospital Radiation Safety Officer of possible admission, including vital information)

↓

*Transport to Hospital - Exercise necessary precautions

↓

*Patient arrives at Washington Street Emergency Ramp

↓

Rapid survey for presence of contamination and determination of need for surgical treatment

↓

If contamination present	If no contamination present
↓	↓
Gross decontamination by trained personnel	Go to Emergency Room for first aid and definitive treatment
↓	↓
Administer any needed first aid or emergency treatment	Release to surgery, ward, or home as indicated
↓	
Re-survey and proceed with further definitive decontamination	
↓	
Release to surgery, ward, or home under supervision of the radiation Safety Officer, Health Physicist, and Public Service Company Medical Staff	

* These items shall be executed by the Public Service Company Shift Supervisor or his delegate.

1. An Accident Occurs - The radiation accident occurs producing a contaminated or non-contaminated victim potentially exposed to ionizing radiation.

2. Administration of Needed Life Saving Procedures - Emergency life saving procedures will be instituted without regard to contamination. It is adviseable that the treatment team personnel dose be limited to five (5) rem whole body dose whenever possible; however, in instances where treatment of shock or control of hemorrhage, or implementation of airway open, g porcedures are necessary to preserve life, seventy-five (75) rem whole body dose will be deemed acceptable. Monitoring of treatment team personnel at Fort St. Vrain will be the responsibility of the Public Service Company health physicists.

3. Survey for Contamination, Decontaminate and Administer First Aid Treatment - as soon as feasible, the victim will be removed from the scene of the accident, surveyed for contamination, and admitted to the Fort St. Vrain Decontamination Unit. (During transfer, contamination spread will be avoided.) Decontamination and first aid treatment will be administered. This will in many instances be all the care that is required.

4. Evaluation as to Need for Further Medical Assistance - If further medical assistance is required, the following injury categores should be used for quick transmittal of information.

Category	Description
I	Injury with no surface contamination.
II	Injury with penetrating radiation, background to 25 rem.
III	Injury with penetrating radiation greater than 25 rem.
IV	Injury with surface contamination (specify DPM on contact if possible).
V	Injury with penetrating contamination.
VI	Injury with imbedded radioactive object.
VII	No injury/internal and/or surface contamination.

A. Notify the Public Service Company Medical Department or physician on call. (The Public Service Company Medical Department or physician will notify the Radiation Officer at St. Luke's Hospital).

B. The patient will be re-surveyed for contamination.

C. If there is no residual contamination present, the patient will be tagged with a wrist tag listing his name, address, telephone number, the health physicist's statement as to the potential medical problem, and the treatment that has been carried out. On the reverse side, space is provided for entry of the radiation exposure to the patient, if known, and contamination levels. If the estimation of radiation dose is not available at the time of transfer, it will be the responsibility of the Health Physics Department at Fort St. Vrain to establish this dose as quickly as possible and to transmit that information to the Hospital. The call will be through the Hospital switchboard to Nurse's services.

D. If there is residual contamination or extensive contamination present, it will be indicated diagrammatically on outlines of the human body showing front, back, and both sides, which will be on the tag attached to the patient's wrist. The amount of contamination will be estimated on this tag as well. The contaminated areas will be identified on the patient with either a circle or square drawn on the body outside the contaminated area to prevent further spread of the contamination. Lipstick or other skin marker can be used. The sites of residual contamination should be sealed with a plastic dressing and masking tape. In the event of residual total body contamination, the patient's body will be enclosed in a plastic wrap or anti-contamination clothing wherever possible.

5. Transportation to the Hospital - Fort St. Vrain will provide transportation to St.Luke's Hospital. St. Luke's Hospital has a helicopter-ambulance available, should it be required. In the event that the patient is not contaminated, and has sustained relatively minor injury, no particular precautions beyond wound first aid will be required and the patient may proceed to the Emergency Room at St. Luke's Hospital if care there is needed. In the event of persistent contamination:

A. Responsibilities of on-site Health Physicist or Shift Supervisor:

1. It will be the responsibility of one of the health physics personnel or shift supervisor to be certain that the patient is properly tagged and that the required medical and radiation exposure data are on the tags.

2. It will also be his responsibility to be certain that the patient is enshrouded in a plastic wrap or Anti-C's when appropriate or that all sites of contamination are properly sealed.

3. He must be certain that the vehicle driver is wearing a film badge and pencil dosimeter on his person closest to the patient.

4. He will confirm that the vehicle driver is aware of the proper hospital entrance.

B. The vehicle operator will proceed to the Washington Street Emergency Ramp or to the designated helicopter landing site at St. Luke's Hospital which will have been cleared by the Radiation Safety Officer for use for the patient's admission.

6. Hospital Radiation Safety Officer Functions - When the Radiation Safety Officer is notified that an accident has occurred and that one or more cases will be transferred to the hospital, either for treatment or admission, he will proceed to activate the Radiation Accident Treatment team.

A. The Nuclear Medicine Department will be alerted and will be prepared to conduct necessary monitoring and to properly prepare the Receiving Room for handling a categorized patient (see paragraph 4).

B. The hospital Health Physicist will be called to assist in proper management, should this be required.

C. The radiation spill cart will be brought to the Receiving Room.

D. The Head of Nursing Service will be alerted as to the possiblity of a radiation accident patient being admitted. She will secure an empty end room in the 20 Unit of the hospital for potential use, but will be asked to stand by until the exact nature of the injury is ascertained and need for a room established.

E. The Radiation Safety Officer, Health Physicist, Nuclear Medicine personnel, and Project Director will proceed to the Washington Street Emergency Entrance designated entryway to supervise handling of the patient and his reception into the hospital.

F. In the event of an admission, the portable Clean Room will be secured and sterile precautions initiated, if indicated, by categorized patient (see paragraph 4).

7. Arrival at St. Luke's Hospital

A. Upon arrival at the Washington Street Emergency Ramp, or designated helicopter landing site, the patient will be monitored by the Radiation Safety personnel at St. Luke's Hospital to confirm the presence or absence of contamination. Disposable masks, caps, overalls, and boots will be worn by the Radiation Safety Officer and his assistants.

B. When it has been ascertained that the Receiving Room is properly prepared, and not before, the patient will be allowed to leave the vehicle.

C. He will enter the hospital via the helicopter pad entrance, the Washington Street Emergency Entrance, or through the 1-C decontamination area.

D. The operator of the vehicle will remain as guard for the vehicle until it has been monitored by the Radiation Safety Officer or assistants and release given.

E. The vehicle attendant will be monitored as well and released to return to Fort St. Vrain for final survey by the Health Physicist on site.

F. The patient will bypass the Decontamination Room only in the event that there is negligible or no detectable contamination present or is in need of immediate medical attention.

8. Decontamiation Procedures

A. General - If the patient has been admitted to the Decontamination Room, the outside entrance will be considered as the "dirty" entrance and the corridor will be considered clean. The corridor will be guarded by one member of the decontamination team and any person leaving the contaminated area will be monitored prior to his departure to be certain that the contamination will not be spread.

B. If the skin is intact:

1. Evaluation

a. Don protective clothing - cap, gown, apron, gloves, overshoes.

b. Read the radiation marking tag.

c. Determine the areas to be decontaminated and in what order with the highest priority going to skin breaks and highest levels of contamination.

d. Remove contaminated area coverings and place in the controlled waste disposal receptacle.

e. Survey the area and record the results of the survey.

2. Decontamination

a. Localize the area of contamination with plastic sheeting and tape to prevent spread of the contamination to other areas of the patient or to the treatment personnel.

b. Use gauze moistened with Phisohex to gently remove any loose particulate contamination and discard the contaminated gauze into the control waste disposal receptacle. This may be repeated until the skin is thinned or becomes reddened.

c. Re-survey the patient and if contamination persists repeat with Phisohex technique.

d. Repeated cleansing and monitoring should be done until the contamination level does not change or the skin appears to be thinning, at which point Nivea cream and a protective dressing can be applied.

e. If radioactive contamination is high, keep initial washings in a waste container for further monitoring.

C. If there are skin breaks and open wounds:

1. Evaluation

a. Read the radiation marking tag attached to the patient.

b. Survey the patient and record the findings. A moistened cotton applicator should be used to evaluate the presence of radioactivity in the wounds. If there are multiple wounds, proceed with the decontamination beginning with the wound of the highest radioactivity level.

2. Decontamination of the wounds

   a. Irrigate the wound with copious amounts of water taking care that no surface contamination is carried into the wound.

   b. Decontaminate the intact skin surface around the wound, re-survey the wound and record.

   c. Continue irrigating until no radioactivity is detectable or no further reduction in radioactivity occurs.

   d. Treat the wound appropriately and cover with plastic and tape making sure the seal is waterproof.

   e. Re-survey the wound and if there is persistent contamination, continue to Step 3.

3. When irrigation is no longer effective in removing contaminants from the wound:

   a. Ask the Health Physicist to evaluate the level of residual contamination and then to determine in conjunction with the surgeon the need for debriding the wound and removing the contaminated tissue.

   b. If surgery is indicated, the area around the wound should be thoroughly decontaminated and surgery performed with an en bloc type of dissection.

   c. All removed tissues should be surveyed and residual wound contamination evaluated. The wound is then closed and covered.

D. Decontamination Techniques for Use with Total Body Contamination

1. Survey the entire body and record the findings. High level areas of radioactivity should be cleansed first and should be indicated in numerical fashion with lipstick or other type of label.

2. The contaminated person should shower using Phisohex wash and gently scrub to remove radioactivity from the contaminated areas. Hairy portions of the body should be covered if not initially contaminated and precautions should be made to prevent any of the contaminated washings from entering the body cavity openings. Wash water can be allowed to exit via the hospital drain.

3. The body should be re-surveyed and re-labeled and re-scrubbed until contamination is removed.

4. If areas of contamination persist, local techniques may be utilized after the general contamination has been removed.

E. Body Opening Decontamination Procedures

1. Make sure with swab or wipe tests and monitoring that the cavity is actually contaminated and the contaminant is not picked up from the surrounding epithelium. After the survey, the results should be recorded.

2. The surrounding area decontamination should be performed followed by cleansing of the cavity opening with moistened cotton tip applicators.

3. Re-survey and repeat cleansing should be done as indicated with care being exerted not to break the mucosa.

F. Decontamination Procedures for Eyes

1. Copious irrigations with water and, as soon as possible, saline solutions should be carried out. The irrigation fluids can be monitored. Follow up treatment would include therapy for irritant conjunctivities.

G. Decontamination of Hair Covered Areas

1. Record the location of contamination and shield the patient in order not to spread the contamination during cleansing.

2. Wash with Phisohex and dry with a clean uncontaminated towel. DO NOT SHAVE as it is possible to injure the skin. The hair may be cut away. After decontamination is complete, the area may be recleansed with a detergent such as Dreft or Tide.

9. Waste Disposal

   A. Contaminated water used in cleansing can usually be flushed into the hospital drains. Faucets should be allowed to run in order to insure movement of the radioactivity and guarantee dilution.

   B. Contaminated disposal supplies should be placed into plastic bags for disposition and contaminated equipment must remain in the control area until it too has been decontaminated. The Radiation Safety Officer will supervise this handling.

10. Initial Laborator Studies - Initial laboratory tests will be obtained as a baseline for use in dosimetry and for following the patient. The tests will include a CBC, platelet count, serum electrolyte screen, which includes Creatinine, BUN and the routine electrolytes, and urinalysis. The urine will be monitored to establish whether it is contaminated. As soon as feasible, a whole body count will be obtained at the State Board of Health total body counter. Samples of the patient's urine and blood will be collected and will be transmitted to the Health Physicist at Fort St. Vrain for gamma spectrometry and/or urinalysis.

    The Pathology Department at St. Luke's Hospital is prepared to do chromosome analysis and total lymphocyte counts. Blood will be drawn on admission or as soon as possible for these purposes.

11. Surgical Treatment of Patients - It is anticipated that most of the surgical procedures conducted will be minor and it will be possible to perform these after decontamination has been accomplished. If the Health Physicist and Project Director feel that a radiological health hazard potential persists after decontamination, the surgeons will be provided with lead aprons and/or a lead operating shield. Lead Brick shielding is available, if needed. Film badges, TLD badges, or pocket dosimeters will be worn by the surgical team. After surgery, their garments will be monitored for contaminants. Radiation doses to the treatment team should be kept low. This could require multiple shifts of operating surgeons in the presence of highly radioactive fragments in the patient. Removed radioactive fragments will be placed in a special shielded container for subsequent disposal or return to Fort St. Vrain.

12. Establishment and Preparation of a Treatment Ward - As soon as it is learned that one or more patients will be admintted to the hospital, the Nursing Supervisor will be notified, and end rooms will be made available in the units designated as Radiation Patient Treatment Stations. If there is residual contamination, the floor will be covered with absorbent paper by the Nuclear Medicine technologist under supervision of the Radiation Safety Officer. If the patient represents a radiation hazard, he will

be shielded with the portable shields and the room will be labeled as a radiation area.

13. Definitive Treatment - Depending upon the patient's basic problem, either a specialist in Internal Medicine or a specialist in surgical care will be in charge of the patient. These personnel will be designated by Public Service Company physicians. A consulting hematologist and a consulting gastroenterologist are available and will be alerted should need for this consultation arise. Additional consultation may be sought from the Radiological Assistance Team, Idaho Falls, Idaho, (208) 522-6640, Extension 1515.

14. Patient Monitoring and Scanning - This will be the responsibility of the Department of Nuclear Medicine. Excretions and emeses will be monitored for radioactivity until it is discerned that the activity is negligible. If an internal contaminant is present, serial total body counts will be conducted by the State Department of Public Health and scintillation camera images made to determine the portion of internal emitters.

15. Exposure of Treatment Personnel at Saint Luke's Hospital - All efforts will be made to keep this exposure of the treatment personnel to a minimum. Unless an emergency situation is at hand, this level will be 300 millirem or less. If life saving measures need to be instituted, a total body exposure of 1250 millirem will be tolerated. Higher exposures will be acceptable at the utility where most of the decontamination will be accomplished.

16. Research - The infrequency of radiation accidents requires maintenance of detailed records for review by the Public Service Company Radiation Protection Manager and the Nuclear Regulatory Commission. Such records will be kept and made available to the appropriate authorities, provided that the patient authorizes a release of his medical records, unless federal or state laws require disclosure.

17. Decontamination Equipment

A. Protective Material for Decontamination Team

1. Surgical gowns and caps.
2. Plastic aprons.
3. Disposable plastic gloves.
4. Plastic overshoes.
5. Respirators.
6. 1 package of respirator filters.
7. Film badges, TLD dosimeters, or pocket dosimeters will be brought to room by Nuclear Medicine personnel.
8. Anti-contamination clothes.

B. Protective Materials for Decontamination Area

1. Radiation signs for radioactive area and radioactive materials to each.
2. Radiation tape.
3. Radiation tags.
4. Large plastic sheets.
5. Heavy plastic barrier cover - rolls.
6. 2" masking tape.

C. Decontamination Equipment*

1. Large plastic garbage cans.
2. Plastic liners for the containers.
3. Large plastic sacks for clothing.
4. Phisohex.
5. Soft skin scrubbing brushes, individually wrapped.
7. Sterile physiologic saline.
8. Bulb syringes.
9. Sterile towels.
10. Decontamination shower with holding tank.

D. Miscellaneous Equipment*

1. Minor surgery sets.
2. 4 x 4 gauze.
3. Cotton balls.
4. Cotton tip swabs.
5. Large heavy duty scissors.
6. 1000 cc bottles of 5% D/W and physiologic saline.
7. Lipstick or marking pen.
8. Recording notebooks with paper.
9. 2" adhesive tape.
10. Xylocaine 1%.

A decontamination Instruction Outline will be attached to the rear door of the Decontamination Room and issued to all personnel on the team.

* These items are not maintained in kit form, but are readily available. Other items may be used at the discretion of Emergency Room personnel.

18. Institutional Equipment Available

A. Gamma Camera.

B. Rectilinear Scanner.

C. Well Counter.

D. Dose Calibrator.

E. 2 Geiger Mueller Survey Meters.

F. 1 Lab Monitor.

G. 1 Victoreen R-Meters.

H. 10 Pocket Dosimeters with Two Chargers.

I. 1 Ion Chamber Moniter.

PLATTEVILLE VOLUNTEER FIRE DEPT.

P.O. BOX 568
PLATTEVILLE, CO. 80651

April 29, 1980

Public Service Co. of Colo.
Ft. St. Vrain Station
% Mr. Don Warembourg, Mgr. Nuclear Prod.
16805 Rd. 19½
Platteville, Colo. 80651

Dear Mr. Warembourg,

It is my understanding that a written explanation of the Platteville Volunteer Fire Dept. agreement with Ft. St. Vrain concerning the Colo. State Ft. St. Vrain Radiological Emergency Response Plan is required for inclusion in the plan.

As Ft. St. Vrain is located wholly within and pays property taxes to the Platteville Fire Protection District, we will provide those services normally provided by a fire department. These services include the use of our ambulance and transport of any sick or injured employee to a local hospital, normally to Weld County Genreal Hospital, but upon request to Greeley Memorial, Longmont United or Brighton Community Hospital. It has been mutually agreed previously that the only time we would be asked to transport to St. Lukes Hospital in Denver would be for an accident victim that is radioactively contaminated. We will also respond any and all fire equipment, as required, for any fire situation that should arise at the site. We will also respond to any radiological emergency at Ft. St. Vrain and carry out the duties as set forth in the Emergency Response Plan for the Platteville Fire Dept. Additional assistance is available from the surrounding Departments as needed on a mutual aid basis.

Respectfully Yours,

Cliff Wright

Cliff Wright, Chief
Platteville Fire Dept.

CW/ss

Johnstown Volunteer Fire Department

Member Colorado State Firemen's Association - JOHNSTOWN, COLORADO

April 28, 1980

Mr. Don Warembourg, Manager
Nuclear Production
Fort St. Vrain
Platteville, Colorado 80651

Dear Mr. Warembourg:

In case of a radiological emergency at Fort St. Vrain, the Johnstown Volunteer Fire Department will be on standby to assist the Platteville Fire Department.

We will, to the best of our ability, assist with establishing road blocks and/or notification of evacuation as needed as a mutual aid to the Platteville Fire Department.

Sincerely,

Duane L. Frye

Duane L. Frye
Chief, Johnstown Volunteer
Fire Department

cc: Platteville Fire Department

STONE & WEBSTER ENGINEERING CORPORATION
DENVER OPERATIONS CENTER
GREENWOOD PLAZA, DENVER, COLORADO
ADDRESS ALL CORRESPONDENCE TO P.O. BOX 5406, DENVER, COLORADO 80217

BOSTON
NEW YORK
CHERRY HILL, N.J.
DENVER
CHICAGO
HOUSTON
PORTLAND, OREGON
SAN DIEGO
WASHINGTON, D.C.

DESIGN
CONSTRUCTION
REPORTS
EXAMINATIONS
CONSULTING
ENGINEERING

May 16, 1980

Public Service Company of Colorado
P.O. Box 840
Denver, Colorado 80202

J.O. 13569.01

Attention: Mr. O. R. Lee, Vice President
Mr. J. K. Fuller, Vice President

Gentlemen:

Letter of Agreement to Provide
Emergency Support and Recovery Assistance
Fort St. Vrain Nuclear Generating Station

In the event of an emergency at PSC's Fort St. Vrain Nuclear Generating Station, Stone & Webster will provide engineering and/or operations support personnel to assist in accident mitigation, emergency plan implementation and/or recovery activities, within the categories described in Attachment No.1.

PSC and Stone & Webster have already agreed to Terms and Conditions which are applicable for the types of support listed in Attachment No. 1. These Terms and Conditions are contained in our existing Continuing Services Agreement (PSC Document No. 37754), effective as of January 2, 1980.

Stone & Webster is currently finalizing its development of a corporate S&W Emergency Response Plan which considers the above activities and other activities such as construction support, start-up support, access to plant records, communication links to supporting A/E offices, participation with clients during emergency drills, and the like. Upon our finalization of such recommendations, S&W would intend to meet with PSC to further define our involvement for Emergency Support and Recovery Assistance, and to consider any effects on existing Terms & Conditions.

In order to rapidly obtain the support listed in Attachment No. 1, please contact Mr. G. T. Quinn (home phone . . or Mr. D. L. Matchett (home phone , or our Denver office at 770-7700.

Very truly yours

John W. Yetter

John W. Yetter
Vice President

ATTACHMENT NO. 1

Emergency Support Available From S&W
For Fort St. Vrain, Under the Terms and Conditions
Of Existing Contract (PSC Document No. 37754)

1. Assessment

S&W Personnel assist PSC, NSSS vendor, other A/E personnel, or state/local agencies in off-site dose assessment, and assist PSC in assessing plant equipment damage, performance, or operability.

2. Engineering/Design

S&W personnel assist PSC, NSSS vendor or other A/E personnel in engineering evaluations of accident consequences and in design of plant modifications or temporary plant systems for mitigation or recovery.

3. Procurement

S&W, acting as an agent for and on behalf of PSC, would assist in procurement of equipment required to mitigate or recover from an emergency.

4. Operations/Maintenance Support

S&W personnel assist PSC Operations and Maintenance personnel in rapid planning/procedure writing for emergent operations and maintenance activities.

S&W personnel assist PSC operations personnel in planning and procedure writing for testing and operation of temporary systems during the mitigation and initial revovery stages. Also could provide similar support on permanant systems when in the final recovery stages.

5. Radiation Protection

In addition to assisting in radiological dose assessments item 1, above, S&W personnel could assist PSC in executing control and minimization of personnel exposures for operations requiring access or re-entry during accident mitigation or recovery S&W Rad Protection activities could also include engineering for temporary shielding as may be required for minimizing personnel exposures.

6. Quality Assurance

S&W personnel can be assigned to assist PSC in assuring an appropriate level of quality control is exercised over engineering, operations and maintenance activities during the recovery phase.

7. Planning and Scheduling

S&W personnel would assist the PSC Recovery Manager in execution of overall and day to day scheduling and tracking of recovery activities.

Stearns-Roger
INCORPORATED

April 25, 1980

Mr. D. Warembourg
Manager of Nuclear Production
Public Service Company of Colorado
Post Office Box 840
Denver, Colorado 80201

Reference: Fort St. Vrain Nuclear Generating Station
Stearns-Roger Project C-22240

Dear Mr. Warembourg:

As a result of discussions with Messrs. Holmes, Gahm and McBride, Stearns-Roger is pleased to provide a commitment to assist Public Service Company of Colorado in the event of an incident at the Fort St. Vrain Nuclear Generating Station. This assistance will be consistent with the engineering and construction services within our capability.

Briefly, our capabilities are as follows:

1. Stearns-Roger Corporation is organized under Colorado law with headquarters located in Glendale, Colorado.

2. Wholly-owned subsidiaries are Stearns-Roger Engineering Corporation, Stearns-Roger Incorporated, Stearns-Roger Services, Inc., Stearns-Roger Manufacturers Incorporated, Stearns-Roger Canada Ltd., Stearns-Roger Architects, Ltd., Stearns-Roger Equipment Co., and Stearns-Roger Export Ltd.

3. The major portion of engineering and administrative functions are performed at the Stearns-Roger Center. This center consists of two (2) 118,000-square-foot buildings, a 285,000-square-foot 12-story building and a 150,000-square-foot 5-story building.

4. Our manufacturing subsidiary has the largest and most complete facilities of its kind in the Rocky Mountain West. The facilities consist of a large machine shop, foundry and pipe fabrication shop located in South Denver. We are a member of the Pipe Fabrication Institute and have been granted the authorization to use the "U," "U2," "PP," "S," "N" and "NPT" stamps by the ASME.

Stearns-Roger

Mr. D. Warembourg
Public Service Company of Colorado
April 25, 1980

5. Our major resource is our employees. The corporation consists of the following:

Engineering	-	1999
Support	-	649
Construction	-	455
Total		3103

Other notable resources are as follows:

a) An IBM 370 Model 165 computer as well as in excess of 200 engineering-related programs.

b) Computer-assisted drafting facilities.

c) Three (3) corporate aircraft.

d) Extensive inventory of tools and equipment for use during construction.

6. Nuclear services to the power industry include engineering, construction management, construction, start-up, quality assurance, quality control, and nuclear component fabrication.

7. Our past responsibilities at Public Service Company of Colorado's Fort St. Vrain Nuclear Generating Station are as follows:

a) Yard piping engineering and construction - 1969/1970.

b) Redundant circulating water pipe engineering and construction - 1972.

c) Engineering analysis of service water system corrosion - 1973.

d) Construction of pond flume - 1973.

e) Construction and fabrication of retube service water heat exchangers - 1974.

f) Fabrication and installation of helium heat exchangers - 1974.

g) Engineering services for review of B-Series start-up tests with PSCC's QA Department - 1974.

h) Engineering services to perform a 3rd level QA audit of surveillance testing required by technical specifications - 1974.

Mr. D. Warembourg
Public Service Company of Colorado
April 25, 1980

i) Engineering services to provide support in 2nd level surveillance activities associated with readiness for initial power operation and start-up testing - 1974.

j) Maintenance services to repair boiler feed pumps and drives - 1974/1975.

k) Engineering, purchasing and construction services for intermediate alternate cooling method - 1975/1976/1977.

l) Engineering services for water supply - 1975/1976/1977.

m) Provide roving fire watch services - 1976/1977.

n) Engineering services to review and modify emergency procedures - 1976/1977.

o) Engineering, purchasing, and construction services for the manually-operated Halon Fire Protection System - 1976.

p) Engineering services to review QA records - 1976.

q) Engineering services to assist in turnover and updating of documents and drawings - 1977.

r) Engineering and clerical services to assist in document control - 1977/1978.

8. Our present responsibilities at Public Service Company of Colorado's Fort St. Vrain Nuclear Generating Station are defined by a Modification and Maintenance Contract. This agreement defines a quality assurance program and responsibilities for engineering, manufacturing, and construction. Under the contract, we presently perform the following functions:

a) Furnish construction and purchasing services to install and/or modify systems and/or facilities for the purpose of improving safety and accessibility.

b) Furnish engineering, purchasing, and construction services required for modification change notices.

c) Furnish engineering, purchasing, and construction services for miscellaneous work items directed by PSCC field engineers.

Stearns-Roger

Mr. D. Warembourg
Public Service Company of Colorado
April 25, 1980

d) Furnish vendor qualification services.

e) Conduct audits on pipe hangers.

Very truly yours,

STEARNS-ROGER INCORPORATED

J. J. Donovan (mcl)

J. J. Donovan
Project Manager

JJD/mcl

cc: Jack Gahm, PSCC
Milt McBride, PSCC
L. H. Gemmill/General File
G. R. Galbraith/P. R. Pennell/C. T. Wilks
F. L. Weigand
H. J. Bell
T. J. Keegan
J. J. Donovan
J. H. Marchalk/CE File

nuclear power consultants, inc.

11300 Rockville Pike, Box 11
Rockville, Maryland 20852

301/881-8161

February 8, 1982
Reference: 2945

Mr. D. W. Warembourg
Manager of Nuclear Production
Public Service Company of Colorado
16805 Road 19-1/2
Platteville, Colorado 80651

SUBJECT: Commitment for Emergency Assistance

Dear Don:

This letter will confirm that Nuclear Power Consultants, Inc. has agreed to assist Public Service Company of Colorado in the event of an emergency at the Fort St. Vrain Nuclear Generating Station. The purpose of this letter is to update the information in your Radiological Emergency Response Plan, Section 10.A, pages 14 and 15 of 29 (NPC-2498 dated 4/24/80).

Our assistance will be in the form of direct participation by Nuclear Power Consultants, Inc. employees, both off-site and on-site, on an as-required basis. As a long standing member of the Fort St. Vrain Nuclear Facility Safety Committee, Mr. James V. Neely will be available at the plant site, or other locations designated by Public Service Company of Colorado, for any matter requiring NFSC consultation or action, as soon after the initial request for assistance that travel arrangements can be made. Other Nuclear Power Consultants, Inc. employees can be made available immediately for any assistance which can be performed at Nuclear Power Consultants, Inc. home office and within twenty-four (24) hours for assistance requiring travel to the plant site or other Public Service Company of Colorado facilities.

We would expect to provide assistance in the phases of engineering, design, maintenance, operation, and quality assurance which are within our knowledge of the Fort St. Vrain plant acquired during the more than ten (10) years our firm has worked with Fort St. Vrain.

February 8, 1982
Reference: 2945

The names and telephone numbers, both home and office, for persons who may be contacted to respond to any requests for emergency assistance are:

James V. Neely President and Principal Consultant	office home
Michael J. Gage Senior Engineering Consultant	office home

You are hereby authorized to use this letter in support of any of your applications for licenses or approvals from Federal, State or local agencies who may be involved with or affected by your emergency planning activities.

Sincerely,

NUCLEAR POWER CONSULTANTS, INC.

James V. Neely
President

JVN:pjs

PROTO-POWER MANAGEMENT CORPORATION

591 POQUONNOCK ROAD
GROTON, CONNECTICUT 06340
(203) 446-9725

File No.: 7511400

May 1, 1980

Mr. D. Warembourg
Manager, Nuclear Production
Public Service Co. of Colorado
Fort St. Vrain Station
16805 Road 19-1/2
Platteville, Colorado 80651

Dear Mr. Warembourg:

In response to a telephone call from Mr. J. Gamm on April 24, 1980, this letter is to inform you and your staff that Proto-Power Management Corporation agrees to make its resources and capabilities available at your request and as may be required by the Fort St. Vrain Emergency Plan and organization.

Proto-Power is capable of responding to your emergency needs in several areas. We would be willing and could participate as follows:

- Proto-Power employees are presently working with PSC in your Denver Engineering Offices. Proto-Power agrees that these personnel are available to support the Fort St. Vrain Emergency Plan as needed, subject to the agreement of their supervision to whom they are normally responsible. These individuals are familiar with the Fort St. Vrain Station and can contribute to any emergency engineering action and decisions which may be required. Additionally, they are presently badged for Fort St. Vrain Station access.

Mr. D. Warembourg

May 1, 1980

- Proto-Power has a Radiological Engineering capability and agrees to provide available personnel for emergency action. The individuals comprising this group have a unique background in developing engineering solutions to radiological problems. Such work has included, for example, the development and manufacture of special tooling for removal of a highly radioactive (1800R) crud trap, together with actually performing the removal operations at the Peach Bottom Station. Similar work in the development and implementation of procedures and methods to achieve ALARA objectives has been performed for the Palisades, Monticello, and Trojan Stations. A Proto-Power Radiological Engineer from this group is serving as Technical Deputy to the Director of Recovery at the Three Mile Island Station.

- The Proto-Power Nuclear Plant Systems and Analysis Engineering Group, a part of which is presently working on design modifications for Fort St. Vrain, can likewise be made available. This group is intimately familiar with the Helium Circulator Auxiliary and related Plant Helium Systems and can assist with engineering and analysis requirements, as well as other engineering tasks. These individuals presently are badged for access to the Station.

Other Proto-Power personnel familiar with procedures and systems would also be available. A description of Proto-Power capabilities, previously forwarded to PSC and subsequently to NRC by PSC letter P-79233, dated 10/15/79, in response to an NRC request for technical capabilities, is enclosed for your information.

If there are any questions or if additional information is required, please call.

Very truly yours,

JLHelm

J. L. Helm
President

JLH:av
Enclosure

PROTO-POWER MANAGEMENT CORPORATION

591 POQUONNOCK ROAD
GROTON, CONNECTICUT 06340
(203) 446-9725

Telecopied to PSC 8/28/79

TYPE AND EXTENT OF TECHNICAL SUPPORT

Proto-Power professionals have had over four (4) years direct hands-on experience related to the technical investigation and solution of design, engineering and operational problems and assignments at Fort St. Vrain Station (FSV) for the Public Service Company of Colorado (PSC). Within the Proto-Power staff, 14 professionals have had direct technical problem solving experience related to the specifics of the Fort St. Vrain nuclear and balance of plant systems.

Type of services provided fall within two broad categories:

1. Mechanical/nuclear system engineers assigned full time as resident technical support to the PSC nuclear project engineering staff. These professionals have, over the past 3 years, performed analyses, engineering, and design of plant problem solutions and plant improvement actions as part of the technical routine of the PSC nuclear project engineering staff.

2. Proto-Power mechanical, nuclear and electrical engineers from within the Proto-Power home office staff have carried out specific FSV technical assignments from PSC. The type and extent of this work is as follows, including specific examples:

   (See Attachment A).

The Proto-Power resident engineering staff within the PSC nuclear project engineering office is available for work assignment at all times and is under the day-to-day administrative supervision of PSC professionals.

FSV experienced professionals within the Proto-Power home office staff are assigned full time at a five (5) equivalent man level-of-effort doing design and engineering on FSV plant improvement projects contracted by PSC to Proto-Power. Additional FSV experienced professionals, up to a level of five (5) men, are available for assignment to FSV work on request from PSC.

Technical Support Availability

- The effort of Proto-Power professionals in residence is 100% available under full control of PSC in accordance with a contract which provides for such effort.
- Identifiable tasks are covered by written task orders under a task-type contract.
- The task-type contract provides for additional tasks, as requested by PSC, beyond those covered by specific task orders.
- Verbal authorization for work beyond specifically defined tasks is acceptable to both parties and used when appropriate.

Authorization Authority

- Day-to-day work is authorized through normal PSC Purchasing Department channels.
- Proto-Power will proceed with additional work verbally authorized by:

  K. Fuller - PSC Vice President of Engineering and Planning

  M. Holmes - PSC Nuclear Project Engineering and Licensing Supervisor

  J. Reesy - PSC Nuclear Project Systems Engineering Supervisor

  F. Swart - Manager of PSC Nuclear Project Department

Contract Duration

Proto-Power has been under continuous contract since May 1975. The current contract expires April 30, 1980. Annual contracts have provided for annual review and renewal; contracts have been renewed every year.

Other Technical Support Capabilities

The type of technical support Proto-Power has been - and presently is - providing to PSC is based upon the company's nuclear and fossil steam supply and balance-of-plant systems engineering/analysis capability.

Other Technical Support Capabilities (Cont'd)

Another area of Proto-Power's expertise that is available to PSC when requested is Radiological Engineering Services. The company expertise in this area extends over the areas of radiation and contamination control, specialized work techniques, tooling design, work sequence planning, biological shielding, and work area radiological control. This expertise was accumulated over a 20-year span through direct participation in radiological exposure control/reduction activities in the Naval Nuclear Program, Proto-Power presently has a staff of five (5) professionals engaged in these activities on three large LWR nuclear plants, plus requisite shop and tool supporting activities.

A key characteristic of Proto-Power's Technical Support capability is the fact that it is based on extensive Naval Nuclear Program experience. This experience encompasses conceptual and detail plant design, engineering, construction, test, repair, overhaul, decommissioning and disposal. Skills range from quality assurance for manufacture of nuclear cores to Senior Program Management and include such as Chairmanship of First Naval Nuclear Joint Test Group, hands-on maintenance and repair of systems and equipment under radiological conditions, as well as design engineering and test experience.

PROTO-POWER MANAGEMENT CORPORATION

591 POQUONNOCK ROAD
GROTON, CONNECTICUT 06340

ATTACHMENT A

August 28, 1979

Examples of Technical Support Capability

Fire Protection Engineering. PPMC is qualified and experienced in nuclear plant fire protection review, analysis and engineering, of solutions required for Regulatory compliance. At FSV, PPMC completed the fire protection design review and recommended improvement actions. Subsequent engineering work included the specification, design installation support and test management for the Halon and spray water fire extinguishing systems.

Instrumentation and Control. PPMC is experienced in the identification and solution of operational problems which have occured within the FSV nuclear Plant Protection System (PPS). PPMC undertook the design review of causes and solutions related to serious "noise" elements which have had destructive impact on integrated control circuitry. Following the analysis, PPMC was retained to design, and proof test a prototype optical isolator circuitry module for the absolute protection of vital plant trip circuits within the PPS. This prototype is ready for plant operational testing.

Plant Operational Problem Solving. PPMC nuclear plant professionals have expertise in the analysis and review of machinery and systems operational behavior together with experience background to develop solutions needed to eliminate causes for concern. For example, at FSV, PPMC was retained to investigate and identify the specific cause of numerous and unexplainable shutdown (trips) of the helium coolant circulators. The engineering analysis of the problem, together with the engineering plan for problem solution was accepted by the plant Nuclear Safety Committee as the satisfying basis for lifting previously imposed committee restriction on reactor power operation. As a second example, the PPMC design review of the plant hydraulic system was initiated to explore and solve various problems associated with the hydraulic operation of high temperature valves and the reliability improvement required of the hydraulic power units.

System Engineering and Design. PPMC has the experience and capability to independently analyze, engineer, and design mechanical fluid systems in support of nuclear and balance of plant systems.

PROTO-POWER MANAGEMENT CORPORATION

591 POQUONNOCK ROAD
GROTON, CONNECTICUT 06340

ATTACHMENT A

August 28, 1979

System Engineering and Design Cont'd.

This capability includes hydraulic design, thermodynamics, mechanical stress (and seismic) analysis, system equipment definition and specification, and the preparation of working drawings and associated written data. For example, PPMC has the task of re-engineering the helium circulator auxiliary system at FSV including redesign for redundant split loop operation, and other system changes as required by design and analysis to improve the operational reliability and availability of the existing system. Work includes equipment layout, specification of materials, preparation of working diagrams, analysis of transient and safety related behavior, and planning for the implementation (including removal of existing system equipment).

Plant Component Design Review. Proto-Power has the capability to examine the design and construction of nuclear plant components to validate them suitably for their intended service or identify means for eliminating deficiencies. For example, Proto-Power was retained to review the design of the FSV steam generators from the standpoint of ability to survive operating conditions with respect to creep, creep/fatigue interaction and the metalurgical stability of the high temperature tube material used. Proto-Power , in completing their work, removed serious concerns regarding steam generator tube life.

Inservice Inspection Planning. PPMC professionals are experienced in the application and implementation of plant specifications for examination of plant equipment and systems for ISI. For example, PPMC is currently preparing the program plan and implementation procedures whereby FSV, as the nation's only GCR, will have a specifically engineered inspection plan geared to the requirements which are different than those experienced in Light Water reactor designs.

NUS CORPORATION
NORTHWEST OFFICE
AMERICAN BANK BUILDING
PORTLAND, OREGON 97205
(503) 228-2341

May 9, 1980
WO-PO-80-76

Mr. Jack Gahn
Ft. St. Vrain Plant
Public Service of Colorado
550-15th Street
P. O. Box 840
Denver, Colorado 80201

Dear Mr. Gahn:

In the event of an emergency at the Fort St. Vrain plant, I will be available to provide assistance in radiation monitoring, emergency planning, radiation dose calculations, general health physics and air filtration. In addition, the NUS Corporation could also supply people with water reactor operating experience, training personnel and people with strong analytical capabilities in reactor safety, thermodynamics and radiation shielding.

If you cannot contact me at my office in Portland (Phone - 503-228-2341), please call our office in Palo Alto, California (Phone - 415-494-7175). To obtain assistance from the NUS Corporation, please call our Rockville, Maryland office (Phone - 301-948-7010) and ask for Dr. W. J. Gallagher, Assistant to the President.

Sincerely,

Grady B. Matheney
Manager
Northwest Region

GBM/lb

cc: W. J. Gallagher, Rockville, Md.
K. H. Campbell, Palo Alto, Ca.

Controls for Environmental Pollution, Inc.

1925 Rosina • P. O. Box 5351 • Santa Fe, New Mexico 87502 • Telephone 505/982-9841

April 24, 1980

Mr. D. W. Warembourg
Manager Nuclear Production
Public Service Company of Colorado
16805 Road 19½
Platteville, Colorado 86051

Subject: Commitment for Emergency Assistance

Dear Don:

This letter will confirm that Controls for Environmental Pollution, Inc. has agreed to assist Public Service Company of Colorado in the event of an emergency situation with Fort St. Vrain Nuclear Generating Station.

This assistance will be in the form of direct participation by CEP employees both off-site and on-site, on an as needed basis. Availability will be immediate for any assistance which can be performed at CEP's home office and within 8 hours for assistance requiring travel to Fort St. Vrain or other Public Service Company of Colorado facilities.

We would expect to provide assistance in the following general areas:

1. Collecting and analyzing radiological environmental s
2. Receiving and analyzing samples on an emergency basis.
3. Assistance with health physics monitoring.
4. Providing monitoring assistance and radiological monitoring.
5. Analyzing urine and feces samples from Fort St. Vrain personnel.
6. Post emergency write-up reports.

Following are the names and telephone numbers, both home and office numbers for persons who may be contacted to respond to a request for emergency assistance:

James J. Mueller
Office,
Home,

Don Brodmerkel
Office,
Home,

Elmer D. Martinez
Office,
Home,

April 24, 1980

D. W. Warembourg

You are hereby authorized to use this letter in support of any of your applications for licenses or approvals from federal, state or local agencies who may be involved with, or affected by, your emergency planning activities.

Very truly yours,

CONTROLS FOR ENVIRONMENTAL POLLUTION, INC.

James J. Mueller
President

ch

IIB-5(h) COLORADO STATE UNIVERSITY

Department of Radiology and Radiation Biology
303/491-5222

Colorado State University
Fort Collins, Colorado
80523

September 27, 1979

TO: Public Service Company of Colorado
P. O. Box 840
Denver, CO 80200
Attn: R. Petzke

FROM: James E. Johnson, Professor

SUBJECT: Environmental and personal radiation monitoring capabilities in the event of a non-normal radioactivity release from the FSV reactor.

Colorado State University has conducted the radiation environmental surveillance program at the FSV reactor since 1969. This period includes the entire preoperational phase as well as the current operational phase. This program has been on a contractual basis with the University.

All personnel and facilities that currently are committed to the environmental radiation surveillance program at the FSV reactor would be available for immediate response in the event of a release. The procedure would be to collect current samples from all stations and begin a new sampling period. In addition all backup equipment could be used for additional sampling stations if necessary.

The principle teaching program of the department is radiation protection technology and major research programs are in the areas of environmental radioactivity and personal radiation dosimetry. The personnel in the radiation protection areas include four certified health physicists as well as two radioecologists. These would be available for assistance to reactor, state or governmental groups. In addition the department has a full range of monitoring equipment which is continuously available. A whole-body counter is in operation at the department main building which is less than 30 miles from FSV. The department also has expertise in agricultural considerations of food chain transport of any environmental radioactivity.

The personnel and resources of the department would be available to assist and/or direct any radiation protection effort.

May 1, 1980

Mr. Don W. Warembourg
Manager, Nuclear Production
Fort St. Vrain Nuclear Generating Station
Public Service Company of Colorado
16805 Weld County Road 19½
Platteville, CO 80651

Dear Don:

In the event of a radiological emergency at Fort St. Vrain, I will be available to assist the plant's staff on problems relating to nuclear engineering and health physics.

I have been associated with Fort St. Vrain as a consultant since initiation of the project. I have remained current on the operational status of the plant because of my direct involvement with the rise-to-power test program, my membership on the Nuclear Facility Safety Committee and because of the numerous operations, health physics, security and technical specifications audits that I have performed as an audit team member.

Very truly yours,

H. G. Olson

H. G. Olson

HGO:bp

DONALD T. KLODT, Ph.D
CONSULTING METALLURGIST
5303 E. Evans Ave. #204 (303) 757-7547
DENVER, COLORADO 80222

May 3, 1980

Mr. D. W. Warembourg
Ft. St. Vrain Nuclear Generating Sta.
Public Service Company of Colorado
16805 Road 19½
Platteville, Colorado 80651

Subject: Metallurgical expertise and assistance during periods of emergency at Ft. St. Vrain.

Dear Mr. Warembourg:

This letter will serve to notify you of my availability as a metallurgical consultant in the event of emergency situations which might develop at the Ft. St. Vrain Nuclear Generating Station. I can be reached in Denver at my office (303-757-7547) or at my home . I believe that you are fully aware of my areas of expertise in metallurgy, corrosion, failure analysis, and welding from my past work as a consultant to Ft. St. Vrain and other areas within PSCo of Colorado.

My current consulting fee schedule is $45.00/hr plus expenses. If you desire additional information or have questions, please call me.

Sincerely,

Donald T. Klodt

Donald T. Klodt

cc: Mr. Larry McInroy

R. S. Landauer, Jr. & Co.
Division of Technical Operations, Incorporated

Glenwood Science Park
Glenwood, Illinois 60425
Telephone (312)755-7000

June 6, 1980

Tim Schleiger
Public Service Company of
Colorado
P.O. Box 361
Plattville, Colorado 80651

Dear Mr. Schleiger:

R. S. Landauer, Jr. & Co. has the capability of providing 24 hour, 7 days a week emergency processing.

There are various methods available to send the film to us. Federal Express and Emory Airborne guarantee 24 hour delivery. In addition most of the major airlines provide a special delivery from airport to airport.

Upon receipt of the film(s) at our facility it is a matter of a couple of hours to process, read, and evaluate the dose.

We also have emergency processing available at our El Segundo sales office. The girl in the office has been thoroughly trained to process and compute exposures for film and TLDs.

We, at R. S. Landauer, Jr. & Co., are eager to help you in the event of a shut down or any other emergency condition.

If you have any further questions concerning these procedures, please do not hesitate to contact me.

Sincerely,

R. S. LANDAUER, JR. & CO.
DIV. OF TECHNICAL OPERATIONS, INC.

Jeannine MacDonald
Technical Assistant

JMD/ml

25 Years of Exceptional Service

ST ANTHONY HOSPITAL SYSTEMS

CENTRAL 4231 WEST 16TH AVENUE • DENVER COLORADO • 80204 • (303) 629-3511
NORTH 2551 WEST 84TH AVENUE • WESTMINSTER COLORADO • 80030 • (303) 426-2151
SUMMIT MEDICAL CENTER P.O. BOX 738 • FRISCO COLORADO • 80443 • (303) 668-3300

E. V. KUHLMAN, Executive Director

November 16, 1982

Don. W. Warembourg
Manager, Nuclear Production
Fort St. Vrain Nuclear Generating Station
16805 WCR 19 1/2
Platteville, Colorado 80651

Dear Mr. Warembourg,

I have received your letter requesting to arrange for transporting victims of radiological accidents from the Fort St. Vrain Nuclear Generating Station.

St. Anthony Hospital Systems' Flight For Life agrees to respond to the Fort St. Vrain facility in Platteville, Colorado, at the request of the Weld County Communications Center for emergency medical assistance. As stated in your letter, our communications dispatcher will verify to your Shift Supervisor that Flight For Life is (or is not) responding to the request by calling 571-7436.

Per your policy, patients who have potential contamination or radiological complications will be transported to St. Lukes Hospital. However, it is the attending Flight Nurse's decision to deviate to another medical facility if the medical condition warrants.

A Health Physics Technician from Fort St. Vrain may accompany the patient on the helicopter if conditions allow, as determined by the pilot and flight nurse.

Sincerely,

Daniel R. Reich

Daniel R. Reich
Director of Flight Operations

DRR/jk
cc: J. Goetzinger
Dr. Dracon
Dusty Eid
Megan Drelles
Operations Manual

Founder of Flight For Life

WELD COUNTY AMBULANCE SERVICE
PHONE (303) 353-67000
356-4000 EXT. 785
1502 HOSPITAL ROAD
GREELEY, COLORADO 80631

November 24, 1982

Don W. Warembourg
Fort St. Vrain Nuclear Generating Station
16805 WCR 19½
Platteville, CO 80651

Dear Mr. Warembourg:

We have received your letter dated November 8, 1982 and a copy of the emergency response plan. In support of that plan, Weld County Ambulance agrees to provide ambulance service to the Fort St. Vrain Nuclear Generating Station for any illness or injury which may occur. That service will normally come from the Ft. Lupton station, with backup from Greeley and the Air Life helicopter.

Our dispatch center will notify us, Platteville Fire-Rescue and St. Anthony's Flight for Life of any medical emergency at your facility. There will be no difficulty accomodating your health physics technician in our ambulance. We also understand that St. Luke's Hospital will be the destination of choice for contaminated patients. Other patients will be transported to a hospital of their choice, with patient condition being the determining factor.

We look forward to working with you and your staff. Please contact me directly if there are any questions regarding our service.

Cordially,

WELD COUNTY AMBULANCE SERVICE

Jerry Wones
Director

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

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 10.D

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

APPENDIX D

TITLES OF WRITTEN PROCEDURES THAT IMPLEMENT OR SUPPLEMENT THE PLAN

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 10.D

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

APPENDIX D

TITLES OF WRITTEN PROCEDURES THAT IMPLEMENT OR SUPPLEMENT THE PLAN

APPENDIX D

Procedure Designation and Title		Implements/ Supplements RERP Section No.
FSV Administrative Procedures		
G-2	FSV Procedure Systems	8
G-3	Action Request - Preparation and Processing	8
G-4	Security, Visitor, and Reactor Building Access Control	6
G-5	Personnel Emergency Response	5,6
G-7	FSV Project Personnel Training and Qualification Programs	5,8
G-9	Controlled Work Procedures	9
G-10	Data Management	8
P-1	Plant Operations	5,6,8,9
P-3	Radioactive/Contaminated Waste/ Area Control	6,9
P-4	Surveillance Testing Program	7
P-6	Controlled Work Procedures	4,7
P-7	Work Control - Maintenance	9
P-8	Fire Fighting and Prevention	5,6
P-10	Safe Work Practices	6
Q-1	FSV Organization and Responsibilities	5
Q-2	Quality Assurance Program	8
Q-3	Design Control System	9
Q-16	Corrective Action System	8
Q-18	QA Monitoring and Audit Program	8

APPENDIX D

Procedure Designation and Title		Implements/ Supplements RERP Section No.
Health Physics Procedures		
HPP-1	Intervals of Surveys and Use of Survey Maps	6
HPP-2	Bioassay Procedure	6
HPP-8	Radiation Surveys	6,9
HPP-9	Establishing and Posting Controlled Areas	6,9
HPP-10	Area and Equipment Decontamination	6,9
HPP-11	Personnel Decontamination	6
HPP-12	Portable Air Sample Collection and Analysis	4,6
HPP-13	Continuous Air Monitor Instructions, Alpha, Beta, Gamma	4
HPP-14	Analytical Instrumentation Room	4,6
HPP-16	Selection and Use of Respiratory Protection Equipment	6,7
HPP-17	Determining Radioactive Liquid Release Rates	4,6
HPP-18	Manual Calculation of Radioactive Gaseous Release Rates	4,6
HPP-20	Operation and Calibration of Radiation Detection Instruments	7,8
HPP-21	Surface Radioactive Contamination Surveys	6,9
HPP-26	Handling and Disposal of Radioactive Material Control and Handling	6,9
HPP-27	Personnel Dosimetry	6,9

APPENDIX D

Procedure Designation and Title		Implements/ Supplements RERP Section No.
HPP-30	Radioactive Material Classification, Packaging, and Labeling	6,9
HPP-33	Fast Gas and Iodine Sampling	4,5
HPP-37	RERP Inventory List	6,7
HPP-44	Radioactive Incident Material Spill	4
HPP-45	Air Activity Analysis Using the RM 14/15 with HP210 Probe	6
HPP-48	Routine Maintenance, Inspection, and Cleaning of Respiratory Equipment	7,8
HPP-50	Breathing Air System Sampling Procedure	6
HPP-51	Changing RT Monitor Filters Procedure	6
HPP-53	RT 7325 and RT 73437 Emergency Filter and Cartridge Removal	6
HPP-56	Reactor Building Exhaust Stack Discharge Activity Calculation	6
HPP-63	Quantitative Respirator Fit Testing	6,7,8
HPP-64	Operating the Harshaw TASC-12-A6 Automatic Alpha/Beta Counting System	6
Radiochemistry Procedures		
RCP-9	Sample Preparation For Gamma Spectral Analysis	6,9
RCP-24	Analysis Procedure for Vent Particulate and Iodine Monitor (SR 5.8.1f)	6
RCP-36	Radioactivity Calculations	6
RCP-38	Operation and Calibration of Computer Based-Beta Gamma Analysis System	6,9

APPENDIX D

Procedure Designation and Title		Implements/ Supplements RERP Section No.
RCP-40	Operation and Calibration of the Whole Body Counting System	6,9
Procedure Manuals and Plans		
	Training Programs Administrative Manual Situation Response Training, Sections 4.0 - 4.6	8
	Fire Supression and Prevention Manual Sections 1, 2, 8	5,6,7,8
	Emergency Procedures Manual (EPs) All Sections	4,5,6
	Station RERP Implementing Procedures All Procedures	All
	Medical Emergency Plan	5,6,7
	Safe Shutdown and Cooling with Highly Degraded Plant Conditions and Abnormal Procedures for Shutdown Cooling	4,6
	Security Administrative Procedures	4,6
	Administrative Services Procedures	4,6
	Public Service Company RERP Public Information Plan	5,7,8,9
	State of Colorado Fort St. Vrain Radiological Emergency Response Plan (State RERP)	5,6,7,8
	Weld County Radiological Emergency Response Plan	5,6,7,8
	Security Instruction 6.10 (Personnel Accountability for Station Emergencies)	5,6

APPENDIX D

Procedure Designation and Title	Implements/ Supplements RERP Section No.
Operations Order Book	All

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 10.E

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

APPENDIX E

LISTINGS OF EMERGENCY KITS, PROTECTIVE EQUIPMENT

AND SUPPLIES STORED AND MAINTAINED FOR EMERGENCY PURPOSES

APPENDIX E

TABLE OF CONTENTS*

Title	Page
Personnel Control Center Emergency Kits	3
Control Room Emergency Supplies	5
Health Physics Area Emergency Supplies	7
Decon Area Equipment List	8
First Aid Room Equipment List	10
Technical Support Center Emergency Kit	11
Emergency Respiratory Protective Equipment	12

* This appendix contains information that was current at time of this revision to the RERP. In all cases, the most current issue of HPP-37 provides the listing which Emergency Kits are to be maintained in accordance with.

PERSONNEL CONTROL CENTER EMERGENCY KITS

- Keys to Longmont Service Center
- Keys to Johnstown County Shop
- Assignment board
- Set of maps and instructions
- Log book
- Scratch pads & pencils
- Wax pencils (black & red) and fillers
- Emergency kit instructions
- Emergency kit content list
- Copy of procedures (HPP)
- Emergency procedures
- Exposure Records
- Radiological Health Handbook
- Calculator with battery
- Yellow pads
- Polyethylene sheets
- 1 Gal. sample bottles
- .5 Gal. plastic bags
- Small plastic bags
- Large yellow plastic bags
- Air Sample Filter Packets (filter, silver zeolite, envelope)
- Wipe envelopes
- Box of 2 inch wipes
- Charcoal cartridges
- Box of 2 inch planchets

- Plastic gloves
- 2 inch masking tape
- Body outline tags
- First aid kit
- Radiation tape
- Warning signs
- Yellow Rope
- Radiation ribbon
- Road Signs
- Directional Signs
- Film Badges
- Low range dosimeters
- High range dosimeters
- Dosimeter charger
- Flashlights/with batteries
- Full-face respirators
- Scott Air Paks
- Air sampler
- RM 14/15
- Ion chamber
- HP 210 probe - pancake
- Batteries
- Electric generator (Parcel Search Room)
- Keys for both site assigned vehicles
- Telephone speaker cradle
- Miscellaneous Tools (screwdriver, allen wrench, wrenches)
- Potassium Iodide Tablets

Drum Decon Supplies and Anti-C's

- Anti-C coveralls - paper
- Shoe covers - paper
- Cotton gloves
- Masking tape
- Vinyl gloves
- Cotton gloves
- Cotton balls
- Q-Tips
- Disposable paper towels
- Decon soap
- Urine sample bottles
- Waterless hand cleaner
- Large Poly Bags
- Small Yellow Poly Bags
- Masking Tape
- Radiation Tape
- Wipe Envelopes

EAB, EPZ Survey Team Kits

- SAM-II scaler, shield
- PIC-6A or Equivalent
- RM 14/15 with HP-210 Probe
- Air Sampler
- Filter, silver zeolite, air sample packets
- Box of 2" wipes
- Wipe envelopes

- Calculator with battery
- Stopwatch
- Radiation Boundary Tape
- Plastic Gloves
- Flashlight with batteries
- Set of Maps
- Clipboard
- Tablet of paper
- Log Book
- Copies of procedure RERP-FIELD
- Black Pens
- Red Pens
- Compass
- Pencils

CONTROL ROOM EMERGENCY SUPPLIES

- High and low range dosimeters
- Scott Air Paks
- Air line respirators
- Implementing documents
- Controlled Distribution Set of station piping and instrument (P&I) drawings
- Controlled Distribution Set of station floor plan drawings
- First aid kit

HEALTH PHYSICS AREA EMERGENCY SUPPLIES

- High and low range dosimeters
- Dosimeter charger
- Dose rate survey meters
- Contamination survey meters
- Protective clothing
- Respiratory equipment - full face filter/cannister type (with spare filters or cannisters)
- Respiratory equipment - full face, self contained (with spare bottles)
- Air samplers and cartridges
- Flashlights
- Spare Batteries
- Spare flashlight bulbs
- Poly bags, tape, survey sheets, clipboard, pencils, chalk, radiation warning signs, barrier tape, and wipes preloaded in envelopes
- Implementing documents
- Set of station, piping, and instrument drawings
- Set of station floor plan drawings

DECON AREA EQUIPMENT LIST (1)

- Disposable gloves
- Rubber gloves
- Detergent
- Handsoap
- Duct tape and masking tape
- Wash cloths
- Towels - disposable
- Cotton balls
- Cotton swabs
- Eye lotion
- Eye wash
- Eye cups
- Facial tissue
- Nasal swipes
- Poly bottles
- Decontamination chemicals
- Anti-Cs
- Bandages
- Yellow poly bags
- Clear poly bags
- Cloth sheets
- Cloth blankets
- Film Badges
- Blankets

(1) Located in Health Physics Area

- First Aid Kit - Large
- First Aid Kit - Small
- Radiation boundary tape
- Body outline tags
- Wipes and envelopes
- Pens

FIRST AID ROOM EQUIPMENT LIST (1)

- Treatment bed
- Instrument and first aid supply cabinets
- Trauma kit (located in Shift Supervisor's Office)
- Canvas stretcher
- Wire basket stretcher
- Stokes stretcher
- Crutches
- Canes
- First aid equipment and supplies
- Medical equipment and supplies

(1) Located on Level Five (5), adjacent to West Entrance

TECHNICAL SUPPORT CENTER EMERGENCY KIT

- Wipes
- Maslinn cloth
- Radiation boundary ribbon
- Full face respirators
- Anti-C's
- 0-200 mR dosimeters
- Bar soap
- Dosimeter charger with batteries
- RM-14/15 with HP-210 Probe
- Coaxial Cable
- Survey Maps
- Scott Air Packs

EMERGENCY RESPIRATORY PROTECTIVE EQUIPMENT*

- Turbine Deck
  - Full face air line respirators
  - Half face respirators with cannisters
- Health Physics
  - Four Scott air packs and five spare bottles
- Outside control room
  - Two Scott air packs
- Inside Control Room
  - Five Scott air packs
- Outside Auxiliary Electric Room
  - Two Scott air packs
- Outside 480V Room
  - Two Scott air packs
- Main Entrance Administration Area (West)
  - Two Scott air packs and 2 spare bottles
- Chemical Bldg.
  - One Scott air pack
- Central Alarm Station
  - Two Scott air packs
- Search and Identification Building
  - Five Scott air packs

* These Scott air packs may be shown on individual center inventory lists also.

- Technical Support Center
  - Five Scott air packs
- Personnel Control Centers
  - Five at each primary PCC

TITLE: RADIOLOGICAL EMERGENCY RESPONSE PLAN, SECTION 10.F

ISSUANCE AUTHORIZED BY	Don Warembourg by Milt McBride		
PORC REVIEW	PORC 497 DEC 27 1982		EFFECTIVE DATE 1-3-83

APPENDIX F

CROSS REFERENCE TO NUREG-0654, REV. 1

APPENDIX F

Cross Reference between NUREG-0654 Rev. 1, and the Fort St. Vrain Radiological Emergency Response Plan.

I. Planning Objective and Evaluation Criteria

A. Assignment of Responsibility (Organization Control)

1)

a) 5.3.2, 5.3.3, 5.4, 5.4.2

b) 5.2, 5.2.1, 5.2.2, 5.3, 5.3.1

c) Figures 5.2-1, 5.2-2, 5.2-3, 5.2-4, 5.2-6

d) 5.2.1

e) 7.2

2) a) N/A

b) N/A

3) 10. Appendix A

4) 5.2.1.a, Figure 5.2-2

B. Onsite Emergency Organization

1) 5.2; 5.2.1, 5.2.2, Figures 5.1-1, 5.1-2, 5.2-1, 5.2-2

2) 5.2, 5.2.1

3) 5.2.1

4) 5.2, 5.2.1.b

5) 5.2.2, 5.3, 5.3.1; Figures 5.2-2, 5.2-3, 5.2-4, 5.2-5 (see also P-81308)

6) 5.3.1

7) 5.3.1

a) 5.3.1.d

b) 5.3.1.b, 5.3.1.a

c) 5.3.1.a

d) 5.3.1.c

8) 5.3.2, 5.3.3, Table 5.3-1

9) 5.3.2, 10. Appendix A

C. Emergency Response Support and Resources

1)

a) 5.4.2

b) 5.4.2

c) 5.4.2

2)

a) N/A

b) 5.4.1.a, 5.4.1.b

3) 6.5.1, 7.3.2, Table 5.3-1

4) 5.3.2, 5.3.3, 5.4.2, 10. Appendix A; Tables 5.3-1, 7.3-2

D. Emergency Classification System

1) 4.1, 4.2, Tables 4.1-1 through 4.1-4

2) Tables 4.1-1 through 4.1-4

3) N/A

4) N/A

E. Notification Methods and Procedures

1) 6.1

2) 6.1

3) Figure 6.1-1, 6.1-2

4) a)-l) Figure 6.1-4, 6.1.3

m) Not Applicable

n) Figure 6.1-4, 6.1-3

5) N/A

6) 6.4.1.b

7) 6.4.1.b

F. Emergency Communications

1) Figures 7.2-1, 5.2-2

a) 6.1, 7.2

b) 6.1, 7.2

c) 6.1, 7.2

d) 6.1, 7.2, Figure 7.2-1

e) 6.1

f) 6.1; Figure 7.2-1

2) 6.5.3, 6.5.4

3) 8.1.2, 8.3

G. Public Information

1) 8.1.1.d

2) 8.1.1.d

3)

a) 5.4.1.a, 5.4.1.b

b) 5.4.1.a

4)

a) 5.3.1.c

b) 5.3.1.c

c) 5.4.1.a, 5.4.1.b

5) 8.1.1.d

H. Emergency Facilities and Equipment

1) 7.1.1

2) 7.1.2

3) N/A

4) 5.2, 6.1

5) 7.3.1; Tables 7.3-1, 7.3-2, 4.1-1 through 4.1-4

a) 7.3.1.a, Table 7.3-1

b) 7.3.1.b, Table 7.3-1

c) Tables 4.1-1 through 4.1-4

d) 7.3.1.b

6)

a) 7.3.2; Table 7.3-2

b) Table 7.3-2

c) Table 7.3-2

7) 6.2, 7.3.2

8) 6.2; Table 7.3-1

9) 7.1

10) 8.3

11) 10. Appendix E

12) 1.19, 5.2.2.a

I. Accident Assessment

1) Tables 4.1-1 through 4.1-4

2) 7.3, Table 7.3-1

3)

a) Section 6.2

b) 6.2; Tables 4.1-1 through 4.1-4

4) 6.2; Tables 4.1-3, 4.1-4

5) 6.2; Table 7.3-1

6) 6.2

7) 6.2, 6.4.3.b; Table 6.2-1

8) 6.2

9) 6.2

10) 10. Appendix D.

11) N/A

J. Protective Response

1)

a) 6.4.1.a

b) 6.4.1.a

c) 6.4.1.a

d) 6.4.1.a.2

2) 6.4.1.a

3) 6.4.1.a.1, 6.4.1.a.3

4) 6.4.1.a.3

5) 6.4.1.a.1

6)

a) 6.4.2; Table 6.4-2

b) 6.4.2; Table 6.4-2

c) 6.4.2; Table 6.4-2

7) 6.2, 6.4, 6.4.1.b; Table 6.2-2

8) Table 10.C-1

9) N/A

10)

a) Figures 10.C-1, 10.C-4, 10.C-5, 10.C-7

b) Figure 10.C-3, Table 10.C-1

c) 6.4.1.b

d-1) N/A

m) 6.4.1.b

11) N/A

12) N/A

K. Radiological Exposure Control

1) a)-g) Table 6.5-1

2) 6.5.1

3)

a) 6.5.1

b) 6.5-1

4) N/A

5)

a) 6.4.3, 6.5.2

b) 6.5.2

6)

a) 6.4.3.a.1

b) 6.4.3.a.1

c) 6.4.3.a.1

7) 6.4.1.a.3, 6.5.2

L. Medical and Public Health Support

1) 6.5.4

2) 6.5.2

3) N/A

4) 6.5.3

M. Recovery and Reentry Planning and Postaccident Operations

1) 9.0, 9.1, 9.2

2) 9.1, Figure 9.1-1

3) 9.1

4) 4.2

N. Exercises and Drills

1)

a) 8.1.2.a

b) 8.1.2.a

2)

a) 8.1.2.b

b) 8.1.2.b

c) 8.1.2.b

d) 8.1.2.b

e) (1) 8.1.2.b

(2) 8.1.2.b

3) a-f) 8.1.2.a

4) 8.1.2.a

5) 8.1.2.a, 8.1.2.b

J. Radiological Emergency Response Training

1) 8.1.1.b

a) 8.1.1.c

b) N/A

2) 8.1.2.b

3) Figure 8.1-1

4) a-j) Figure 8.1-1

5) 8.1.1.a, 8.1.1.b

P. Responsibility for the Planning Effort: Development, Periodic Review, and Distribution of Emergency Plans

1) Figure 8.1-1

2) 8.1.3

3) 8.1.3

4) 8.1.2, 8.2

) 8.2

6, Table 10.A-1

7) 10. Appendix D

8) 10. Appendix F

9) 8.2

10) 8.3