Attachment

Report of Change and Summary of 50.54(q) Analysis
Emergency Plan Implementing Procedure 5.7.19, Revision 15

Change Description

Revision 15 of Emergency Plan Implementing Procedure (EPIP) 5.7.19, On-Site Radiological Monitoring, is a total re-write to meet new format and performance guidance provided by Cooper Nuclear Station's (CNS) procedure writer's guide. The revisions included section/step sequence changes, changing notes containing actions into procedure steps, deleting redundant steps/duplicate information, and re-writing steps to improve human performance.

Additional changes made were as follows: revised Section 1 to describe entry conditions; added a statement in Section 1 of Attachment 1 that the on-site survey entails interior space of all station buildings to site boundary; removed the dosimeter of legal record from the list of equipment required in emergency lockers; and, added two regulatory commitments that were omitted from previous EPIP revisions for maintaining the ongoing process for obtaining total iodine inhalation dose rate and proper utilization of the Post Accident Sampling System.

Change Summary of Analysis (10 CFR 50.54(q) evaluation)

Licensing Basis Affected by Change:

CNS Emergency Plan (E-Plan), Appendix A, discusses that in the event of an accidental release involving radionuclides, data obtained from the on-site survey will be used to make initial assessments concerning the magnitude of the accident and decisions concerning evacuation of site personnel. This EPIP describes the emergency on-site radiological monitoring necessary to determine dose rates, airborne particulate, noble gas, and radioiodine activity levels due to an accidental release of radionuclides.

How Change Complies with Regulations and Previous Commitments:

10 CFR 50.47(b)(9) requires that adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

The change continues to comply with the above regulation as on-site radiological monitoring continues to be implemented as required.

Two applicable regulatory commitments references were added to the EPIP as discussed in the change description above. There were no conflicts identified with the regulatory commitments associated with the E-Plan.

Affected Emergency Planning Functions/Impact on Effectiveness of Emergency Planning Functions:

10 CFR 50.47(b)(9); Function - Methods, systems, and equipment for assessment of radioactive releases are in use.

This change did not affect the meaning or intent of descriptions, facilities/equipment, or the process for decontamination. The change continues to meet the above planning standard and does not constitute a decrease in effectiveness of the E-Plan.

Enclosure

Emergency Plan Implementing Procedure 5.7.19, Revision 15

COOPER NUCLEAR STATION

Operations Manual

Emergency Preparedness

EMERGENCY PLAN IMPLEMENTING PROCEDURE

5.7.19

ON-SITE RADIOLOGICAL MONITORING

Level of Use:	**INFORMATION**
Quality:	**QAPD RELATED**
Effective Date:	**4/11/18**
Approval Authority:	**ITR-RDM**
Procedure Owner:	**EMER PREP ON-SITE COORD**

TABLE OF CONTENTS

1. ENTRY CONDITIONS

1.1 Unexpected plant release of radioactive material has occurred.

1.2 Dispatch required for On-Site Monitoring Team(s) with associated communications equipment.

2. INSTRUCTIONS

NOTE – Monitoring Teams may be assigned one or more of following tasks; gross Gamma and/or Beta dose rate measurements, air particulate levels, and radioiodine levels.

2.1 EQUIPMENT AND MATERIALS

2.1.1 As a minimum, following equipment and material available from Emergency Lockers is required:

- High range survey instrument.
- Appropriate self-reading Dosimeter.
- Hand-held radios, if deemed necessary.
- Protective clothing and/or respirators.
  - Coveralls, hoods, shoe covers.
  - Respiratory equipment (self-contained or filter mask).
- Air sampler (only if airborne sampling is required).
- Plastic bags and envelopes for air samples.

2.2 TEAM ASSIGNMENTS

2.2.1 OSC Chem/RP Lead **SELECT** team members from personnel assembled at OSC per EPIP 5.7.15.

2.2.1.1 **ASSIGN** minimum of two persons to each team.

CAUTION – Emergency radiation exposures in excess of occupational limits authorized by Emergency Director per EPIP 5.7.12. Under no circumstances are exposures for sampling or monitoring procedures to exceed 5 rem (0.05 Sv) TEDE.

2.2.1.2 **PERFORM** initial briefing for teams on current plant status and radiological conditions prior to dispatch.

2.2.1.3 **DESIGNATE** Team Leader for each team.

NOTE – KI use authorized by ED only per EPIP 5.7.14. KI use will be discussed and appropriate attachment(s) of EPIP 5.7.14 completed.

2.2.2 **OBTAIN** appropriate equipment from Emergency Lockers.

2.2.3 Teams **PERFORM** following tasks:

2.2.3.1 **DON** protective clothing and respiratory equipment, if necessary.

2.2.3.2 **RECORD** dosimeter readings.

2.2.3.3 **PERFORM** operational check of survey instruments.

2.2.3.4 **PERFORM** source response check of survey instruments.

a. **ENSURE** adequate battery life.

2.2.3.5 **ALLOW** warm up time for high range survey equipment.

2.2.3.6 If necessary, **ASSEMBLE** appropriate air sampling equipment (sampler, cartridge, and filter paper) using proper cartridge(s).

a. **IDENTIFY** flow direction of filter paper and cartridge before installation.

NOTE – Noble gas concentrations may be determined by subtracting silver zeolite results from charcoal results.

b. IF both radioiodine's and noble gases to be analyzed, THEN **USE** charcoal cartridges.

c. IF only radioiodine's to be evaluated, THEN **USE** AgX, silver zeolite cartridges.

d. **INSTALL** particulate filter and cartridge in air sampler.

e. **TURN ON** air sampler and check proper flow rate (3 cfm) can be obtained.

2.3 ON-SITE MONITORING

2.3.1 RPT **PERFORM** Dose Rate Survey.

2.3.1.1 **USE** caution when entering area.

2.3.1.2 **KEEP** survey meter on while in route to survey location.

a. **SET** instrument on lower scale.

b. **OBSERVE** meter reading to establish background.

c. **MONITOR** for increasing dose rates.

d. **VERIFY** indicated dose rates by changing scales.

2.3.1.3 **DETERMINE** if any of following conditions exist:

- Dose rates greater than 10 rem/hr (0.1 Sv/hr).
- Presence of steam or spillage.
- Failed piping or equipment.

2.3.1.4 IF any of these conditions encountered,
THEN **LEAVE** area and **CONTACT** OSC Chem/RP Lead.

a. OSC Chem/RP Lead **CONTACT** Chem/RP Coord.

b. Chem/RP Coord **DETERMINE** further team actions.

2.3.2 BETA-GAMMA DOSE RATE SURVEY

2.3.2.1 **USE** ion chamber survey instrument with window closed.

2.3.2.2 **TAKE** dose rate measurement with detector held about 3' off floor (waist level).

2.3.2.3 **RECORD** readings on Survey Data Forms.

2.3.2.4 **TAKE** overhead and floor level radiation readings to ensure they are not significantly higher than waist level readings.

2.3.2.5 **REPEAT** procedure with window open.

2.3.2.6 **DETERMINE** Beta dose rate using Correction Factor recorded on side of instrument.

2.3.2.7 **RECORD** Beta dose rate readings on Survey Data Forms.

2.3.3 AIR SAMPLING

2.3.3.1 **ASSEMBLE** air sampling equipment per Step 2.2.3.6 (should be completed before arriving at sampling location).

2.3.3.2 **START** air sampler.

a. **NOTE** time.

b. **ADJUST** flow rate to ~ 3 cfm.

c. **ALLOW** sampler to run at least 5 minutes.

d. **RECORD** following on air Sample Data Form:

- Start time.
- Stop time.
- Flow rate.
- Location.
- Air sample type.

2.3.3.3 **PLACE** particulate filter and radioiodine cartridge in separate plastic bags.

2.3.3.4 **LABEL**, **DATE**, and **SEAL** plastic bags.

a. **RETURN** particulate filter and iodine cartridge to Radio Chemistry Counting Room for analysis.

b. **OBTAIN** total iodine inhalation dose rate (mrem/hr).

1. **MULTIPLY** I-131 air concentration (μCi/cc) by appropriate correction factor.

Effective Age (hr)	Correction Factor (mrem - cc/hr - μCi I-131)
0 to 2	2.6E+9
2.1 to 10	2.4E+9
10.1 to 30	2.1E+9
30.1 to 100	2.0E+9
> 100	1.86E+9

2.3.4 **REFER** to Procedure 8.4.1.2 for collection of radioiodines, particulates, and noble gas samples at release pathway.

2.3.4.1 Chem RP Coordinator **DIRECT** implementation of this procedure, if required.

2.3.5 **OBTAIN** post-accident samples of primary coolant and containment atmosphere to aid in release core degradation information, if needed.

2.3.6 **REFER** to Procedure 8.4.1.1.

2.3.6.1 Chem RP Coordinator **DIRECT** implementation of this procedure, if required.

ATTACHMENT 1 INFORMATION SHEET

1. PURPOSE©[2]

   1.1 Emergency on-site radiological monitoring necessary to determine exposure rates, airborne particulate, noble gas, and radioiodine activity levels due to an accidental release of radionuclides.

   1.2 On-site survey entails interior space of all station buildings to site boundary.

2. PRECAUTIONS AND LIMITATIONS

   2.1 Clearly label contaminated material.

   2.2 Control access and egress from area.

3. DISCUSSION

   3.1 In event of accidental release involving radionuclides, data obtained from on-site survey will be used to make initial assessments concerning magnitude of accident and decisions concerning evacuation of non-essential site personnel.

   3.2 Principal concerns for accidental radioactive releases, particularly gaseous releases, include limiting internal doses through appropriate respiratory protection equipment, anti-contamination clothing, limiting external exposures by identifying areas of high external radiation, and containment of the material to prevent the spreading of contamination or release to the environs.

   3.3 During events which involve damage to decayed spent fuel, particular attention should be given to skin dose resulting from gaseous Kr-85. Kr-85 emits Beta radiation with a maximum energy of 0.67 MeV for 99.6% of the decays and 0.51 MeV Gamma radiation for 0.4% of the decays. Consequently, direct exposure to this gas would result in a dose to the skin ~ 100 times the whole-body dose. In event of serious accident involving decayed spent fuel, protective actions would be needed for personnel on-site, while off-site doses (assuming an exclusion area radius of 1 mile from the plant site) would be well below Environmental Protection Agency's Protective Action Guides. Accordingly, it is important to be able to properly survey and monitor for Kr-85, and to assess the skin dose to workers who could be exposed to Kr-85 in event of an accident with decayed spent fuel.©[1]

4. RECORDS

4.1 This procedure does not generate any quality records.

5. REFERENCES

5.1 CODES AND STANDARDS

5.1.1 Environmental Protection Agency EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, May 1992.

5.1.2 NPPD Emergency Plan for CNS.

5.1.3 NUREG 0654/FEMA-REP-1, Revision 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants.

5.2 PROCEDURES

5.2.1 Emergency Plan Implementing Procedure 5.7.12, Emergency Radiation Exposure Control.

5.2.2 Emergency Plan Implementing Procedure 5.7.14, Stable Iodine Thyroid Blocking (Ki).

5.2.3 Emergency Plan Implementing Procedure 5.7.15, OSC Team Dispatch.

5.2.4 Chemistry Procedure 8.4.1.1, Post-Accident Sampling System.

5.2.5 Chemistry Procedure 8.4.1.2, Gaseous Releases Emergency Sampling.

5.3 MISCELLANEOUS

5.3.1 ©[1] NRC Information Notice 90-08. Affects Attachment 1, Step 3.3.

5.3.2 ©[2] NRC Commitment NLS2014035-03, maintains I-131 site survey detection capability, including an ability to assess radioactive iodines released to off-site environs, by using effluent monitoring systems or portable sampling equipment. Commitment affects entire procedure and is annotated in Attachment 1, Section 1, Purpose.