Northern States Power Company

Monticello Nuclear Generating Plant
2807 West Co. Rd. 75
Monticello, Minnesota 55362-9637

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Section V

US Nuclear Regulatory Commission
Attn: Document Control Desk
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MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Emergency Plan Implementing Procedures

Furnished with this letter are revisions to the Monticello Nuclear Generating Plant Emergency Plan Implementing Procedures. The following issues are new or revised:

Procedure No.	Procedure Title	Procedure Rev.
A.2-404	Emergency Air Sampling and Analysis	7
A.2-424	EOF Count Room Procedures	9

Please post changes in your copy of the Monticello Nuclear Generating Plant Emergency Plan Implementing Procedures. Superseded procedures should be destroyed.

This letter contains no new NRC commitments, nor does it modify any prior commitments.

Please contact Marcus H. Voth, Project Manager - Licensing at (612) 271-5116 if you require further information.

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NOTE: The documents listed below are new or revised			
1060	A.2-404	7	EMERGENCY AIR SAMPLING AND ANALYSIS
1060	A.2-424	9	EOF COUNT ROOM PROCEDURES

EMERGENCY PLAN IMPLEMENTING PROCEDURE - TABLE OF CONTENTS

Prepared By: Gerald G. Hotchaus	Reviewed By:	
ALARA Coord Review By:		
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Approved By: Anne Ward		Date: 1-14-00

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1.0 PURPOSE

The purpose of this procedure is to provide instructions and guidance on conducting in-plant radiological air sampling during an emergency that could involve high dose rates, airborne concentrations or surface contamination.

2.0 APPLICABILITY

2.1 An emergency has been declared at the Monticello Nuclear Generating Plant,

AND

2.2 In-plant radiological sampling has been requested by the Emergency Director or REC,

AND

2.3 The Post Accident Sampling System (PASS) is not operable or capable of obtaining the desired samples.

3.0 ORGANIZATION AND RESPONSIBILITIES

3.1 The Radiological Emergency Coordinator (REC) is responsible for:

3.1.1 Overall coordination of the Radiation Protection and Chemistry Group activities.

3.1.2 Determining sample priorities.

3.2 The Radiation Protection Coordinator is responsible for:

3.2.1 Implementation of this procedure.

3.2.2 Coordination of air sampling activities during an emergency event.

3.3 The Chemistry Coordinator is responsible for:

3.3.1 Coordination of Chemistry Group activities in the Chemistry Lab.

3.3.2 Coordination of sample logging, identification and documentation.

3.4 Radiation Protection Specialists are responsible for:

3.4.1 Implementation of this procedure.

3.4.2 Obtaining in-plant radiological air samples IAW applicable instructions contained in this procedure and as directed by the Radiation Protection Coordinator.

3.4.3 Analysis of samples.

3.4.4 Recording results and properly storing samples.

4.0 DISCUSSION

This procedure provides instructions for airborne radioactivity sampling during an emergency condition when normal sampling methods (i.e., RPPs) are inappropriate due to elevated radiation, airborne and/or contamination levels. This procedure satisfies the requirements of NUREG 0737, Item III.D.3.3 which specifies that utilities ***SHALL*** provide equipment, associated training and procedures for adequately determining airborne iodine concentrations in in-plant areas that may be occupied during an accident.

5.0 PRECAUTIONS

5.1 Exposures of survey team personnel ***SHALL*** be in accordance with administrative control levels. Survey team members must remain alert to their own exposure and request relief if their cumulative exposure approaches these levels. The Emergency Director may authorize exposure limit extensions, if necessary IAW A.2-401. All exposures ***SHALL*** be maintained as low as reasonable achievable (ALARA) by employing the following methods:

5.1.1 Limit team personnel to the minimum required to perform the sampling/surveys in a safe, efficient manner;

5.1.2 Plan the survey and conduct a briefing with team members;

5.1.3 Ensure the team has all the necessary equipment prior to deployment;

5.1.4 Use extendable instruments (i.e., Teletector, etc.) to minimize exposure;

5.1.5 Use equipment or structures in the survey area as shielding whenever available.

5.2 The "buddy" system should be employed for all entries into the affected area whenever necessary to ensure the physical safety of survey team personnel.

5.3 The following precautions should be considered when planning in-plant emergency radiological surveys/sampling:

5.3.1 The location and magnitude of sources of radiation may be unknown;

5.3.2 Physical safeguards may have been destroyed;

5.3.3 The physical process or reaction that caused the emergency condition may still be occurring or could recur.

6.0 INSTRUCTIONS

GENERAL NOTE: The MSL/RPC should determine the appropriate airborne sampling methods based on area radiation monitor readings, anticipated radioactive airborne concentrations, and the availability of alternate sampling methods.

6.1 Particulate and Iodine Sampling

6.1.1 Obtain a battery or AC powered air sampler with Staplex (4") filter holder.

6.1.2 Check the calibration sticker on the sampler and verify the calibration is current (if not, obtain another air sampler).

6.1.3 Perform an operational test of the sampler prior to departing Access Control.

6.1.4

CAUTION

A Staplex filter head with 4" particulate filter must be used with battery powered air samplers to ensure adequate sample flow rate. Do not use a standard 2" filter head unless otherwise directed.

Obtain a 4" particulate filter and silver zeolite cartridge from the emergency locker and install the filters in the sampler head.

6.1.5 Determine the appropriate sample time, based on anticipated dose rates and airborne concentration.

6.1.6 If a battery powered sampler is used, set the air sampler timer to the desired sample time using thumbwheels on the sampler. For AC powered samplers, sample time should be kept using a stopwatch from the emergency locker.

NOTE: The sample timer indicates minutes and 1/10th minutes in the format X.X (for example, the timer setting for a 30 second sample would be 0.5).

6.1.7 Proceed to the designated sample area with the prepared air sampler.

6.1.8 Start the sampler by pressing the START button or positioning the ON/OFF switch.

6.1.9

CAUTION

Appropriate radiological precautions should be observed when handling highly radioactive and/or contaminated samples.

When sampling is complete, return to Access Control with the air sampler and collected samples.

6.1.10 Remove, properly bag and label the particulate and silver zeolite filters.

6.1.11 Analyze the samples IAW the instructions in section 6.4 and section 6.5 of the procedure.

6.2 Gaseous Sampling (100cc Gas Chamber)

6.2.1 Obtain a 100cc gas sample chamber, suction bulb and filter assembly.

6.2.2 Install a new 25mm particulate filter in the filter holder.

6.2.3 Connect the suction bulb, sample chamber and filter assembly such that air passes through the filter assembly into the sample chamber, then to the suction bulb.

6.2.4 Proceed to the designated sample area with the prepared sample assembly.

6.2.5 Open the sample chamber stop cocks, squeeze the suction bulb ten (10) times to obtain a representative sample, then shut the stop cocks on the sample chamber.

6.2.6

CAUTION

Appropriate radiological precautions should be observed when handling highly radioactive and/or contaminated samples.

When sampling is complete, return to Access Control with the collected sample.

6.2.7 Disassemble the sample assembly, properly bag and label the 100cc sample chamber.

6.2.8 Analyze the sample IAW the instructions in section 6.6 of this procedure.

6.3 Gaseous Sampling (15cc Vial)

6.3.1 Obtain a 15cc gas vial, rubber vial cap, needle and tygon tube purge assembly.

6.3.2 Install the cap on the vial.

6.3.3 Connect the tygon tube purge assembly to a vacuum connection in the chemistry lab and evacuate the vial.

6.3.4 Proceed to the designated sample area with the evacuated vial and needle.

6.3.5 Puncture the vial cap with the needle and allow the vial to fill with air (5 seconds).

6.3.6 Remove the needle from the vial cap and discard the needle.

6.3.7

CAUTION

Appropriate radiological precautions should be observed when handling highly radioactive and/or contaminated samples.

When sampling is complete, return to Access Control with the collected sample.

6.3.8 Properly bag and label the 15cc gas vial.

6.3.9 Analyze the sample IAW the instructions in section 6.7 of this procedure.

6.4 Particulate Filter Analysis

6.4.1 Analyze the filter using one of the following methods:

A. Analyze the filter using the instructions in Radiation Protection Procedure R.02.04 (ANALYSIS OF AIRBORNE RADIOACTIVITY SAMPLES). For filters counted on the HpGe system, choose the "ES" menu option.

NOTE 1: Formula assumes 10% detector efficiency and 95% filter efficiency.

B. Count the filter using a count rate meter (RM-14 or equivalent) with pancake probe and calculate the airborne concentration using the following formulas:

1. Convert the sample volume to cc as follows:

   cc = **(ft^3/min) (2.83E+4) (sample time in minutes), or**
   = **(lpm) (1000) (sample time)**

2. Using the sample volume in cc, determine the uCi/cc as follows:

$$\frac{\text{(NET CPM)}}{\text{(2.11 E+5) (Sample Volume)}} = \text{uCi/cc}$$

NOTE 2: The following formula is based on .5 Mev gammas and .5 gammas / disintegration.

C. For filters reading GREATER THAN 50,000 CPM and GREATER THAN 10% Dead Time, obtain a 1' dose rate from the filter using an ion chamber dose rate meter and calculate the airborne concentration using the following formulas:

1. Convert the sample volume to cc as follows:

   cc = **(ft^3/min) (2.83E+4) (sample time in minutes), or**
   = **(lpm) (1000) (sample time)**

2. Using the sample volume in cc, determine the uCi/cc as follows:

$$\frac{\text{(1' Dose Rate mr/hr) (610 uCi/mr/hr)}}{\text{(Sample Volume)}} = \text{uCi/cc}$$

6.4.2 Record the sample analysis results on the appropriate Radiation Protection form (specified in R.02.04) and submit the results to the REC or RPSS.

6.5 Silver Zeolite Cartridge Analysis

6.5.1 Survey the cartridge to determine the gross activity rate on the cartridge.

6.5.2 If the dose rate on the cartridge is greater than 10 mr/hr attempt to purge the cartridge with air in the Chemistry Lab fume hood for approximately 5 minutes prior to sample analysis.

6.5.3 Analyze the cartridge using one of the following methods:

A. Analyze the cartridge on the HPGe system using the instructions in Radiation Protection Procedure R.02.04 (ANALYSIS OF AIRBORNE RADIOACTIVITY SAMPLES). For cartridges counted on the HpGe system, choose the "ES" option.

NOTE: The following formula assumes cartridge activity is based on I-131. Use an efficiency of .99 for silver zeolite.

B. Obtain a 1' dose rate from the cartridge using an ion chamber dose rate meter and calculate the airborne concentration using following formulas:

1. Convert the sample volume to cc as follows:

   cc = **(ft3/min) (2.83E+4) (sample time), or**

   = **(lpm) (1000) (sample time)**

2. Using the sample volume in cc, determine the uCi/cc as follows:

$$\frac{\text{(1' Dose Rate mr/hr) (420 uCi/mr/hr)}}{\text{(Sample Volume) (Cartridge Efficiency)}} = \text{uCi/cc}$$

6.5.4 Record the sample analysis results on the appropriate Radiation Protection forms (specified in R.02.04) and submit the results to the REC or RPSS.

6.6 Gaseous Sample (100cc Gas Chamber) Analysis

6.6.1 Analyze the chamber using one of the following methods:

NOTE: HPGe system "dead time" should not exceed 10%.

A. Analyze the gas chamber IAW I.3.39 (MCA OPERATION/GAMMA ISOTOPIC ANALYSIS), using option "ES."

B. Count the chamber using a count rate meter (RM-14 or equivalent) with pancake probe and calculate the airborne concentration using the curve in FIGURE 7.1.

C. If the chamber is greater than 50,000 CPM AND the "dead time" is greater than 10%, obtain a 1' dose rate from the chamber using an ion chamber dose rate meter and report the results in mR/HR.

6.6.2 Record the sample analysis results on the appropriate Radiation Protection forms and submit the results to the REC or RPSS.

6.7 Gaseous Sample (15cc Vial) Analysis

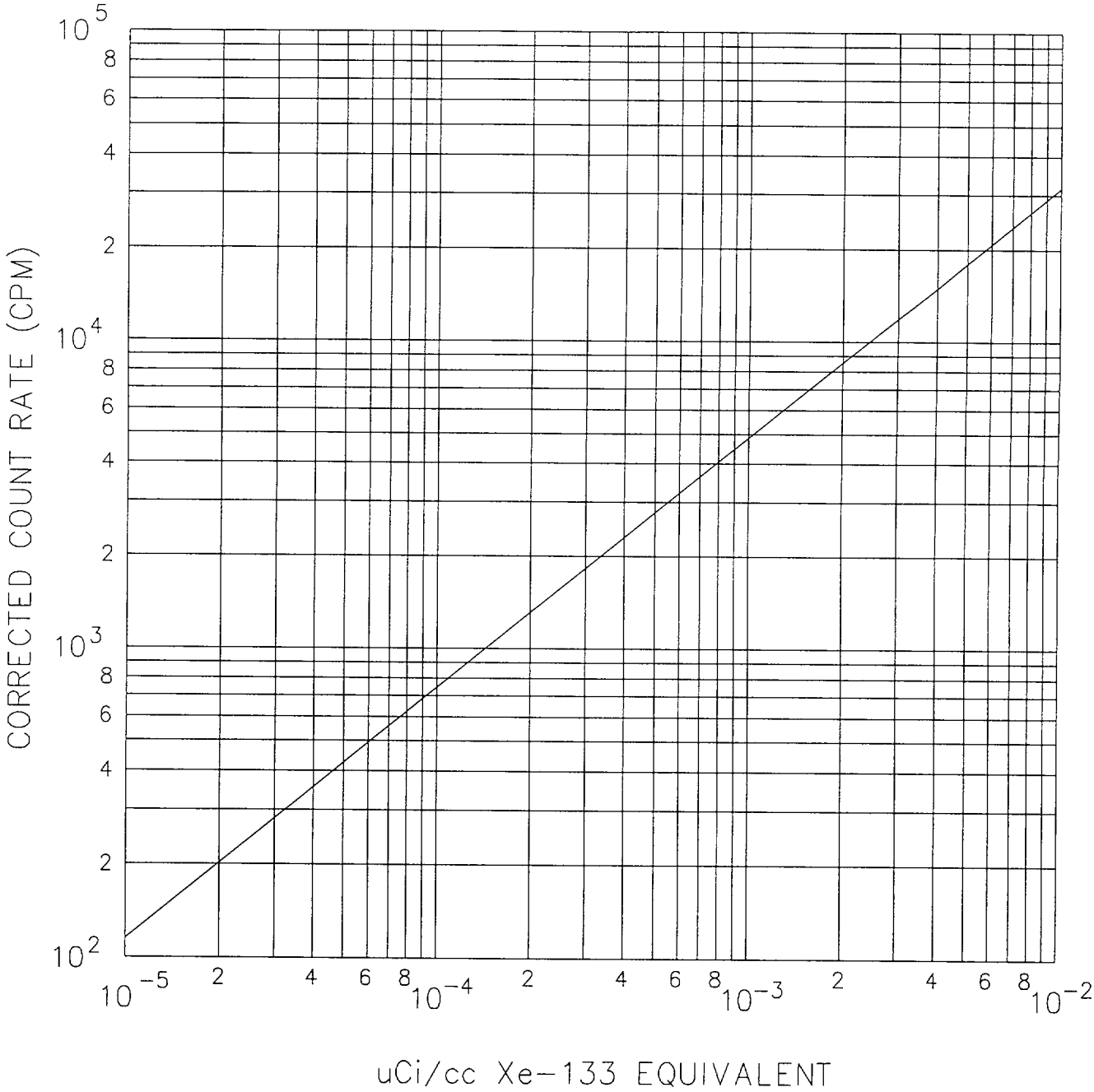
6.7.1 Analyze the sample vial IAW I.3.39 (MCA OPERATION/GAMMA ISOTOPIC ANALYSIS), using option "ES."

6.7.2 Record the sample analysis results on the appropriate Radiation Protection forms and submit the results to the REC or RPSS.

7.0 FIGURES

FIGURE

7.1 100cc Gas Chamber Calibration Curve



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1.0 PURPOSE

The purpose of this procedure is to provide instructions for EOF Count Room set-up, receiving area set-up, the proper operation of the Count Room equipment and instructions for the analysis of environmental and/or plant samples.

2.0 APPLICABILITY

2.1 An Alert or higher Emergency Classification has been declared and the Emergency Response Organization has been staffed, or the in-plant Count Room is unavailable.

3.0 ORGANIZATION AND RESPONSIBILITIES

3.1 The Radiation Protection Support Supervisor (RPSS) is responsible for:

3.1.1 Overall direction of the Field Teams and EOF Count Room activities.

3.1.2 Coordination of Radiation Protection group activities in the Count Room and Receiving Area.

3.2 The Radiation Protection Specialists (Chem) are responsible for:

3.2.1 Implementation of this procedure.

3.2.2 Coordination of Sample logging, identification and documentation.

4.0 DISCUSSION

4.1 The primary function of the EOF Count Room is the analysis of environmental and/or plant samples taken during emergency conditions. The EOF Count Room also provides backup Count Room capability in the event the in-plant Count Room becomes inoperable or uninhabitable.

This procedure provides instructions for the startup and operation of analytical equipment located in the EOF Count Room and also provides instructions for the analysis of environmental samples that may be taken during post accident conditions.

5.0 PRECAUTIONS

5.1 Appropriate radiological precautions should be used when handling potentially contaminated or highly radioactive samples. I

5.2 Strict contamination control methods should be employed when transferring samples from the EOF receiving area to the EOF Count Room for analysis. These methods should include the re-bagging or wrapping of samples to prevent contamination of the EOF Count Room.

5.3 High activity samples (i.e., > 10 millirem/HR) should be stored in the shielded storage container in the EOF receiving area. A sample storage cabinet is also

provided in the EOF receiving area for storage of low activity samples. Samples which are no longer required for analysis should be properly disposed of or transferred to a designated storage area as directed.

5.4 EOF Count Room personnel should perform periodic radiological surveys of the Count Room and receiving area, have proper dosimetry, and remain alert to their own exposure. Exposure of Count Room personnel should be in accordance with administrative control levels.

6.0 INSTRUCTIONS

6.1 EOF Count Room Activation

6.1.1 Obtain keys for the supply cabinets and count room desk from the key box in the EOF command center.

6.1.2 Initiate Form 5790-424-1 (EOF COUNT ROOM STARTUP CHECKLIST).

6.2 HpGe Operation

6.2.1 Toggle voltage power to ON then slowly raise voltage to the indicated operating voltage.

6.2.2 Log into computer using current node, user name, and password.

6.2.3 Perform HpGe energy calibration, IAW Chemistry Manual Procedure I.3.39.

6.2.4 Record calibration completion on Form 5790-424-01.

6.3 HpGe Shutdown

6.3.1 Select option "EX" from Main Menu.

6.3.2 Slowly lower voltage to zero and then toggle voltage power to OFF.

6.4 Canberra Alpha/Beta Counter Operation

6.4.1 Perform Alpha/Beta counting system start-up IAW Chemistry Manual Procedure I.3.37.

6.4.2 Perform Alpha/Beta counting system efficiency checks IAW Chemistry Manual Procedure I.3.37.

6.4.3 Record completion on Form 5790-424-1.

6.5 Receiving Area Setup

6.5.1 When directed set up the receiving area with equipment in the Receiving Area Setup Cabinet. (See FIGURE 7.1)

6.5.2 Move the smoking area table to the East Wall, in front of roll up doors. Remove the chairs and any other equipment which will not be utilized during an emergency.

6.5.3 Set up the portable change booths next to the shower as indicated on FIGURE 7.1.

6.5.4 Set up the contamination area boundaries with the rad-rope, step-off-pads, and stanchions located in cabinet.

6.5.5 Obtain friskers from the instrument cabinet in the count room and set up in their respective location. (See FIGURE 7.1)

6.5.6 Break out any other equipment which is required for handling contaminated samples or personnel decontamination in the receiving area.

6.6 Snow/Dirt/Sand Sample Analysis

6.6.1 FILL a 500 ml marinelli with sample. For snow, melt snow if not already melted and transfer to a 500 ml marinelli container.

6.6.2 Analyze the sample IAW Chemistry Manual Procedure I.3.39.

6.6.3 Calculate ground deposition activity as follows:

$$uCi/m^2 = \frac{\text{total uCi in sample}}{(\text{area of sample in } cm^2) \times (.0001\ m^2/cm^2)}$$

6.6.4 Record sample results on Form 5790-424-02 (EOF EMERGENCY CHEMISTRY SAMPLE LOG) and report the results to the REC or RPSS.

6.7 Vegetation Sample Analysis

6.7.1 FILL a 500 ml marinelli with vegetation.

6.7.2 WEIGH the marinelli on the Triple Beam Balance and note the weight.

6.7.3 Calculate the weight of the vegetation as follows:Gross Weight (gms) - 163 gms (marinelli + bag) =Net weight of sample

NOTE: For sample units use grams, for sample size use net sample weight.

6.7.4 Analyze sample in accordance with Chemistry Manual Procedure 1.3.39.

6.7.5 Record sample results on Form 5790-424-2 (EOF EMERGENCY CHEMISTRY SAMPLE LOG) and report the results to the REC or RPSS.

7.0 FIGURES

FIGURE

7.1 Receiving Area Contaminated Area Set-Up

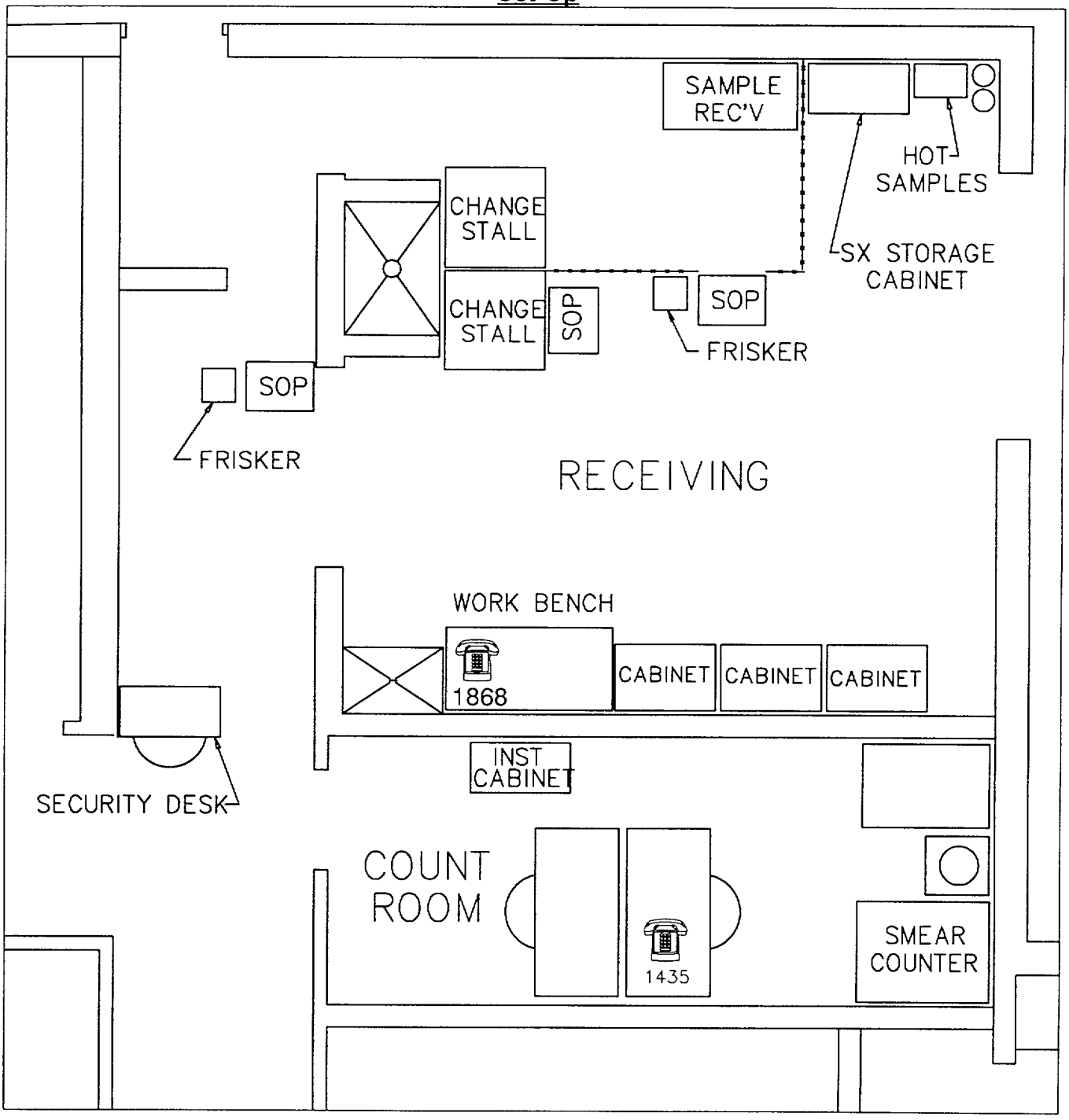

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FIGURE

7.2 Forms Utilized in this Procedure

1. 5790-424-01 EOF Count Room Startup Checklist.
2. 5790-424-02 EOF Emergency Chemistry Sample Log.

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