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CHANGE NO:	013-03-0

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ANO-1 Docket 50-313

ANO-2 Docket 50-368

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UNIT 1 UNIT 2 UNIT 2 WORK PLAN, EXF	P. DATE			
TYPE OF CHANGE:				
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1. Supersede or replace another procedure?			YES	🛛 NO
(If YES, complete 1000.006B for deleted procedure.) (0C/	AN058107)			E No
 After or delete an existing regulatory commitment? (If YES, coordinate with Licensing before implementing.) (OCNA128509)(OCAN	049803)	LI YES	
 Require a 50.59 review per LI-101? (See also 1000.006, A (If 50.59 evaluation, OSRC review required.) 	Attachment 15)		YES	NO NO
 Cause the MTCL to be untrue? (See Step 8.5 for details.) (If YES, complete 1000.009A) (1CAN108904, 0CAN09900)1, 0CNA128509, OC/	AN049803)	YES	NO NO
 Create an Intent Change? (If YES, Standard Approval Process required.) 				NO NO
6. Implement or change IPTE requirements? (If YES, complete 1000.143A. OSRC review required.)			VES	NO NO
 Implement or change a Temporary Alteration? (If YES, then OSRC review required.) 			YES	NO NO
Was the Master Electronic File used as the source document?			YES	
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1.0 PURPOSE

This procedure provides guidance for the following radiological control practices during emergency situations:

- 1.1 Personnel Monitoring.
- 1.2 Respiratory Protection.
- 1.3 Contamination Control.

2.0 SCOPE

- 2.1 This procedure is applicable during Alert, Site Area or General Emergency conditions.
- 2.2 This procedure applies to ANO emergency support personnel and emergency response facilities within the ten mile Emergency Planning Zone.

3.0 REFERENCES

- 3.1 REFERENCES USED IN PROCEDURE PREPARATION.
 - 3.1.1 Emergency Plan.
 - 3.1.2 1903.043, "Duties of the Emergency Radiation Team".
 - 3.1.3 1000.031, "Radiation Protection Manual".
 - 3.1.4 1903.033, "Protective Action Guidelines For Rescue/Repair and Damage Control Teams"
 - 3.1.5 1903.023, "Personnel Emergency"
 - 3.1.6 RP-105, "Radiation Work Permits"
 - 3.1.7 Letter H-5, 79-739, of May 16, 1976 from Mr. Alan Hack, LASL, Respirator Research and Development Section to Mr. John Collins, USNRC RE: Respiratory Protection at TMI.
 - 3.1.8 10 CFR 20
 - 3.1.9 10 CFR 50
 - 3.1.10 NRC Information Notice 90-08
- 3.2 REFERENCES USED IN IMPLEMENTING THIS PROCEDURE.
 - 3.2.1 1903.033, "Protective Action Guidelines for Rescue/Repair and Damage Control Teams"
 - 3.2.2 1903.030, "Evacuation"
 - 3.2.3 1601.209, "Whole Body Counting Bioassay"
 - 3.2.4 1601.201, "Issue/Control of TLD's"

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3.3 RELATED ANO PROCEDURES

- 3.3.1 1903.066, "Emergency Response Facility Operational Support Center (OSC)"
- 3.3.2 1903.067, "Emergency Response Facility Emergency Operations Facility (EOF)"
- 3.4 REGULATORY CORRESPONDENCE CONTAINING NRC COMMITMENTS WHICH ARE IMPLEMENTED IN THIS PROCEDURE: [BOLD] DENOTES COMMITMENTS
 - 3.4.1 OCAN078609, (P-4235), Section 6.2
 - 3.4.2 OCAN038313, (P-4192), Form 1905.001 A Section IIB1
 - 3.4.3 LIC94-226 (P-14029), 6.5.2 Note

4.0 DEFINITIONS

- 4.1 <u>Controlled Access Area</u> Any area where full radiological controls are in effect for the purpose of providing protection and/or information to the individual. (Includes the auxiliary buildings inside the turnstyles, both reactor buildings, and inside the fenced area of the BWST/RWT.)
- 4.2 <u>Control Point</u> An area established on the perimeter of, and in the normal access route to/from an RCA for the purpose of controlling personnel and or material movement.
- 4.3 <u>Radiologically Controlled Area</u> A Radiologically Controlled Area (RCA) is defined as an area within the plant site in which radioactive material and/or radiation may be present in quantities sufficient to require protective measures. (The Controlled Access Area, for example, is a Radiologically Controlled Area).
- 4.4 <u>Emergency Operations Facility</u> (EOF) A near site emergency response facility located approximately 0.65 miles northeast of the reactor buildings (the ANO Training Center).
- 4.5 <u>Technical Support Center</u> (TSC) Located within the ANO Administration Building equipped with instrumentation and communication systems and facilities useful in monitoring the course of an accident; this center is located in the 3rd Floor Conference Room.
- 4.6 <u>Emergency Response Organization</u> (ERO) The organization which is composed of the Initial Response Staff (IRS), the EOF staff, the TSC staff, the OSC staff and the emergency team members. It has the capability to provide manpower and other resources necessary for immediate and long-term response to an emergency situation.
- 4.7 <u>Operational Support Center</u> (OSC) The Emergency Response Center within the ANO maintenance facility, that serves as the assembly point and briefing area for rescue/repair and damage control teams. The OSC is where the following functions are coordinated:

4.7.1 On-site Radiological Monitoring

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		4.7.2	Maintenance		

- .7.2 Maintenance
- 4.7.3 Nuclear Chemistry
- 4.7.4 Emergency Medical Support
- 4.7.5 Fire Fighting Support
- 4.8 HEALTH PHYSICS NETWORK (HPN) TELEPHONE

Dedicated telephone system established by the NRC during its standby or initial activation mode of operations after the licensee's TSC/EOF has been activated and is operational. The HPN is the primary means of communicating radiological data (on-site and off-site measurements and dose assessment information) from the licensee to the NRC.

5.0 RESPONSIBILITIES

- 5.1 MANAGER, RADIATION PROTECTION AND RADWASTE
 - 5.1.1 Responsible for the overall control and implementation of this procedure.
- 5.2 HEALTH PHYSICS SUPERVISOR
 - 5.2.1 Responsible for the implementation of this procedure within the ANO site boundary fence.
 - 5.2.2 Responsible for directing on-site monitoring and assigning personnel to the on-site and off-site radiological monitoring sections of the Emergency Radiation Team.
- 5.3 EOF HEALTH PHYSICS SUPERVISOR
 - 5.3.1 Responsible for ensuring that the appropriate control points and radiological control measures are established and implemented at the Emergency Operations Facility/ Alternate Emergency Operations Facility.

6.0 INSTRUCTIONS

NOTE In an emergency, the Health Physics Supervisor may allow normal radiological work practices to be disregarded in order to expedite repair and damage control actions if necessary to protect the health and safety of the public.

- 6.1 GENERAL GUIDELINES FOR EMERGENCY RADIOLOGICAL CONTROL
 - 6.1.1 The Health Physics Supervisor should use Form 1905.001A as a checklist for ensuring appropriate radiological controls have been implemented.
 - 6.1.2 As manpower becomes available, the Health Physics Supervisor should assign at least one (preferably two) H.P. technicians to report to the EOF to assist the EOF Health Physics Supervisor.

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		6.1.3	Upon receipt of survey results, the Manag Protection and Radwaste should check Atta appropriate emergency response actions su or notification are implemented. Radiolo results should be posted in the Technical and the Operational Support Center.	er, Radia chment 1 ch as eva gical sur Support	tion to ensure cuation vey Center		
		6.1.4 Based on reported radiological survey data and as directed by the Manager, Radiation Protection and Radwaste, the Health Physics Supervisor shall establish Radiologically Controlled Area boundaries in accordance with Radiation Protection procedures.					
		6.1.5 <u>IF</u> an emergency condition lasts longer than 8 hours, <u>THEN</u> the Manager, Radiation Protection and Radwaste sh establish an Emergency Radiation Team working schedule					
		6.1.6	Beta radiation from Kr-85 gas is a significant hazard in accident involving spent fuel. Direct exposure to Kr-85 gas could result in a skin dose up to 100 times the Deep Dose equivalent dose. The half-life of Kr-85 is 10.76 years. For these reasons, IF the accident involves spent fuel, THEN the Health Physics Supervisor shall have the affect area surveyed for beta radiation.				
	6.2	[CONTROL	POINT ESTABLISHMENT]				
/		6.2.1	IF radiation levels exceed 2.5 mRem/hr or (greater than 1 DAC particulate or iodine activity exists outside confines of Auxil buildings, THEN control points should be established as defined by survey results.	signific) airborn iary and at RCA b	ant e Turbine coundaries		
		6.2.2	Once the extent of contamination, radioac concentrations and radiation exposure rat known, the control point for Emergency T be located as close to the Controlled Acc possible without sacrificing communicatio entry/exit control.	tive airb e conditi eam entri ess Area ns and ea	orne ons are es should as se of		
			A. Radiological conditions permitting, controlled access area control point	the norma s in Unit	1 One and		

- A. Radiological conditions permitting, the normal controlled access area control points in Unit One and Two Auxiliary Building (Elev. 386') should be used as the control point for emergency response operations into the Auxiliary Building.
- 6.2.3 <u>IF</u> radiation levels exceed 2.5 mRem/hr or significant (greater than 1 DAC particulate or iodine) airborne activity exists at the EOF, <u>THEN</u> a control point should be established at the entrance to the EOF and the need for a contamination control point evaluated.

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1	6.2.4	The following radiological controls shoul control points.	d be inst	ituted at
	1	A. Personnel entry log including time : Dosimeter reading(s) should be maint entries on Form 1905.001B.	in, out ar tained for	nd all
	E	 A frisking station should be used to for contamination when exiting a rac controlled area. 	o check pe diological	ersonnel Lly
	C	 Air samples <u>should</u> be taken every he taken once every four hours. 	our and <u>sh</u>	<u>all</u> be
	1	 A survey of the control point area s if the friskers indicate a rise in f level. 	should be the area 1	conducted radiation
·		IF no friskers are set up at the con <u>THEN</u> hourly area surveys should be sample and dose rate data should be appropriate forms and data reviewed the Health Physics Supervisor to det or trends. Significant changes show the Manager, Radiation Protection as as practical.	ntrol poir conducted. maintaine periodica termine ir uld be rep nd Radwast	ht, . Air ed on ally by hcreases ported to te as soor
6.3	RESPIRATORY	PROTECTION		

6.3.1 Respiratory Protection Guidelines

- A. Although doses should be maintained as low as reasonably achievable during an emergency, respirators should not be assigned to emergency team members or emergency response facility personnel if the use of respirators will have an adverse affect on the timely implementation of emergency measures and projected dose is less than 40 DAC-hrs/week.
- B. During emergency conditions, higher uptakes may be authorized in a manner similar to that for increased external exposure as specified in 1903.033 "Protective Action Guidelines for Rescue/Repair and Damage Control Teams".
- C. Protection factors for respirators are identified in 1000.031, "Radiation Protection Manual" and 10 CFR 20 Appendix A. However, the Respiratory Protection Manual specifies that these protection factors are not applicable unless the respirator has been quantitatively fit tested on the wearer.
- D. The Health Physics Supervisor shall ensure the following data, on personnel entering the RCA(s), is recorded on Forms 1601.209D and F or tracked on the ERIM system.
 - 1. Occupancy time and airborne concentrations
 - 2. DAC-Hrs (each entry, each day, and last 7 days)
 - 3. Protection factor for the respiratory protection device worn

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E. All individuals entering radiologically controlled areas shall have whole body counts or bioassays performed, as soon as practical, if their exposure to radioactive airborne concentration exceed 4 DAC-HRS per day or 12 DAC-HRS/wk or 40 DAC hours since last whole body count.

6.4 IODINE CANISTER USE

- 6.4.1 NUREG-0041 and Regulatory Guide 8.15 do not provide a protection factor for iodine canisters for routine use because of difficulties ensuring continued protection. As a result, the only respirators which are suitable in iodine atmospheres are air supplied devices, such as SCBA and air line masks. (NUREG-0041 prohibits the use of air line masks in rescue operations). However, in addition to airborne radioactivity, the areas in which the respirators are likely to be used may also be affected by high dose rates. Since mobility is reduced when wearing SCBAs, it may be more conducive to overall dose reduction to use iodine canisters in lieu of SCBAs. For these reasons, the Manager, Radiation Protection and Radwaste or the Health Physics Supervisor may direct that iodine canisters be used in emergency conditions.
- 6.4.2 The filter canister authorized is the MSA GMR-I charcoal canister.
- 6.4.3 The protection factor is 1 for iodine.
- 6.4.4 The respirator shall not be used in iodine atmospheres greater than 100 times the 10 CFR 20 value for the specific iodine nuclide. For Iodine-131, this is 2 E-6 µCi/cc. (Assumes stay-time control).
- 6.4.5 The stay-time in affected areas shall not exceed 40 DAChours in any seven consecutive days. (This provides for additional subsequent dose).
- 6.4.6 Appropriate representative air sampling shall be performed.
- 6.4.7 Suitable DAC-hour records shall be kept in accordance with Section 6.3.1(D).
- 6.4.8 Personnel exposure to iodine atmospheres with iodine canisters shall be monitored as follows:
 - A. At least weekly whole body counting while exposures continue.
 - B. <u>IF</u> results of whole body counting indicate an iodine uptake in excess of 70 nCi, <u>THEN</u> that individual(s) shall be restricted from further entry to iodine atmospheres pending evaluation by the Manager Radiation Protection and Radwaste.

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6.5 PERSONNEL MONITORING

6.5.1 Assignment of Dosimetry

- A. Personnel radiation exposure shall be monitored by regulation if 10% of the applicable limit could be received; or they will be entering a High Radiation Area or a Very High Radiation Area.
- B. <u>IF</u> a significant release of radioactivity occurs such that an individual would receive a dose in excess of 2.5 mRem in any one hour, <u>THEN</u> this area shall be designated as radiologically controlled area and Dosimetry shall be worn in affected areas.
- C. Emergency response personnel shall wear a TLD at all times while on site during the emergency.
- D. When an emergency involves a site evacuation, final personnel dosimetry issue and collection operations should be relocated to the EOF or an alternate low back-ground area designated by the Manager, Radiation Protection and Radwaste.
- 6.5.2 Assignment of Dosimetry to Emergency Teams

NOTE

Alarming dosimeters may be used in lieu of self-reading dosimeters (SRDs). Personnel should be cautioned to check SRDs frequently since conditions may change rapidly. SRDs should never be allowed to exceed 3/4 scale. Personnel with SRDs reading at or above 3/4 scale should exit immediately unless such action would endanger the plant or another person. Other dosimetry (SRDs or alarming dosimeters) may be assigned by the HP Supervisor or Radiation Protection and Radwaste Manager.

[NOTE

During a "Personnel Emergency" the Emergency Medical Team may go into Radiologically Controlled Areas without SRDs/Alarming Dosimeters as long as an HP Technician is acting as the RWP; and is monitoring dose rates and time in the area. Prompt medical attention shall take precedence over HP procedures when an individual is seriously injured.]

- A. Personnel requiring entry into a Radiologically Controlled Area shall wear the following dosimetry as a minimum:
 - 1. TLD
 - 2. SRD (0-200 mR or 0-500 mR) or alarming dosimeter

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			4.	If mu Proce	ultiple edure 16	dosime 501.20J	etry is r 1, "Issue	equire and (ed, refe Control	r to of TLD
	6.5.3	Assic	nment	of D	Osimetr	<u>y to O</u>	ffsite Er	mergen	icy Organ	izatio
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6.5.4 Accelerated TLD Processing

- A. More frequent readings of TLDs should be performed during the emergency and, initially, during recovery operations until such time as exposure trends have been identified and exposure control methods established by the Manager, Radiation Protection and Radwaste.
- B. In the event of an accidental exposure, or an approved planned emergency exposure, the TLDs of the individuals involved shall be processed as soon as practicable following exposure. Further exposure should not be allowed until the results of their TLD badge readings are available and have been evaluated.

6.5.5 Recording of Personnel Exposures

- A. Dosimeter (SRD or alarming dosimeter) readings shall be recorded on Form 1905.001B, "Access and Exposure Control Log" or equivalent ERIM system programs. Form 1905.001B shall be kept by the Health Physics Supervisor for the purpose of interim exposure tracking for individuals performing emergency activities.
- B. TLD readings shall be recorded in accordance with procedure 1601.201, "Issue/Control of TLD's".

6.6 DECONTAMINATION OF EVACUEES

6.6.1 During plant evacuation, the Health Physics personnel stationed at the portal monitors should segregate any contaminated individuals until an evaluation/de-contamination can be performed.

7.0 ATTACHMENTS AND FORMS

7.1 ATTACHMENTS

7.1.1 Attachment 1 - "Emergency Radiological Conditions Action Levels"

7.2 FORMS

- 7.2.1 1905.001A, "Health Physics Supervisor Checklist".
- 7.2.2 1905.001B, "Access and Exposure Control Log"
- 7.2.3 1905.001C, DELETED PER PC-1.

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		EMERGENCY RADIOLOGICAL CONDITIONS ACTION LEVE	LS Fage 1 01 2
A. Eme	rgency	Classifications	
		Initiating Condition	Emergency Classification
1.	Two c than contr	or more ARMS in Rx. Bldg. increase by greater 2000 mR/hr due to severe degradation in the col of radioactive material.	Alert
2.	Two o incre degra	or more ARMS in Aux. Bldg. or Fuel Handling Area case by greater than 100 mR/hr due to severe adation in the control of radioactive materials.	Alert
3.	Great	er than 50 mRem/hr TEDE at site boundary.	Site Area Emergency
4.	Great bound	er than 150 mRem/hr Child Thyroid at site lary.	Site Area Emergency
5.	Great	er than 250 mRem/hr TEDE at site boundary.	General Emergency
6.	Great bound	er than 500 mRem/hr Child Thyroid at site lary.	General Emergency
B. <u>Eva</u>	cuation	1	
		Initiating Condition	Action
1.	Great	er than 2.5 mRem/hr <u>outside</u> CAA	Notify Shift Superintendent/ TSC Director
2.	Great (un-e	er than 9E-10 µCi/cc outside CAA evaluated)	Notify Shift Superintendent/ TSC Director
3.	Great OSC,	er than 2.5 mRem/hr radiation levels at TSC, or remainder of the Administration Building.	*Notify Shift Superintendent/ TSC Director
4.	Great remai (unev	er than 9E-10 µCi/cc in the TSC, OSC, or nder of the Administration Building valuated).	*Notify Shift Superintendent/ TSC Director
5.	Iodin 2.7E-	ne Airborne levels greater than •9 μCi/cc.	Keep Occupancy Log for Affected Area
6.	Iodin (8.0E	ne Airborne levels greater than 4 DAC Σ-8 μCi/cc).	Evacuate Affected Area or Use Respiratory Protection

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		Initiating Condition	1	Actio	<u>m</u>
7.	Radia less the A	tion levels greater than 100 mRem/hr but than 1 Rem/hr at TSC, OSC, or remainder of dministration Building.	Evacua mined term of detern short condif the parson accum	ate i to b condi nined -term tion rojec nnel ulate	of deter- be a long tion. If to be a vevaluate ted ed dose.
8.	8. Radiation levels greater than 1 Rem/hr at TSC, O or remainder of the Administration Building.		Evacu Immed	ate iate]	Ly
*On-site radiological monitoring section should:					

- 1.
- 2.
- Increase surveillance of airborne radioactivity to once per hour. Determine the dose rates in the area every 15 minutes. Evaluate projected personnel accumulated doses and establish appropriate stay times. Post radiological survey results in the TSC and in the OSC. 3.
- 4.

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Superv Facili	isor's ty- Ope	Position Guide in Procedure 1903.066, "Emergency Response erational Support Center (OSC)"	e
			INITI
I.	If no ERT m telep	t already accomplished, contact should be attempted with members either by the plant paging system or by whome.	
	Reque for y Super the E	est the TSC Support Superintendent to call an assistant you (if desired). This assistant may be another HP visor or someone from the HP Technical Assistant list in mergency Telephone Directory.	
II.	Assig	n the On-site Radiological Monitoring Section	
	A.	Assign at least one (1) H.P. for monitoring the affected unit's Control Room.	<u> </u>
	в.	Assign HP coverage for the TSC, OSC, and EOF HP Supervisor.	<u></u>
		1. [Ensure that all radiological surveys are posted in their respective Facilities for staff review]	<u> </u>
	c.	Establish communications:	
		 Assign OSC base radio operator. (Instruction booklet with radio.) 	
		 Assign HPN telephone communicator. (Instruction booklet with HPN telephone.) 	· · · ·
	D.	Emergency equipment inspected and made operational.	
	E.	RCA boundaries established.	
	F.	Contamination control point established.	<u></u>
	G.	Control point logs established.	
	н.	Personnel decontamination sites designated.	•
	Ι.	Emergency dosimetry/respiratory equipment requirements established for ERT members and TSC/OSC staff.	
	J.	Determine immediate response needs:	
		1. On-site surveys, samples required, etc.	
		2. Initial re-entries by other emergency teams.	
		3. Obtain equipment from routine stock as needed.	

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INITIALS

- 4. <u>Plant Evacuation</u>- one HP technician shall be stationed at the portal monitors at each guard station. Ensure HP personnel have obtained portable radiological monitoring equipment.
- 5. <u>Medical Emergencies</u>- provide assistance to medical personnel in accordance with procedure 1903.023.
- 6. <u>Post-Accident Sample</u>- provide assistance to Nuclear Chemistry personnel in accordance with procedure 1905.003.
- 7. Survey affected area for beta radiation if the accident involves spent fuel.
- III. Assign the Off-site Radiological Monitoring Team (include appointment of section leaders as necessary).
 - A. Establish 2 to 4 Off-site Monitoring Teams, each team composed of at least 2 members; have the teams obtain vehicle keys and gas pump keys. The teams are to proceed to the EOF, obtain and inspect field monitoring kits, and report to the Off-site Monitoring Supervisor in Room 264 at the EOF.
 - B. Select one HP technician to report to the Off-site Monitoring Supervisor in Room 264 at the EOF as the Off-site Monitoring team Base Radio Operator. (Instruction booklet with Base Radio in Dose Assessment Room.)
 - C. Select one HP technician to report to the Dose Assessment Supervisor in Room 262 at the EOF as the HPN telephone communicator. (Instruction booklet with HPN telephone).
 - D. Instruct at least 2 HP technicians to report to the EOF HP Supervisor at the EOF.
 - E. After immediate needs are addressed, establish ERT schedule for an extended event.
 - F. Contact the Support Manager in the EOF if additional manpower is required.
 - G. Provide periodic updates to team personnel and the OSC Director.

Completed by:

Reviewed by: _

Health Physics Supervisor

Form 1905.001A for records retention.

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ACCESS AND EXPOSURE CONTROL LOG

DATE:_____

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LOCATION:_____

SHIFT:_____

Name	Badge #	ED/SRD Number	Availible Exposure	Time Departed	Destination/ Comments	Time Returned	Exposure Received
<u></u>							
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REVIEWED BY:_____

DATE:_____

FORM TITLE:

ACCESS AND EXPOSURE CONTROL LOG

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