Attachment 1 Cross Reference

A. Assignment of Responsibility (Organization Control)

Planning Standard- 50.47(b)(1)

*Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organization within the Emergency planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal re*sponse organization has staff to respond and to augment its initial response on a continuous basis.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1a	Each plan shall identify the State, local, Federal and private sector organizations (including utilities), that are intended to be part of the overall response organization for Emergency Planning Zones.	B.1, B.2, B.3, B.4, B.5	A.6		
b.	Each organization and sub-organization having an operational role shall specify its concept of operations, and its relationship to the total effort.	B.1, F	A.7		
c.	Each plant shall illustrate these interrelationships in a block diagram.	Fig. B-1, C-1, C-5			
d.	Each organization shall identify a specific individual by title who shall be in charge of the emergency response.	B.6, C.1, C.3	A.2.c		
e.	Each organization shall provide for 24-hour per day emergency response, including 24 hour per day manning of communications links.	B.2, B.3, B.4, B.5, C.3	A.2	GGNS 13.3-16	LOAs

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
2a	*Each organization shall specify the functions and responsibilities for major elements and key individuals by title, of emergency response, including the following: Command and Control, Alerting and Notification, Communications, Public Information, Accident Assessment, Public Health and Sanitation, Social Services, Fire and Rescue, Traffic Control, Emergency Medical Services, Law Enforcement, Transportation, Protective Response (including authority to request Federal assistance and to initiate other protective actions), and Radiological Exposure Control. The description of these functions shall include a clear and concise summary such as a table of primary and support responsibilities using the agency as one axis, and the function as the other. (See Section B for licensee).*	*B.2, B.3, B.4, C.2, C.3, E, G, H, K Table B-1 Figure B-1*	*A.4*	*GGNS 13.3-13 GGNS 13.3-14*	
b.	*Each plan shall contain (by reference to specific acts, codes or statutes) the legal basis for such authorities.*	*State Plan*			
3.	*Each plan shall include written agreements referring to the concept of operations developed between Federal, State, and local agencies and other support organizations having an emergency response role within the Emergency Planning Zones. The agreements shall identify the emergency measures to be provided and the mutually acceptable criteria for their implementation, and specify the arrangements for exchange of information. These agreements may be provided in an appendix to the plan or the plan itself may contain descriptions of these matters and a signature page in the plan may serve to verify the agreements. The signature page format is appropriate for organizations where response functions are covered by laws, regulations or executive orders where separate written agreements are not necessary.*	*A, B*		*GGNS 13.3-7*	*LOAs*
4.	*Each principal organization shall be capable of continuous (24-hour) operations for a protracted period. The individual in the principal organization who will be responsible for assuring continuity of resources (technical, administrative, and material) shall be specified by title.*	*B.4, C.1, C.3, C.4*			

B. Onsite Emergency Organization

Planning Standard-50.47(b)(2)

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each licensee shall specify the onsite emergency organization of plant staff personnel for all shifts and its relation to the responsibilities and duties of the normal staff complement.	C.3 1.1, 2.1	A.2.a A.2.b	VEGP 13.3-8	GL 82-33
2.	Each licensee shall designate an individual as emergency coordinator who shall be on shift at all times and who shall be the authority and responsibility to immediately and unilaterally initiate any emergency actions, including providing protective action recommendations to authorities responsible for implementing offsite emergency measures.	C.1, C.2, C.3, C.4.1, C.4.9	A.2.c		
3.	Each licensee shall identify a line of succession for the emergency coordinator position and identify the specific conditions for higher level utility officials assuming this function.	C.3, C.4.1, C.4.9			
4.	Each licensee shall establish the functional responsibilities assigned to the emergency coordinator and shall clearly specify which responsibilities may not be delegated to other elements of the emergency organization. Among the responsibilities which may not be delegated shall be the decision to notify and to recommend protective actions to authorities responsible for offsite emergency measures.	C.2			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
5.	Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, Minimum Staffing Requirements for Nuclear Power Plant Emergencies. The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.	C.3, C.4, Table C-1	A.2 A.3 B.4		GL 82-33
6.	Each licensee shall specify the interfaces between and among the onsite functional areas of emergency activity, licensee headquarters support, local services support, and State and local government response organization. This shall be illustrated in a block diagram and shall include the onsite technical support center and the operational support (assembly) center and the licensee's near-site Emergency Operations Facility (EOF).	Figure F-1	A.3		
7.	Each licensee shall specify the management, administrative, and technical support personnel who will augment the plant staff as specified in the table entitled Minimum Staffing Requirements for Nuclear Power Plant Emergencies, (Table B-1) and in the following areas:	C.4 Table C-1	A.5		
a.	logistics support for emergency personnel, e.g., transportation, communications, temporary quarters, food and water, sanitary facilities in the field, and special equipment and supplies procurement;	C.4.7, C.4.12	A.5		
b.	technical support for planning and reentry/recovery operations;	L.6	H		
c.	management level interface with governmental authorities, and	C.4.9, C.4.13	E.9		
d.	release of information to news media during an emergency (coordinated with governmental authorities).	K.5, K.7, K.8			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
8.	*Each licensee shall specify the contractor and private organizations who may be requested to provide technical assistance to and augmentation of the emergency organization.*	B.5	A.5		
9.	*Each licensee shall identify the services to be provided by local agencies for handling emergencies, e.g., police, ambulance, medical, hospital, and fire-fighting organizations shall be specified. The licensee shall provide for transportation and treatment of injured personnel who may also be contaminated. Copies of the arrangements and agreements reached with contractor, private, and local support agencies shall be appended to the plan. The agreements shall delineate the authorities, responsibilities, and limits on the actions of the contractor, private organization, and local services support groups.*	B.4, B.5, B.5.7, J.5	A.6		

C. Emergency Response Support and Resources

Planning Standard- 50.47(b)(3)

Arrangement for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other
1.	*The Federal government maintains in-depth capability to assist licensees, States and local government through the Federal Radiological Monitoring and Assessment Plan (formerly Radiological Assistance Plan (RAP) and Interagency Radiological Assistance Plan (IRAP)). Each State and licensee shall make provisions for incorporating the Federal response capability into its operation plan, including the following:*				

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other
a.	specific persons by title authorized to request Federal assistance; see A.1.d., A.2.a.	B.4	A.8	VEGP 13.3-39	
b.	specific Federal resources expected, including expected times of arrival at specific nuclear facility sites; and	B.4.10, B.4.11, B.4.12		GGNS 13.3-10	
c.	specific licensee, State and local resources available to support the Federal response, e.g., air fields, command posts, telephone lines, radio frequencies and telecommunications centers.	G.4, G.6, G.8, G.13 Addendum E-1			
2a.	Each principal offsite organization may dispatch representatives to the licensee's near-site Emergency Operations Facility. (State technical analysis representative at the near site EOF are preferred.)	B.2.1, G.8			
b.	The licensee shall prepare for the dispatch of a representative to principal offsite governmental emergency operations centers.	G.7			
3.	Each organization shall identify radiological laboratories and their general capabilities and expected availability to provide radiological monitoring and analyses services which can be used in an emergency.	G.9, J.12 Table H-1		GGNS 13.3-7	
4.	Each organization shall identify nuclear and other facilities, organizations or individuals which can be relied upon in an emergency to provide assistance. Such assistance shall be identified and supported by appropriate letters of agreement.	B.2, B.3, B.4, B.5, B.6, G.9		VEGP 13.3-1 VEGP 13.3-2 GGNS 13.3-9	

D. Emergency Classification System

Planning Standard-50.47(b)(4)

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use of the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other
1.	An emergency classification and emergency action level scheme as set forth in Appendix 1 must be established by the licensee. The specific instruments, parameters or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures. The plan shall identify the parameter values and equipment status for each emergency class.	Table D-1 Table D-2 (Generalized Description)	B.1	VEGP 13.3-3 GGNS 13.3-18 GGNS 13.3-19 GGNS 13.3-21	BL 05-02
2.	The initiating conditions shall include the example conditions found in Appendix 1 and all postulated accidents in the Final Safety Analysis Report (FSARS) for the nuclear facility.	Table D-1 Table D-2 (Generalized Description)		VEGP 13.3-3	BL 05-02
3.	Each State and local organization shall establish an emergency classification and emergency action level scheme consistent with that established by the facility licensee.	N/A	B		
4.	Each State and local organization should have procedures in place that provide for emergency actions to be taken which are consistent with the emergency actions recommended by the nuclear facility licensee, taking into account local offsite conditions that exist at the time of the emergency.	State Plan County Plan			

E. Notification Methods and Procedure

Planning Standard-50.47(b)(5)

Procedures have been established for notification, by the licensee of State and local response organizations and for notification of emergency personnel by all response organizations; the content of initial and follow-up message to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each organization shall establish procedures which describe mutually agreeable bases for notification of response organizations consistent with the emergency classification and action level scheme set forth in Appendix 1. These procedures shall include means for verification of messages. The specific details of verification need not be included in the plan.	E.1		VEGP 13.3-44	
2.	Each organization shall establish procedures for alerting, notifying, and mobilizing emergency response personnel.	E.1, E.2, E.3, E.4	C		
3.	The licensee in conjunction with State and local organizations shall establish the contents of the initial emergency messages to be sent from the plant. These measures shall contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary.	E.1	D		
4.	Each licensee shall make provisions for follow-up messages from the facility to offsite authorities which shall contain the following information if it is known and appropriate:	E.1, E.2	D		
a.	location of incident and name and telephone number (or communications channel identification) of caller;	E.1			
b.	date/time of incident;	E.1			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
c.	class of emergency;	E.1			
d	type of actual or projected release (airborne, waterborne, surface spill), and estimated duration/impact times;	E.1			
e.	estimate of quantity of radioactive material released or being released and the points and heights of releases;	E.1			
f.	chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates;	E.1			
g.	meteorological conditions at appropriate levels (wind speed, direction (to and from), indicator of stability, precipitation, if any);	E.1			
h.	actual or projected dose rates at site boundary; projected integrated dose at site boundary;	E.1			
i.	projected dose rates and integrated dose at the projected peak and at 2, 5 and 10 miles, including section(s) affected;	E.1			
j.	estimate of any surface radioactive contamination inplant, onsite or offsite;	E.1, E.2			
k.	licensee emergency response actions underway;	E.1			
l.	recommended emergency actions, including protective measures;	E.1			
m.	request for any needed onsite support by offsite organizations; and	E.1			
n.	prognosis for worsening or termination of event based on plant information.	E.1			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
5.	State and local government organizations shall establish a system for disseminating to the public appropriate information contained in initial and follow-up messages received from the licensee including the appropriate notification to appropriate broadcast media, e.g., the Emergency Alert System (EAS).	E.3, E.4	D.1		
6.	Each organization shall establish administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway Emergency Planning Zone. (See Appendix 3). It shall be the licensee's responsibility to demonstrate that such means exist, regardless of who implements this requirement. It shall be the responsibility of the State and local governments to activate such a system.	E.1, E.2, E.3, E.4	D.1		
7.	Each organization shall provide written messages intended for the public, consistent with the licensee's classification scheme. In particular, draft messages to the public giving instructions with regard to specific protective actions to be taken by occupants of affected areas shall be prepared and included as part of the State and local plans. The role of the licensee is to provide supporting information for the messages. For ad hoc respiratory protection see Respiratory Protective Devices Manual American Industrial Hygiene Association, 1963 pp. 123-126.	E.1, E.4	D.1		

Cross Reference

F. Emergency Communications

Planning Standard-Other Documents.47(b)(6)

Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	The communication plans for emergencies shall include organizational titles and alternates for both ends of the communication links. Each organization shall establish reliable primary and backup means of communication for licensees, local, and State response organizations. Such systems should be selected to be compatible with one another. Each plan shall include:				
a.	provision for 24-hour per day notification to and activation of the State/local emergency response network; and at a minimum, a telephone link and alternate, including 24-hour per day manning of communications links that initiate emergency response actions.	E.1, E.3	D.3		
b.	provision for communication with contiguous State/local governments within the Emergency Planning Zones;	E.1			
c.	provision for communications as needed with Federal emergency response organizations;	E.1, E.2, E.3			10 CFR 73.71
d.	provision for communications between the nuclear facility and the licensee's near-site Emergency Operations Facility, State and local emergency operations centers, and radiological monitoring teams;	Addendum E-1			BL 80-15
e.	provision for alerting or activating emergency personnel in each response organization; and	E.2 Addendum E-1	C		BL 05-02

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
f.	provision for communication by the licensee with NRC headquarters and NRC Regional Office Emergency Operations Centers and the licensee's near-site Emergency Operations Facility and radiological monitoring team assembly area.	Addendum E-1		GGNS 13.3-28	BL 80-15 GL 91-14 50.72(a)(3) 50.72(a)(4) 50.72(c)(3)
2.	Each organization shall ensure that a coordinated communication link for fixed and mobile medical support facilities exists.	E.2	E.7		
3.	Each organization shall conduct periodic testing of the entire emergency communications system (see evaluation criteria H.10, N.2.a and Appendix 3).	Addendum E-1, N-1, E.3 E.3		VEGP 13.3-41	IN 85-44

G. Public Education and Information

Planning Standard-50.47(b)(7)

Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other
1.	Each organization shall provide a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. This information shall include, but not necessarily be limited to:				
a.	educational information on radiation;	K.1	D.2		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other
b.	contact for additional information;	K.1	D.2		
c.	protective measures, e.g.., evacuation routes and relocation centers, sheltering, respiratory protection, radioprotective drugs; and	K.1	D.2		
d.	special needs of the handicapped.	K.1			
2.	The public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually. The programs should include provision for written material that is likely to be available in a residence during an emergency. Updated information shall be disseminated at least annually. Signs or other measures (e.g., decals, posted notices or other means, placed in hotels, motels, gasoline stations and phone booths) shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs. Such notices should refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.	K.1, K.1.3, K.2, K.3, K.4	D.2	VEGP 13.3-4 GGNS 13.3-31 GGNS 13.3-32	Public Information Brochure
3a.	Each principal organization shall designate the points of contact and physical location for use by news media during an emergency.	K.5, K.9, G.6			
b.	Each licensee shall provide space which may be used for a limited number of the news media at the near site Emergency Operations Facility.	G.6			
4a.	Each principal organization shall designate a spokesperson who should have access to all necessary information.	K.5.5			
b.	Each organization shall establish arrangements for timely exchange of information among designated spokesperson.	K.8			
c.	Each organization shall establish coordinated arrangements for dealing with rumors.	K.10			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other
5.	Each organization shall conduct coordinated programs at least annually to acquaint news media with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency.	K.4.1		GGNS 13.3-33	

H. Emergency Facilities and Equipment

Planning Standard- 50.47(b)(8)

Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each licensee shall establish a Technical Support Center and an onsite operations support center (assembly area) in accordance with NUREG-0696, Revision 1.	G.2, G.3	E.8		GL 82-33
2.	Each licensee shall establish an Emergency Operations Facility from which evaluation and coordination of all licensee activities related to an emergency is to be carried out and from which the licensee shall provide information to Federal, State and local authorities responding to radiological emergencies in accordance with NUREG-0696, Revision 1.	G.4	E.8		GL 82-33
3.	Each organization shall establish an emergency operations center for use in directing and controlling response functions.	State Plan County Plan			
4.	Each organization shall provide for timely activation and staffing of the facilities and centers described in the plan.	C.4, E.2			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
5.	Each licensee shall identify and establish onsite monitoring systems that are to be used to initiate emergency measures in accordance with Appendix 1, as well as those to be used for conducting assessment. The equipment shall include:			VEGP 13.3-45	
a.	geophysical phenomena monitors, (e.g., meteorological, hydrologic, seismic);	H.1.2, H.1.6, Table H-1			
b.	radiological monitors, (e.g., process, area, emergency, effluent, wound and portable monitors and sampling equipment);	H.1.4, H.1.5, Table H-1	E.2		
c.	process monitors, (e.g., reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels, flow rates, status or lineup of equipment components), and	H.1.3, Table G-3			
d.	fire and combustion products detectors.	H.1.1, Table H-1			
6.	Each licensee shall make provision to acquire data from or for emergency access to offsite monitoring and analysis equipment including:				
a.	geophysical phenomena monitors, (e.g., meteorological, hydrologic, seismic);	Table H-1			
b.	radiological monitors including ratemeters and sampling devices. Dosimetry shall be provided and shall meet, as a minimum, the NRC Radiological Assessment Branch Technical Position for the Environment Radiological Monitoring Program; and	H.1.4, H.1.5, H.1.7, H.1.8, H.1.9, J.10, Table G-3	E.2		
c.	laboratory facilities, fixed or mobile.	G.9			
7.	Each organization, where appropriate, shall provide for offsite radiological monitoring equipment in the vicinity of the nuclear facility.	G.9, Table H-1	E.2		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
8.	Each licensee shall provide meteorological instrumentation and procedures which satisfy the criteria in Appendix 2, and provisions to obtain representative current meteorological information from other sources.	H.1.6			
9.	Each licensee shall provide for an onsite operations support center (assembly area) which shall have adequate capacity, and supplies, including, for example, respiratory protection, protective clothing, portable lighting, portable radiation monitoring equipment, cameras and communications equipment for personnel present in the assembly area.	G.2	E.1		GL 82-33
10.	Each organization shall make provisions to inspect, inventory and operationally check emergency equipment/instruments at least once each calendar quarter and after each use. There shall be sufficient reserves of instruments/equipment to replace those which are removed from emergency kits for calibration or repair. Calibration of equipment shall be at intervals recommended by the supplier of the equipment.	Table G-1			
11.	Each plan shall, in an appendix include identification of emergency kits by general category (protective equipment, communications equipment, radiological monitoring equipment and emergency supplies).	Table G-1	E.1		
12.	Each organization shall establish a central point (preferably associated with the licensee's near-site Emergency Operations Facility), for the receipt and analysis of all field monitoring data and coordination of sample media.	H.2	E.2		

I. Accident Assessment

Planning Standard- 50.47(b)(9)

Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each licensee shall identify plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and accidents, and shall identify the plant parameter values or other information which correspond to the example initiating conditions of Appendix 1. Such parameter values and the corresponding emergency class shall be included in the appropriate facility emergency procedures. Facility emergency procedures shall specify the kinds of instruments being used and their capabilities.	Table D-1 (Generalized Description)			
2.	Onsite capability and resources to provide initial values and continuing assessment throughout the course of an accident shall include post-accident sampling capability, radiation and effluent monitors, in-plant iodine instrumentation, and containment radiation monitoring in accordance with NUREG-0578, as elaborated in the NRC letter to all power reactor licensees dated October 30, 1979.	H.1, J.10, Table H-1	E.2		
3.	Each licensee shall establish methods and techniques to be used for determining:				
a.	the source term of releases of radioactive material within plant systems. An example is the relationship between the containment radiation monitor(s) reading(s) and radioactive material available for release from containment.	J.11	E.2		
b.	the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.	J.11			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
4.	Each licensee shall establish the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.	J.11			
5.	Each licensee shall have the capability of acquiring and evaluating meteorological information sufficient to meet the criteria of Appendix 2. There shall be provisions for access to meteorological information by at least the near site Emergency Operations Facility, the Technical Support Center, the Control Room and an offsite NRC center. The licensee shall make available to the State suitable meteorological data processing interconnections which will permit independent analysis by the State, of facility generated data in those States with the resources to effectively use this information.	H.1.6	E.1	VEGP 13.3-12	
6.	Each licensee shall establish the methodology for determining the release rate/projected doses if the instrumentation used for assessment are offscale or inoperable.	I.4			
7.	Each organization shall describe the capability and resources for field monitoring within the plume exposure Emergency Planning Zone which are an intrinsic part of the concept of operations for the facility.	H.2, H.3			
8.	Each organization, where appropriate, shall provide methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. This shall include activation, notification means, field team composition, transportation, communication, monitoring equipment and estimated deployment times.	H.3			
9.	Each organization shall have a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 10-7 uCi/cc (microcuries per cubic centimeter) under field conditions. Interference from the presence of noble gas and background radiation shall not decrease the stated minimum detectable activity.	J.11			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
10.	Each organization shall establish means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes (i.e., those given in Table 3, page 18) and gross radioactivity measurements. Provision shall be made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The detailed provisions shall be described in separate procedures.	H.3			
11.	Arrangements to locate and track the airborne radioactive plume shall be made, using either or both Federal and State resources.	H.3			

J. Protective Response

Planning Standard-50.47(b)(10)

A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each licensee shall establish the means and time required to warn or advise onsite individuals and individuals who may be in areas controlled by the operator, including:				
a.	Employees not having emergency assignments;	F.3, I.1, I.2, I.3			
b.	Visitors;	F.3, I.1, I.2, I.3			
c.	Contractor and construction personnel; and	F.3, I.1, I.2, I.3			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
d.	Other persons who may be in the public access areas on or passing through the site or within the owner controlled area.	I.1, I.2, I.3			
2	Each licensee shall make provisions for evacuation routes and transportation for onsite individuals to some suitable offsite location, including alternatives for inclement weather, high traffic density and specific radiological conditions.	F.5, I.3		GGNS 13.3-37 GGNS 13.3-38	
3.	Each licensee shall provide for radiological monitoring of people evacuated from the site.	F.5, I.3, J.6			
4.	Each licensee shall provide for the evacuation of onsite non-essential personnel in the event of a Site or General Emergency and shall provide a decontamination capability at or near the monitoring point specified in J.3.	F.5, I.3, J.6			BL 05-02
5.	Each licensee shall provide for a capability to account for all individuals onsite at the time of the emergency and ascertain the names of missing individuals within 30 minutes of the start of an emergency and account for all onsite individuals continuously thereafter.	F.3, I.2, I.3			
6.	Each licensee shall, for individuals remaining or arriving onsite during the emergency, make provisions for:				
a.	Individual respiratory protection;	J.9			
b.	Use of protective clothing; and	J.3			
c.	Use of radioprotective drugs, (e.g. individual thyroid protection).	J.9			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
7.	Each licensee shall establish a mechanism for recommending protective actions to the appropriate State and local authorities. These shall include Emergency Action Levels corresponding to projected dose to the population-at-risk, in accordance with Appendix 1 and with the recommendations set forth in Tables 2.1 and 2.2 of the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400-R-92-001). As specified in Appendix 1, prompt notification shall be made directly to the offsite authorities responsible for implementing protective measures within the plume exposure pathway Emergency Planning Zone.	I.4, I.5	B	GGNS 13.3-40	BL 05-02 RIS 2004-13
8.	Each licensee's plan shall contain time estimates for evacuation within the plume exposure EPZ. These shall be in accordance with Appendix 4.	I.6.1			
9.	Each State and local organization shall establish a capability for implementing protective measures based upon protective action guides and other criteria. This shall be consistent with the recommendations for EPA regarding exposure resulting from passage of radioactive airborne plumes, (EPA-400-R-92-001) and with those of DHEW (DHHS)/FDA regarding radioactive contamination of human food and animal feeds as published in the Federal Register of December 15, 1978 (43 FR 58790).	State Plan			
10.	The organization's plans to implement protective measures for the plume exposure pathway shall include:				
a.	Maps showing evacuation routes, evacuation areas, preselected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas; (identification of radiological sampling and monitoring points shall include the designators in Table J-1 or an equivalent uniform system described in the plan);	Figures I-1, I-2			
b.	Maps showing population distribution around the nuclear facility. This shall be by evacuation areas (licensees shall also present the information in a sector format);	Figure I-1			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
c.	*Means for notifying all segments of the transient and resident population;*	*E.3 Figure E-1*		*VEGP 13.3-13*	
d.	*Means for protecting those persons whose mobility may be impaired due to such factors as institutional or other confinement;*	*State Plan County Plan*			
e.	*Provisions for the use of radioprotective drugs, particularly for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evaluation may be infeasible or very difficult, including quantities, storage, and means of distribution.*	*State Plan County Plan*			
f.	*State and local organizations' plans should include the method by which decisions by the State Health Department for administering radioprotective drugs to the general population are made during an emergency and the pre-determined conditions under which such drugs may be used by offsite emergency workers;*	*State Plan County Plan*			
g.	*Means of relocation;*	*State Plan County Plan*			
h.	*Relocation centers in host areas which are at least 5 miles, and preferably 10 miles, beyond the boundaries of the plume exposure emergency planning zone;* (See J.12).	*State Plan County Plan*			
i.	*Projected traffic capacities of evacuation routes under emergency conditions;*	*State Plan County Plan*			
j.	*Control of access to evacuated areas and organization responsibilities for such control;*	*State Plan County Plan*			
k.	*Identification of and means for dealing with potential impediments (e.g., seasonal impassability of roads) to use of evacuation routes, and contingency measures;*	*State Plan County Plan*			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
l.	*Time estimates for evacuation of various sectors and distances based on a dynamic analysis (time-motion study under various conditions) for the plume exposure pathway emergency planning zone (See Appendix 4); and*	*County Plan*			
m.	*The bases for the choice of recommended protective actions from the plume exposure pathway during emergency conditions. This shall include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates.*	*Addendum I-1*	*B*		
11.	*Each State shall specify the protective measures to be used for the ingestion pathway, including the methods for protecting the public from consumption of contaminated food-stuffs. This shall include criteria for deciding whether dairy animals should be put on stored feed. The plan shall identify procedures for detecting contamination, for estimating the dose commitment consequences of uncontrolled ingestion, and for imposing protection procedures such as impoundment, decontamination, processing, decay, product diversion, and preservation. Maps for recording survey and monitoring data, key land use data (e.g., farming), dairies, food processing plants, water sheds, water supply intake and treatment plants and reservoirs shall be maintained. Provisions for maps showing detailed crop information may be by including reference to their availability and location and a plan for their use. The maps shall start at the facility and include all of the 50-mile ingestion pathway EPZ. Up-to-date lists of the name and location of all facilities which regularly process milk products and other large amounts of food or agricultural products originating in the ingestion pathway Emergency Planning Zone, but located elsewhere, shall be maintained.*	*State Plan*			
12.	*Each organization shall describe the means for registering and monitoring of evacuees at relocation centers in host areas. The personnel and equipment available should be capable of monitoring within about a 12 hour period all residents and transients in the plume exposure EPZ arriving at relocation centers.*	*State Plan* *County Plan*			

K. Radiological Exposure Control

Planning Standard-50.47(b)(11)

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each licensee shall establish onsite exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Actions Guides (EPA-400-R-92-001) for;				
a.	removal of injured persons;	J.1.1		GGNS 13.3-30	
b.	undertaking corrective actions;	J.1.1		GGNS 13.3-39	
c.	performing assessment actions;	J.1			
d.	providing first aid;	J.1			
e.	performing personnel decontamination;	J.1	E.3		
f.	providing ambulance service; and	J.1	E.6		
g.	providing medical treatment services.	J.1	E.7		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
2.	Each licensee shall provide an onsite radiation protection program to be implemented during emergencies, including methods to implement exposure guidelines. The plan shall identify individual(s), by position or title, who can authorize emergency workers to receive doses in excess of 10 CFR Part 20 limits. Procedures shall be worked out in advance for permitting onsite volunteers to receive radiation exposures in the course of caring out lifesaving and other emergency activities. These procedures shall include expeditious decision making and a reasonable consideration of relative risks.	J.1		GGNS 13.3-49	
3.a	Each organization shall make provision for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any nuclear accident, including volunteers. Each organization shall make provisions for distribution of dosimeters, both self-reading and permanent record devices.	J.2			
b.	Each organization shall ensure that dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers involved in any nuclear accident.	J.2			
4.	Each State and local organization shall establish the decision chain for authorizing emergency workers to incur exposures in excess of the EPA General Public Protective Action Guides (i.e., EPA PAGs for emergency workers and lifesaving activities).	N/A			
5a.	Each organization as appropriate, shall specify action levels for determining the need for decontamination.	J.3	E.3		
b.	Each organization, as appropriate, shall establish the means for radiological decontamination of emergency personnel wounds, supplies, instruments and equipment, and for waste disposal.	J.5	E.3		
6	Each licensee shall provide onsite contamination control measures including:				

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
a.	area access control;	J.3			
b.	drinking water and food supplies;	J.4			
c.	criteria for permitting return of areas and items to normal use, see Draft ANSI 13.12.	J.3			
7.	Each licensee shall provide the capability for decontaminating relocated onsite personnel, including provisions for extra clothing and decontaminants suitable for the type of contamination expected, with particular attention given to radioiodine contamination of the skin.	J.5, J.8			

L. Medical and Public Health Support

Planning Standard-50.47(b)(12)

Arrangements are made for medical services for contaminated injured individuals.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each organization shall arrange for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake, including assurance that persons providing these services are adequately prepared to handle contaminated individuals.	B.4.5, J.5	E.5		
2.	Each licensee shall provide for onsite first aid capability.	F.6, G.11, J.5	E.4		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
3.	Each State shall develop lists indicating the location of public, private and military hospitals and other emergency medical services facilities within the State or contiguous States considered capable of providing medical support for any contaminated injured individual. The listing shall include the name, location, type of facility and capacity and any special radiological capabilities. These emergency medical services should be able to radiologically monitor contamination personnel, and have facilities and trained personnel able to care for contaminated injured persons.	State Plan			
4.	Each organization shall arrange for transporting victims of radiological accidents to medical support facilities.	B.4, B.5.7, F.7, J.5	E.6		

M. Recovery and Reentry Planning and Post-Accident Operations

Planning Standard-50.47(b)(13)

General plans for recovery and reentry are developed.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each organization, as appropriate, shall develop general plans and procedures for reentry and recovery and describe the means by which decisions to relax protective measures (e.g., allow reentry into an evacuated area) are reached. This process should consider both existing and potential conditions.	L.1, L.2, L.3, L.4, L.5, L.6	H		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
2.	*Each licensee plan shall contain the position/title, authority and responsibilities of individuals who will fill key positions in the facility recovery organization. This organization shall include technical personnel with responsibilities to develop, evaluate and direct recovery and reentry operations. The recovery organization recommended by the Atomic Industrial Forum's Nuclear Power Plant Emergency Response Plan dated October 11, 1979, is an acceptable framework.*	L.6	H		
3.	*Each licensee and State plan shall specify means for informing members of the response organizations that a recovery operation is to be initiated, and of any changes in the organizational structure that may occur.*	L.7			
4.	*Each plan shall establish a method for periodically estimating total population exposure.*	L.4		VEGP 13.3-11	

N. Exercises and Drills

Planning Standard-50.47(b)(14)

Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1a.	*An exercise is an event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations. The emergency preparedness exercise shall simulate an emergency that results in offsite radiological releases which would require response by offsite authorities. Exercises shall be conducted as set forth in NRC and FEMA rules.*	N.1	F.1		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
b.	An exercise shall include mobilization of State and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. The organization shall provide for a critique of the annual exercise by Federal and State observers/evaluators. The scenario should be varied from year to year such that all major elements of the plans and preparedness organizations are tested within a five-year period. Each organization should make provisions to start an exercise between 6:00 p.m. and midnight, and another between midnight and 6:00 a.m. once every six years. Exercises should be conducted under various weather conditions. Some exercises should be unannounced.	N.1	F.1		
2.	A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill is often a component of an exercise. A drill shall be supervised and evaluated by a qualified drill instructor. Each organization shall conduct drills, in addition to the annual exercise at the frequencies indicated below:				
a.	Communication Drills- Communications with State and local governments within the plume exposure pathway Emergency Planning Zone shall be tested monthly. Communications with Federal emergency response organizations and States within the ingestion pathway shall be tested quarterly. Communications between the nuclear facility, State and local emergency operations centers, and field assessment teams shall be tested annually. Communication drills shall also include the aspect of understanding the content of messages.	N.1, Addendum N-1			
b.	Fire Drills- Fire drills shall be conducted in accordance with the plant (nuclear facility) technical specifications.	Addendum N-1	F.1.iv		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
c.	Medical Emergency Drills-A medical emergency drill involving a simulated contaminated individual which contains provisions for participation by the local support services agencies (i.e., ambulance and offsite medical treatment facility) shall be conducted annually. The offsite portions of the medical drill may be performed at part of the required annual exercise	Addendum N-1	F.1.vii F.1.vi		
d.	Radiological Monitoring Drills-Plant environs and radiological monitoring drills (onsite and offsite) shall be conducted annually. These drills shall include collection and analysis of all sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping. The State drills need not be at each site. Where appropriate, local organization shall participate	Addendum N-1	F.1.iii		
e.	Health Physics Drills		F.1.iii		
	(1) Health Physics drills shall be conducted semi-annually which involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment. The State drills need not be at each site.	Addendum N-1			
	(2) Analysis of inplant liquid samples with simulated elevated radiation levels shall be included in Health Physics drills annually. These drills will include appropriate radiation protection and contamination controls.	Addendum N-1			
3.	Each organization shall describe how exercises and drills are to be carried out to allow free play for decision making and to meet the following objectives. Pending the development of exercise scenarios and exercise evaluation guidance by NRC and FEMA the scenarios for use in exercises and drills shall include but not be limited to, the following:		F.1		
a.	The basic objective(s) of each drill and exercise and appropriate evaluation criteria:	N.1.1, N.2			

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
b.	The date(s), time period, place(s) and participating organization	Addendum N-1, N.2.2,			
c.	The simulated events;	N.2			
d.	A time schedule of real and simulated initiating events	N.2			
e.	A narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities; and	N.2			BL 05-02
f.	A description of the arrangements for and advance materials to be provided to official observers.	N.2.2			
4.	Official observers from Federal, State or local governments will observe, evaluate, and critique the required exercises. A critique shall be scheduled at the conclusion of the exercise to evaluate the ability of organizations to respond as called for in the plan. The critique shall be conducted as soon as practicable after the exercise, and formal evaluation should result from the critique.	N.1, N.2.2			
5.	Each organization shall establish means for evaluating observer and participant comments on areas needing improvement, including emergency plan procedural changes, and for assigning responsibility for implementing corrective actions. Each organization shall establish management control used to ensure that corrective actions are implemented.	N.1	F.2	VEGP 13.3-10	

O. Radiological Emergency Response Training

Planning Standard-50.47(b)(15)

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each organization shall assure the training of appropriate individuals.				
a.	Each facility to which the plant applies shall provide site specific emergency response training for those offsite emergency organizations who may be called upon to provide assistance in the event of an emergency.	M.8		GGNS 13.3-55	
b.	Each offsite response organization shall participate in and receive training. Where mutual aid agreements exist between local agencies such as fire, policy and ambulance/rescue, the training shall also be offered to the other departments who are members of the mutual aid district.	N/A			
2.	The training program for members of the onsite emergency organization shall, besides classroom training, include practical drills in which each individual demonstrates ability to perform his assigned emergency function. During the practical drills, on-the-spot correction of erroneous performance shall be made and a demonstration of the proper performance offered by the instructor.	M.6	F.2		
3.	Training for individuals assigned to licensee first aid teams shall include courses equivalent to Red Cross Multi-Media.	M.7			
4.	Each organization shall establish a training program for instructing and qualifying personnel who will implement radiological emergency response plans. The specialized initial training and periodic retraining programs (including the scope, nature and frequency) shall be provided in the following categories:				
a.	Directors or coordinators of the response organizations;	M.3	F.1.i		
b.	Personnel responsible for accident assessment;	M.4	F.1.ii		
c.	Radiological monitoring teams and radiological analysis personnel;	M.4	F.1.iii		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
d.	Police, security and fire fighting personnel;	M.8	F.1.iv		
e.	Repair and damage control/correctional action teams (onsite);	M.3	F.1.v		
f.	First aid and rescue personnel;	M.4	F.1.vi		
g.	Local support services personnel including Civil Defense/Emergency Service personnel;	M.8			
h.	Medical support personnel;	M.4			
i.	Licensee's headquarters support personnel;	M.3	F.1.viii		
j.	Personnel responsible for transmission of emergency information and instructions.	M.4			
5.	Each organization shall provide for the initial and annual retraining of personnel with emergency response responsibilities.	M.2.3			

P. Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans.

Planning Standard-50.47(b)(16)

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
1.	Each organization shall provide for the training of individuals responsible for the planning effort.	M.2	G		
2.	Each organization shall identify by title the individual with the overall authority and responsibility for radiological emergency response planning.	O.1	G		

	NUREG-0654-Evaluation Criteria	Plan Section	Appendix E IV	RAIs	Other Documents
3.	Each organization shall designate an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations.	O.1	G		
4.	Each organization shall update its plan and agreements as needed, review and certify it to be current on an annual basis. The update shall take into account changes identified by drills and exercises.	O.2, O.3			
5.	The emergency response plans and approved changes to the plans shall be forwarded to all organizations and appropriate individuals with responsibility for implementation of the plans. Revised pages shall be dated and marked to show where changes have made.	O.1		GGNS 13.3-56	
6.	Each plan shall contain a detailed listing of supporting plans and their source.	Attachment 2			
7.	Each plan shall contain as an appendix listing, by title, procedures required to implement the plan. The listing shall include the section(s) of the plan to be implemented by each procedure.	Attachment 2		VEGP 13.3-5	
8.	Each plan shall contain a specific table of contents. Plans submitted for review should be cross-referenced to these criteria.	Table-of-Contents			
9.	Each licensee shall arrange for and conduct independent reviews of the emergency preparedness program at least every 12 months. (An independent review is one conducted by any competent organization either internal or external to the licensee's organization, but who are not immediately responsible for the emergency preparedness program). The review shall include the emergency plan, its implementing procedures and practices, training, readiness testing, equipment, and interfaces with State and local governments. Management controls shall be implemented for evaluation and correction of review findings. The results of the review, along with recommendations for improvements, shall be documented, reported to appropriate licensee corporate and plant management, and involved Federal, State and local organizations, and retained for a period of five years.	O.3, O.4		VEGP 13.3-5(d)	10CFR50.54(t)
10.	Each organization shall provide for updating telephone numbers in emergency procedures at least quarterly.	Addendum E-1			