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June 27, 1986

Mr. James G. Keppler
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: LaSalle County Station Units 1 and 2
GSEP Annex EAL Revision
NRC Docket Nos. 50-373/374

Dear Mr. Keppler:

Enclosed for your review and approval is a revision to the Emergency Action Levels of the LaSalle County Station Generating Station Emergency Plan Annex. This revision to Emergency Action Levels is being proposed for the following reasons:

a. To reduce the number of alerts declared based on Technical Specification statements,

b. To reduce the potential for unnecessary activation of state and local facilities,

c. To show progress toward a standardized set of emergency conditions as requested by the Illinois Department of Nuclear Safety and Illinois Emergency Services and Disaster Agency,

d. To define initiating conditions that more appropriately comply with the concerns of the general class descriptions in NUREG 0654, and

e. To provide more definitive wording where possible.

This revision removes most statements regarding Technical Specifications from the Alert category. The only exception deals with the violation of Technical Specification Safety Limits.

The table of Emergency Action Levels (EALS) is consistent with the concerns of the general class descriptions and the examples provided in Appendix 1 of NUREG 0654. Where possible, these emergency action levels have been related to plant instrumentation readings. In some instances, it was inappropriate to adopt initiating conditions exactly equivalent to those examples specified in NUREG 0654. Site specific annexes should categorize postulated accidents contained in the Stations Final Safety Analysis Report provided the event produced a concern consistent with the class description in NUREG 0654.

The changes to the Annex are consistent with the requirements of 10 CFR 50 App. E, and do not decrease the effectiveness of the plan. Since this is a major change to the format of the EAL's, this change will not be implemented prior to NRC review and approval.

A copy of this letter along with two copies of the proposed revision are being sent to the Document Control Desk. Commonwealth Edison is notifying the State of Illinois of our request for this revision by transmitting a copy of this letter and enclosure to the designated state official.

In accordance with the requirements of 10 CFR 50.170, a fee remittance in the amount of $150.00 is enclosed.

Sincerely,

C M Allen

C. M. Allen
Nuclear Licensing Administrator

encl.

cc: NRC Document Control Desk
Mike Parker - State of Ill.
A. Bournia - NRR

CMA/df/1821K

LA SALLE COUNTY NUCLEAR STATION

BWR EMERGENCY ACTION LEVELS

NOTES

It is the prerogative of the Station Director to upgrade the condition classification as he deems necessary.

If more than one distinctive EAL of different classification levels, ie. an EAL for Alert and an EAL for Site Emergency, are reached; ensure that the highest classification level reached (or a higher classification level) is declared.

If more than one distinctive EAL of the same classification level ie. two EAL's for Site Emergency are reached; consider classification at a higher classfication level.

1665A/1/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION I. RADIOACTIVE EFFLUENT RELEASES TO THE ENVIRONMENT (A-MODEL NOT AVAILABLE*)

UNUSUAL EVENT	ALERT	SITE ENERGENCY	GENERAL EMERGENCY

For Classification of gaseous release refer to the following:

LZP 1200-2 Classification of a Noble Gas Release
LZP 1200-3 Classification of an Iodine Release

NOTE: For gaseous release, if S.B.G.T. and Station Ventilation are Operating, the Stack W.R.G.M. and the V.G. W.R.G.M. readings must be added.

A. Gaseous effluent instantaneous release is greater than or equal to 1.22E6 uCi/sec (10CFR20.105) as measured by the vent stack WRGM and/or SBGT WRGM and/or counting equipment.

G. Gaseous effluent instantaneous release is greater than or equal to 1.22E7 uCi/sec (10CFR20.105 limit x 10) as measured by the vent stack WRGM and/or SBGT WRGM and/or counting equipment.

M. Gaseous effluent monitors detect level corresponding to greater than or equal to 50 mR/hr (1.3E7 uCi/sec.) for 1/2 hr. or greater than or equal to 500 mR/hr (1.3E8 uCi/sec.) for 2 minutes at the site boundary (adverse meteorology).

S. Gaseous effluent monitors detect levels corresponding to greater than or equal to 1 Rem/hr whole body at the site boundary. This condition exists when:
Q/u is greater than or equal to 4.5 E7
where:
Q = release rate in uCi/sec.
u = mean wind speed in mph
or
Q/u is greater than or equal to 1 E8
where:
Q = release rate in uCi/sec
u = mean wind speed in meters/sec

B. To be developed by Sargent & Lundy.

N. To be developed by Sargent & Lundy.

C. To be developed by Sargent & Lundy.

H. To be developed by Sargent & Lundy.

O. To be developed by Sargent & Lundy.

T. To be developed by Sargent & Lundy.

P. To be developed by Sargent & Lundy.

*IF A-MODEL IS AVAILABLE, CLASSIFICATION WILL BE MADE IN ACCORDANCE WITH A-MODEL OUTPUT.

Emergency Action Levels (EALS) C, D, E, H, I, J, K, P, Q, T & U for liquid releases appear on next page.

Condition I continued next page.

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 1. RADIOACTIVE EFFLUENT RELEASES TO THE ENVIRONMENT (continued)

UNUSUAL EVENT	ALERT	SITE ENERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	One of the following:
LIQUID RELEASE			
For classification of liquid releases refer to the following: LZP 1200-4 Classification of a Liquid Release			
D. Liquid release greater than or equal to 1 E-7 uCi/ml but less than 1 E-6 uCi/ml as sampled and measured by counting equipment.	I. Liquid release greater than or equal to 1 E-6 uCi/ml as measured by monitors (Blowdown PRM, WS PRM or RHR WS PRM) and/or counting equipment.	Q. Liquid release greater than or equal to 2 E3 Ci but less than 2 E4 Ci total in 24 hours.	U. Liquid release greater than or equal to 2 E4 Ci total in 24 hours.
		R. Not applicable to BWRs	V. Not applicable to BWRs
E. Estimated liquid release greater than or equal to 4 Ci but less than 40 Ci total in 24 hours.	J. Estimated liquid release greater than or equal to 40 Ci but less than 2000 Ci total in 24 hours.		
F. Not applicable to BWRs	K. Not applicable to BWRs		
	L. Not applicable to BWRs		

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 2. LOSS OF FISSION PRODUCT BARRIERS

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	One of the following:
A. Coolant activity sample greater than or equal to 20 uCi/ml total Iodine.	G. Loss of one Fission Product Barrier as indicated by any of the following:	K. Loss of two Fission Product Barriers as indicated by any of the following:	N. Loss of two Fission Product Barriers with probable loss of the third Fission Product Barrier as indicated by any of the following:
B. Primary Containment Integrity is degraded such that a Technical Specification Action Statement requires a Unit to be placed in Condition 3 or 4 AND Reactor power is or has been reduced to less than or equal to 50% as indicated by power range instrumentation.	a) Cladding Grab sample activity equivalent to 300 uCi/ml of I-131, 62 uCi/ml of CS-137 OR 41 uCi/ml of Xe-133.		
	b) Reactor Coolant System 1) Containment pressure greater than or equal to 1.69 psig AND 2) Reactor Vessel Level less than or equal to -129 inches during other than controlled evolutions.		
C. ECCS Initiation due to a valid signal AND resultant injection to the vessel. (Not spurious.)	c) Primary Containment. 1) Containment pressure greater than or equal to 45 psig OR 2) Containment temperature greater than or equal to 340 °F, OR 3) Wet well air temperature greater than or equal to 275°F, OR 4) Wet well water temperature greater than or equal to 200° F, OR 5) Unisolable breach of the containment.		
D. Primary Containment radiation level is greater than or equal to 1×10^2 R/hr. but less than 2×10^2 R/hr.	H. Primary Containment radiation level is greater than or equal to 2×10^2 but less than 4×10^2 R/hr.	L. Primary Containment radiation level is greater than or equal to 4×10^2 R/hr.	O. Primary Containment radiation level is greater than or equal to 2×10^3 R/hr. AND probable loss of containment integrity.
E. Failure of a Primary System Safety or Relief Valve(s) to close with the affected Unit in Condition 1 or 2 AND Suppression Pool Temp. cannot be maintained less than 110°F.	I. A 50 gpm reactor coolant leakage rate increase as indicated by surveillance		P. Total core uncovery has occurred or is projected to occur within 2 hours AND NEITHER an adequate capability for steam cooling NOR a core spray system is available.
F. Total reactor coolant leakage rate to Primary Containment is greater than Technical Specifications Limiting Condition for Operation (25 gpm)	J. A Main Steam Line break outside containment with at least one MSIV in each Main Steam Line closed.	M. A Main Steam Line break outside containment with one or more Main Steam Lines having no isolation valves closed.	Q. Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with probable loss of containment integrity.

1665A/4/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 3. SYSTEM MALFUNCTIONS

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	
A. Equipment described in the Technical Specifications is degraded such that an Action Statement requires a Unit to be placed in Condition 3 or 4 AND Reactor power is or has been reduced to less than or equal to 50% as indicated by power range instrumentation.	E. Equipment is degraded such that a condition with the reactor subcritical AND with reactor coolant temperature less than 212°F cannot be achieved or maintained by any means.	I. Equipment is degraded such that a condition with the reactor subcritical AND with reactor pressure less than 1076 psig (lowest relief valve setpoint) cannot be achieved or maintained by any means.	L. Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with probable loss of containment integrity.
B. Loss of instrumentation such that accident classification or off-site dose assessment can not be made.	F. Technical Specifications Safety Limit has been or will be exceeded.	J. Loss of all the following 125 VDC distribution panels: 111Y (211Y), 112Y (212Y), 113Y (213Y).	M. Total core uncovery has occurred or is projected to occur within 2 hours AND NEITHER an adequate capability for steam cooling NOR a core spray system is available.
C. Loss of all power to the Unit Auxiliary Transformer AND the associated Station Auxiliary Transformer with the Unit not in Cold Shutdown or Refuel.	G. Failure of the Reactor Protection System instrumentation to initiate AND complete a scram which brings the reactor subcritical once a limiting safety system setting as specified in the Technical Specifications has been exceeded. (ATWS Event)	K. Loss of power to the Unit Auxiliary Transformer AND the Station Auxiliary Transformer associated with a Unit. AND Loss of all Diesel Generators associated with that Unit.	
D. Loss of all associated Diesel Generators with the Unit not in Cold Shutdown or Refuel.	H. Unplanned loss of most or all annunciators on all the following: 1H13-P601 (ECCS Panel), 1H13-P603 (Rx Panel), 1PM01J (Electrical Panel), AND the Hathaway Typer.		

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 4. SECONDARY SYSTEM MALFUNCTONS (NOT APPLICABLE TO DRESDEN, LA SALLE, OR QUAD CITIES.)

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY

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NOTE

Condition # 4 will be evants dealing with PWRs and are not applicable to BWRs. The numbering has been created for consistency and to avoid confusion when dealing with State Agencies.

1665A/6/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 5. FUEL HANDLING ACCIDENT

UNUSUAL EVENT	ALERT	SITE ENERGENCY	GENERAL EMERGENCY
	One of the following:	One of the following:	
	A. Refuel Floor ARM reads greater than or equal to 1 R/hr, with at least one train of Standby Gas Treatment System operational AND Secondary Containment isolation is capable of being achieved.	C. Refuel Floor ARM reads greater than or equal to 1 R/hr AND Standby Gas Treatment System is not operational or Secondary Containment isolation is incapable of being achieved.	
	B. Fuel Pool level decreases below the Technical Specifications limit.	D. Fuel Pool level decreases below the top of irradiated fuel.	

1665A/7/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 6. NATURAL AND DESTRUCTIVE PHENOMENA (EARTHQUAKE, EXPLOSION, FIRE, FLOOD, TORNADO, SUSTAINED WINDS, AIRCRAFT CRASH OR MISSILES FROM WHATEVER SOURCES)

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	
A. Equipment described in the Technical Specifications is degraded such that an Action Statement requires a Unit to be placed in Condition 3 or 4 AND Reactor Power is or has been reduced to less than or equal to 50% as indicated by power range instrumentation.	H. Equipment is degraded such that a condition with the reactor subcritical AND with reactor coolant temperature less than 212°F cannot be achieved or maintained by any means.	R. Equipment is degraded such that a condition with the reactor subcritical AND with reactor pressure less than 1076 psig (lowest relief valve setpoint) cannot be achieved or maintained by any means.	Y. Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with probable loss of containment integrity.
B. Damage is such that off-site assistance is required to prevent further degradation of the level of safety of the facility.	I. As the result of a natural or destructive phenomena a safety system is affected such that it may not perform its required function.		Z. Total core uncovery has occurred or is projected to occur within 2 hours AND NEITHER an adequate capability for steam cooling NOR a core spray system is available.
C. Rupture of Cooling Pond Lake affecting off-site property.	J. Control Room evacuation is anticipated or required with control established from local stations.	S. Control Room evacuation is required AND control is not established from local stations.	
	K. Sustained winds of 80 mph.	T. Sustained winds of 90 mph. with a unit not in Cold Shutdown or Refuel.	
D. Not applicable to LSCS.	L. Not applicable to LSCS.	U. Not applicable to LSCS.	
E. Not applicable to LSCS.	M. Cooling Lake level is less than or equal to 690' elevation (top of CSCS Pond)	V. CSCS Pond level is less than or equal to 685' elevation (bottom of CSCS Pond)	

1665A/8/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 6. NATURAL AND DESTRUCTIVE PHENOMENA (EARTHQUAKE, EXPLOSION, FIRE, FLOOD, TORNADO, SUSTAINED WINDS, AIRCRAFT CRASH OR MISILES FROM WHATEVER SOURCES.) cont'd

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	
F. Aircraft impacted on site.	N. Aircraft impacted within the protected area but not affecting vital areas.	W. Aircraft impacted within the protected area AND affecting vital areas.	
G. Earthquake felt inplant or detected on Station "in house" seismic instrumentation with level verification from the Aux. Equipment Room. (Not supurious)	O. Earthquake experienced at a level greater than or equal to 0.1 g horizontal or 0.066g vertical (OBE) with level verification from the Aux. Equipment Room.	X. Earthquake experienced at a level greater than or equal to 0.2g horizontal or 0.133g vertical (SSE) with level verification from the Aux. Equipment Room AND a Unit not in Cold Shutdown or Refueling.	
	P. Technical Specification has been OR will be exceeded.		
	Q. Turbine failure causing casing penetration.		

1665A/9/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 7. HAZARDOUS, TOXIC OR FLAMMABLE MATERIALS

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	
A. Uncontrolled release of toxic OR flammable gas at life threatening levels is detected AND confirmed on-site.	D. Uncontrolled release of toxic OR flammable gas at life threatening levels is detected AND confirmed within the protected area.	G. Uncontrolled release of toxic OR flammable gas at life threatening levels is detected AND confirmed within vital areas.	
B. Release of large quantities of flammable, explosive OR toxic material such that plant operation may be affected.	E. Control Room evacuation is anticipated or required with control established from local stations.	H. Control Room evacuation is required AND control is not established from local stations.	
C. As a direct result of hazardous material, a person is killed OR hospitalized AND/OR estimated property damage exceeds $50,000.	F. Chlorine or Ammonia detected with Control Room Emergency Filtration System Operable. Chlorine 5 PPM Ammonia 25 PPM	I. Chlorine or Ammonia detected without Control Room Emergency Filtration System Operable. Chlorine 5 PPM Ammonia 25 PPM	

1665A/10/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 8. SECURITY THREAT

UNUSUAL EVENT	ALERT	SITE ENERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	One of the following:
A. Obvious attempt to sabotage safety related equipment.	G. Security threat of increasing security that persists for more than 60 minutes.	J. Imminent loss of physical control of the facility.	L. Loss of physical control of the facility.
B. Internal disturbance (disturbance that is not short lived or is not a harmless outburst involving one or more individuals within the protected area; collective group gathering which disrupts normal operations.)	H. Security threat that generates an Unusual Event under another condition. Example: Bomb explosion results in loss of plant systems sufficient to classify an Unusual Event.	K. Security threat that results in loss of control of any vital area. (For Control Room refer to General Emergency.)	M. Loss of physical control of the Control Room due to a security threat.
C. Bomb device discovered inside the protected area.	I. Armed or forced vital area intrusion.		
D. Hostage situation which disrupts normal operation.			
E. Civil disturbance (spontaneous collective group gathering which disrupts normal operations.)			
F. Armed or Forced protected area intrusion.			

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 9. ANY OTHER CONDITIONS OF EQUIVALENT MAGNITUDE TO THE CRITERIA USED TO DEFINE THE ACCIDENT CATEGORY AS DETERMINED BY THE STATION DIRECTOR.

UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
One of the following:	One of the following:	One of the following:	One of the following:
A. A condition that warrants increased awareness on the part of the State AND/OR Local offsite officials.	B. A condition that warrants precautionary activation of Technical Support Center AND/OR Corporate Command Center, AND placing Emergency Operations Facility on standby.	E. A condition that warrants activation of emergency centers AND monitoring teams or a precautionary notification to the public near the site.	G. Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.
	C. Fuel Pool level decreases below the Technical Specifications Limit.	F. Fuel Pool level decreases below the top of irradiated fuel.	H. Total core uncovery has occurred or is projected to occur within 2 hours AND NEITHER an adequate capability for steam cooling NOR a core spray system is available.
	D. ARM reading(s) AND survey results or survey results alone confirm an increase in plant radiation levels by a factor of 1000.		

1665A/12/wjm

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION 10. PERSONAL INJURY

UNUSUAL EVENT	ALERT	SITE ENERGENCY	GENERAL EMERGENCY
A. Transportation of a radioactively contaminated injured person(s) to an off-site medical facility for treatment.			

LSCS BWR EMERGENCY ACTION LEVELS

CONDITION II. TRANSPORTATION ACCIDENT

A. A vehicle transporting radioactive materials OR non-radioactive Hazardous materials from a Commonwealth Edison generating station is involved in a situation in which:

1. Fire, breakage or suspected radioactive contamination occurs involving a shipment of radioactive material OR;

2. As a direct result of Hazardous materials,

(a) A person is killed; OR
(b) A person receives injuries requiring hospitalization; OR
(c) Estimated carrier or other property damage exceeds $50,000.

B. Any other condition involving Hazardous material transportation AND equivalent to the criteria in item A.

1665A/14/wjm

LA SALLE COUNTY NUCLEAR STATION

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Revision 0
November, 1985

1667A/wjm

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 1. Radioactive Effluent Release

EAL#1A Noble Gas Release Rate

This emergency action level action addresses the concern of Example #2 under Unusual Event in NUREG 0654. Example #2 reads as follows:

> #2 Radiological effluent Technical Specification limits exceeded.

This emergency action level is based on Technical Specification Limits in 10CFR20 guidelines. Refer to the Offsite Dose Calculation Manual (ODCM) Section 8.

EAL#1B Iodine Release Rate

Information to be developed by Sargent & Lundy.

EAL#1C Noble Gas Release Rate

Information to be developed by Sargent & Lundy

EAL#1D Liquid Release

This emergency action level is based on Table 5.0-7, Emergency Action Levels for Radioactivity in Liquid Effluents, of the Generating Stations Emergency Plan.

EAL#1E Liquid Release

This emergency action level is based on Table 5.0-7, Emergency Action Levels for Radioactivity in Liquid Effluents, of the Generating Stations Emergency Plan.

EAL#1F Not applicable to BWRs

EAL#1G Noble Gas Release Rate

This emergency action level addresses the concern of Example #15 under Alert in NUREG 0654. Example #15 reads as follows:

> "Radiological effluents greater than 10 times Technical Specification instantaneous limits (an instantaneous rate which, if continued over 2 hours, would result in about 1 mr at the site boundary under average meteorological conditions)."

This emergency action level is based on 10 times the Technical Specification Limit and 10CFR20 guidelines. Refer to the Offsite Dose Calculation Manual (ODCM) Section 8.

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BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 1. Radioactive Effluent Release (cont'd)

EAL#1H Noble Gas Release Rate
Information to be developed by Sargent & Lundy.

EAL#1I Liquid Release
This emergency action level is based on Table 5.0-7, Emergency Action Levels for Radioactivity in Liquid Effluents, of the Generating Stations Emergency Plan.

EAL#1J Liquid Release
This emergency action level is based on Table 5.0-7, Emergency Action Levels for Radioactivity in Liquid Effluents, of the Generating Stations Emergency Plan.

EAL#1K Not applicable to BWRs

EAL#1L Not applicable to BWRs

EAL#1M Noble Gas Release Rate
This emergency action level addresses the concern of Example #13 under Site Emergency in NUREG 0654. Example #13 reads as follows:

a. Effluent monitors detect levels corresponding to greater than 50 mr/hr for 1/2 hour or greater than 500 mr/hr W.B. for two minutes (or five times these levels to the thyroid) at the site boundary for adverse meteorology.
b. These dose rates are projected based on other plant parameters (e.g., radiation level in containment with leak rate appropriate for existing containment pressure) or are measured in the environs
c. EPA Protective Action Guidelines are projected to be exceeded outside the site boundary.

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Condition 1. Radioactive Effluent Release (cont'd)

EAL#1N Noble Gas Release Rate
Information to be developed by Sargent & Lundy.

EAL#1O Noble Gas Release Rate
Information to be developed by Sargent & Lundy.

EAL#1P Noble Gas Release Rate
Information to be developed by Sargent & Lundy.

EAL#1Q Liquid Release

This emergency action level addresses the concern of Example 13C under Site Emergency and NUREG 0654. Example 13C reads as follows:

c. EPA Protective Action Guidelines are projected to be exceeded outside the site boundary.

This emergency action level is based on the following:

a. EPA Publication "Accidental Radioactive Contamination of Human Food & Animal Feeds; Recommendation for State & Local Agencies", Federal Register, Vol. 47, #205, Oct. 22, 1982.
b. EPA Publication "Manual of Protective Action Guides & Protective Actions for Nuclear Incidents", 1975 (updated 1979).
c. GSEP Manual, Table 5.0-7, Emergency Action Levels For Radioactivity in Liquid Effluents.

EAL#1R Not applicable to BWRs

EAL#1S Noble Gas Release Rate
This emergency action level addresses the concern of Example #1 under General Emergency and NUREG 0654. Example #1 reads as follows:

a. Effluent monitors detect levels corresponding to 1 rem/hr W.B. or 5 rem/hr thyroid at the site boundary under actual meteorological conditions
b. These dose rates are projected based on other plant parameters (e.g., radiation levels in containment with leak rate appropriate for existing containment pressure with some confirmation from effluent monitors) or are measured in the environs.

Condition 1. Radioactive Effluent Release (cont'd)

EAL#1T Noble Gas Release Rate
Information to be developed by Sargent & Lundy.

EAL#1U Liquid Release
This emergency action level is based on Table 5.0-7, Emergency Action Levels for Radioactivity in Liquid Effluents, of the Generating Stations Emergency Plan.

EAL#1V Not applicable to BWRs

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Condition 2. Loss of Fission Product Barriers

EAL#2A Coolant Activity

This emergency action level addresses the concern of Example #3b under Unusual Event in NUREG 0654. Example #3b reads as follows:

> High coolant activity sample (e.g., exceeding coolant technical specifications for iodine spike.)

This EAL is adopted from the Technical Specification limit.

EAL#2B Loss of Primary Containment Integrity

This emergency action level addresses the concern of Example #8 under Unusual Event in NUREG 0654. Example #8 reads as follows:

> Loss of containment integrity requiring shutdown by technical specificiation.

This EAL is very similar to the example provided in the NUREG. The words "and reactor power is or has been reduced to less than or equal to 50% as indicated by power range instrumentation" were added to clearly define when the Unusual Event is to be declared. 50% power allows for repairs to be accomplished during load drop from 100%. If repairs have not been accomplished by the 50% power mark, an Unusual Event will be declared. For a BWR control rod insertion will have commenced. Since control rod insertion can occur at any power level for a PWR, the 50% power mark was selected. Power reduction to less than or equal to 50% is indicative of a commitment to fully shutdown. Termination should be considered once the Unit has been placed in a Shutdown Condition.

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Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2C ECCS Initiation

This emergency action level addresses the concern of Example #1 under Unusual Event in NUREG 0654. Example #1 reads as follows:

> Emergency Core Cooling System (ECCS) initiated and discharge to vessel.

The wording, although similar to the NUREG, was changed to indicate that the signal was "valid" and "not suprious." It is recognized that this event may not warrant GSEP activation, (i.e., loss of VP causes 1.69# and HPCS initiates and injects) however, there are no clear choices on how to cover the NUREG requirements and allow for more operational flexibility. The HPCS example does not indicate a "loss of barriers", however, initiation is due to a "real" or "valid" signal. To avoid Operator confusion (i.e., how to determine if HPCS initiation was "valid" or "spurious" or "valid signal" but not needed for core cooling or flooding) it was decided the best approach was strict adherence to the NUREG.

Operational experience to date has indicated that these types of events are not very probable. Such an event may cause declaration and cancellation almost simultaneously.

1667A/wjm

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2D Primary Containment Radiation Level

This emergency action level is gradation of Example #1, #6 and #12 under Alert in NUREG 0654. These examples read as follows:

#1 Severe loss of fuel cladding.

#6 Radiation levels or airborne contamination which indicate a severe degradation in the control of radioactive materials (e.g., increase of factor of 1000 in direct radiation readings within facility.)

#12 Fuel damage accident with release of radioactivity to containment or fuel handling building.

This is a gradation of EAL #2I. The lower boundary for containment radiation level will be the alarm setpoint.

EAL#2E Safety Relief Valve Closure

This emergency action level addresses the concern of Example #6 under Unusual Event in NUREG 0654. Example #6 reads as follows:

Failure of safety or relief valve in a safety related system to close following reduction of applicable pressure.

This EAL is essentially word for word from the NUREG example. Words have been added to indicate that this is only a declaration if the Unit is in Condition 1 or 2, and S.P. temp. cannot be maintained less than 110°F. La Salle abnormal procedures require that the Unit be removed from Condition 1 or 2 by SCRAM if the valve does not close after 4 attempts to close, 2 minutes have elapsed, or Suppression Pool temperature reaches 110°F.

Since the abnormal procedure will place the Unit in a safe condition, the GSEP declaration should only be made if the Unit can not be scrammed or if S.P. temp. can not be kept at acceptable levels.

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Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2F Primary System Leakage

This emergency action level addresses the concern of Example #5 under Unusual Event in NUREG 0654. Example #5 reads as follows:

> Exceeding either primary/secondary leak rate technical specification or primary system leak rate technical specification.

This EAL was worded similar to the NUREG example and adopted from Technical Specification.

1667A/wjm

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2G Loss of One Fission Product Barrier

This emergency action level is a gradation of Example #2 under General Emergency in NUREG 0654. Example #2 read as follows:

> Loss of 2 of 3 fission product barriers with a potential loss of 3rd barrier, (e.g., loss of primary coolant boundary, clad failure, and high potential for loss of containment.)

This EAL provides indications of a LOCA or an undesired release of coolant and/or fission products to the primary containment.

a) The indication of cladding failure chosen is high coolant activity. Example #16 under Alert in NUREG 0654, indicates 300 uCi/cc equivalent of I-131. Using NEDO-22215 this correlates to approximately 6.5% fuel cladding failure.

Using the 6.5% fuel cladding failure, the Cs-137 and Xe-133 levels of 62 uCi/cc and 41 uCi/cc respectively, were determined. Actual site specific values for Cs-137 and Xe-133 may be determined using core damage assessment procedures. If determined these values may be substituted in the EALs. Classification under this criteria can only be accomplished after isotopic analysis has been performed.

b) The indication of reactor coolant system failure is the emergency core cooling initiation signals. These signals are related by an "and" as a single signal can also be indicative of a loss of containment cooling. If only one of these signals were present, it could indicate a loss of containment cooling or loss of feedwater and not necessarily a loss of reactor coolant system integrity.

c) The indications of primary containment failure are the containment design parameters and the words "unisolable breech of containment."

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2H Primary Containment Radiation Level

This emergency action level addresses the concern of Example #1, #6 and #12 under Alert in NUREG 0654. These examples read as follows:

#1 Severe loss of fuel cladding.

#6 Radiation levels or airborne contamination which indicate a severe degradation in the control of radioactive materials (e.g., increase of factor of 1000 in direct radiation readings within facility.)

#12 Fuel damage accident with release of radioactivity to containment or fuel handling building.

This emergency action level addresses the concern of Example #5 under Alert in NUREG 0654.

EAL#2I Primary System Leakage

This emergency action level addresses the concern of Example #5 under Alert in NUREG 0654. Example #5 reads as follows:

Primary coolant leak rate greater than 50 gpm.

EAL#2J Main Steam Line Break With Isolation

This emergency action level addresses the concern of Example #4 under Alert NUREG 0654. Example #4 reads as follows:

Steam line break ... with MSIV malfunction causing leakage (BWR)

A Main Steam Line break outside containment is a significant event even if complete MSIV isolation is effective. If no isolation occurs, and a leakage path still exists, the event would warrant a Site Emergency classification. If a break occurs and only a single MSIV on a Main Steam Line isolated then the event would be classified as an Alert. Termination of this event should be considered once the Unit has been placed in a shutdown condition.

1667A/wjm

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2K Loss of Two Fission Product Barriers

This emergency action level is a gradation of Example #2 under General Emergency in NUREG 0654. Example #2 reads as follows:

> Loss of 2 of 3 fission product barriers with a potential loss of 3rd barrier, (e.g., loss of primary coolant boundary, clad failure, and high potential for loss of containment.)

This EAL provides indications of a LOCA or an undesired release of coolant and/or fission products to the primary containment.

a) The indication of cladding failure chosen is high coolant activity. Example #16 under Alert in NUREG 0654, indicates 300 uCi/cc equivalent of I-131.

Using NEDO-22215 this correlates to approximately 6.5% fuel cladding failure. Using the 6.5% fuel cladding failure, the Cs-137 and Xe-133 levels of 62 uCi/cc and 41 uCi/cc. respectively, were determined. Actual site specific values for Cs-137 and Xe-133 may be determined using core damage assessment procedures. If determined these values may be substituted in the EALs. Classification under this criteria can only be accomplished after isotopic analysis has been performed.

b) The indication of reactor coolant system failure is the emergency core cooling initiation signals. These signals are related by an "and" as a single signal can also be indicative of a loss of containment cooling. If only one of these signals were present, it could indicate a loss of containment cooling or loss of feedwater and not necessarily a loss of reactor coolant system integrity.

c) The indications of primary containment failure are the containment design parameters and the words "unisolable breech of containment."

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2L Primary Containment Radiation Level

This emergency action level is a gradation of Example #2 and #10 under Site Emergency in NUREG 0654. These examples read as follows:

> #2 Degraded core with possible loss of coolable geometry (indicators should include instrumentation to detect inadequate core cooling, coolant activity and/or containment radioactivity levels.)
>
> #10 Major damage to spent fuel in containment or fuel handling building (e.g., large object damages fuel or water loss below fuel level.)

So long as containment failure remains unlikely, there is no primary containment activity which will cause escalation to General Emergency.

EAL#2M Main Steam Line Break Without Isolation

This emergency action level addresses the concern of Example #4 under Site Emergency in NUREG 0654. Example #4 reads as follows:

> BWR steam line break outside containment without isolation.

A Main Steam Line break outside containment is a significant event even if complete MSIV isolation is effective. If no isolation occurs, and a leakage path still exists, the event would warrant a Site Emergency classification. If a break occurs and only a single MSIV on a Main Steam Line isolated then the event would be classified as an Alert.

1667A/wjm

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2N Loss of Two Fission Product Barriers With Probable Loss of the Third.

This emergency action level addresses the concern of Example #2 under General Emergency in NUREG 0654. Example #2 reads as follows:

> Loss of 2 of 3 fission product barriers with potential loss of 3rd barrier, (e.g., loss of primary coolant boundary, clad failure, and high potential for loss of containment.)

This EAL provides indications of a LOCA or an undesired release of coolant and/or fission products to the primary containment.

a) The indication of cladding failure chosen is high coolant activity. Example #16 under Alert in NUREG 0654, indicates 300 uCi/cc equivalent of I-131. Using NEDO-22215 this correlates to approximately 6.5% fuel cladding failure. Using the 6.5% fuel cladding failure, the CS-137 and Xe-133 levels of 62 uCi/cc and 41 uCi/cc, respectively, were determined. Actual site specific values for Cs-137 and Xe-133 may be determined using core damage assessment procedures. If determined these values may be substituted in the EALs. Classification under this criteria can only be accomplished after isotopic analysis has been performed.

b) The indication of reactor coolant system failure is the emergency core cooling initiation signals. These signals are related by an "and" as a single signal can also be indicative of a loss of containment cooling or a loss of feedwater. If only one of these signals were present, it could indicate a loss of containment cooling or loss of feedwater and not necessarily a loss of reactor coolant system integrity.

c) The indications of primary containment failure are the containment design parameters and the words "unisolable breech of containment."

1667A/wjm

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#20 Primary Containment Radiation Level With Probable Loss of Containment.

This emergency action level addresses the concern of Example #1b and #2 under General Emergency in NUREG 0654. These examples read as follows:

#1b These dose rates are projected based on other plant parameters (e.g., radiation levels in containment with leak rate appropriate for existing containment pressure with some confirmation from effluent monitors) or are measured in the environs.

#2 Loss of 2 of 3 fission product barriers with a potential loss of 3rd barrier, (e.g., loss of primary coolant boundary, clad failure, and high potential for loss of containment)

If primary containment activity is greater than or equal to $2x10^3$R/hr and primary containment integrity is intact and is expected to remain intact, then the classification remains Site Emergency.

If primary containment activity is less than $2x10^3$R/hr and primary containment integrity is expected to be lost, the classification remains at Site Emergency. It is only when primary containment integrity is greater than or equal to $2x10^3$R/hr and when loss of containment integrity is probable that a General Emergency would be declared.

1667A/wjm

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL#2P Imminent Core Melt

This emergency action level is a gradation of Example #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

#4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.

#5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.

This emergency action level is based on the definition of adequate core cooling described in the BWR Emergency Operating Procedure Guidelines. The time selected should be the nominal evacuation time for the 2 mile radius.

1667A

Condition 2. Loss of Fission Product Barriers (cont'd)

EAL# 2Q General Emergency Class Description

This is general guidance extracted from NUREG 0654. This EAL is written to address Examples #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

#4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.

#5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.)

The term "probable" was substituted for the term "potential" to be consistent with GSEP and with other EALs.

1667A/wjm

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 3. System Malfunctions

EAL#3A Technical Specification Requiring Shutdown

This emergency action level addresses the concerns of Examples #9, #11 and #15 under Unusual Event of NUREG 0654. These examples read as follows.

#9 Loss of engineered safety feature or fire protection system function requiring shutdown by technical specification (e.g., because of malfunction, personnel error or procedural inadequacy.)

#11 Indications or alarms on process or effluent parametes not functional in control room to an extent requiring plant shutdown or other significant loss of assessment or communication capability (e.g., plant computer, Safety Parameter Display System, all meteorological instrumentation.)

#15 Other plant conditions exist that warrant increased awareness on the part of a plant operating staff or State and/or local offsite authorities or require plant shutdown under technical specification requirements or involve other than normal controlled shutdown (e.g., cooldown rate exceeding technical specification limits, pipe cracking found during operation.)

The EAL is provided to allow for equipment degradations the combinations of which could place a unit in jeopardy. Rather than listing all possible combinations of equipment failures, and thereby establish a "pseudo" technical specification, reference is made to existing Technical Specifications. Operating personnel and Station management are intimately familiar with Technical Specifications.

The words ""and reactor power is or has been reduced to less than or equal to 50% as indicated by power range instrumentation" were added to clearly define when the Unusual Event is to be declared. 50% power allows for repairs to be accomplished during load drop from 100%. If repairs have not been accomplished by the 50% power mark, an Unusual Event will be declared. For a BWR control rod insertion will have commenced. Since control rod insertion can occur at any power level for a PWR, the 50% power mark was selected. Power reduction to less than or equal to 50% is indicative of a commitment to fully shutdown. Termination of this event should be considered once the Unit has been placed in a shutdown condition.

1667A/wjm

Condition 3. System Malfunctions (cont'd)

EAL#3B Loss of Instrumentation

This emergency action level relates to EAL #3A and addresses the concerns of Example #11 under Unusual Event of NUREG 0654. Example #11 reads as follows:

> Indications or alarms on process or effluent parameters not functional in control room to an extent requiring plant shutdown or other significant loss of assessment or communication capability (e.g., plant computer, Safety Parameter Display System, all meteorological instrumentation.)

No attempt to detail the specific instruments that are critical to accident classification or to offsite dose assessment has been made. As an example, so long as manual procedures for offsite dose assessment and the necessary input parameters are available, this event need not be declared.

The instrumentation necessary for accident assessment is governed by Technical Specifications. Effluent radiation monitors, containment radiation monitors and the availability of meterological data minimize the possibility of declaration under this EAL.

For example, GSEP declaration need not be declared if the Prime Computer is lost so long as sufficient instrumentation is available for performing ODCM hand calculations. Even if the Site Met Tower has been lost, Environmental procedures allow the use of Dresden Met Data or Met Data from the Marseilles weather station.

1667A

Condition 3. System Malfunctions (cont'd)

EAL#3C Loss of Station Auxiliary Transformer and Unit Auxiliary Transformer.

This emergency action level addresses the concern of Example #7 under Unusual Event in NUREG 0654. Example #7 reads as follows:

> Loss of offsite power or loss of onsite AC power capability.

Loss of all offsite power refers to the loss of the Station Auxiliary Transformer and the Unit Auxiliary Transformer. For purposes of the emergency action level, credit is not taken for unit tie breakers. Therefore, declaration of an Unusual Event cannot be avoided if the only source of offsite power is through the unit tie breakers.

The words "with the Unit not in Cold Shutdown or Refuel" emphasize the fact that such a loss of power should not constitute an Unusual Event so long as Diesel Generators are available.

1667A/wjm

Condition 3. System Malfunctions (cont'd)

EAL#3D Loss of All Diesel Generators

This emergency action level addresses the concern of Example #7 under Unusual Event in NUREG 0654. Example #7 reads as follows:

> Loss of offsite power or loss of onsite AC power capability.

Loss of all Diesel Generators associated with a unit refers to only the normal diesel supplies.

It does not refer to Diesel Generators related adminstratively through Technical Specifications. For example, the loss of the 0 1A and 1B Diesel Generators is an Unusual Event for Unit I. The 2A Diesel Generator is associated adminstratively to Unit I by Technical Specifications and would not be involved in a Unusual Event declaration for Unit I.

The words "with the Unit not in Cold Shutdown or Refuel" emphasize the fact that such a loss of power should not constitute an Unusual Event so long as the Unit Auxiliary Transformer or the associated Station Auxiliary Transformer is available.

1667A/wjm

Condition 3. System Malfunctions (cont'd)

EAL#3E Loss of Ability To Reach Cold Shutdown

This emergency action level addresses the concern of Example #10 under Alert in NUREG 0654. Example #10 reads as follows:

> Complete loss of any function needed for plant cold shutdown.

The wording of this EAL is an attempt to clarify the concern of NUREG 0654.

The use of the term "any function" in the NUREG could result in inappropriate GSEP activation and was therefore avoided.

For example, the loss of a single system would generate an Alert declaration despite the fact that numerous methods exist for achieving Cold Shutdown.

The term "Cold Shutdown" was not used since the Technical Specification definition is not applicable to the concerns of this accident classification. The Technical Specification definition relates only to the Mode Switch position and to coolant temperature.

Note that the wording chosen for the EAL does not require that "all rods be inserted" or that "shutdown margins be met" but rather that the reactor be "subcritical". Subcritically is a condition that can be indicated by rod insertion and/or decaying power level.

The use of the words "by any means" allows personnel the opportunity to use available systems to achieve the condition before issuing a declaration. Cool down using main steam line drains clean up systems, feed and bleed or other methods using normally available systems are acceptable means of achieving Cold Shutdown. This wording is not intended to delay declaration once it is recognized that the desired condition cannot be achieved or maintained.

EAL#3F Technical Specification Safety Limit

Although not specifically addressed in NUREG 0654, violation of a Technical Specification Safety Limit constitutes a degradation in the level of safety of the plant consistent with the Alert class description provided in the NUREG.

Condition 3. System Malfunctions (cont'd)

EAL#3G ATWS Event

This emergency action level is adopted essentially word for word from Example #11 under Alert in NUREG 0654. Example #11 reads as follows:

> Failure of the reactor protection system to initiate and complete a scram which brings the reactor subcritical.

This EAL contains additional wording with respect to having reached a "Limiting Safety System Setting" as specified in the Technical Specifications. The additional wording clarifies when the SCRAM should have occurred.

EAL#3H Loss of Annunciators

This emergency action level addresses the concern of Example #14 under Alert in NUREG 0654. Example #14 reads as follows:

> Most of all alarms (annunciators) lost.

The term "unplanned" was added to indicate that there may be planned losses of power to the annunciators. For example, D.C. ground search procedures may result in temporary loss of power to annunciators. The listing of panels specifies certain annunciator panels to be critical. The NRC has indicated that this condition should be an "and" condition. Loss of power to all of the indicated panels is required before declaration is made.

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Condition 3. System Malfunctions (cont'd)

EAL#3I Loss of Ability to Reach Hot Shutdown

This emergency action level addresses the concern of Example #8 under Site Emergency in NUREG 0654. Example #8 reads as follows:

> Complete loss of any function needed for plant hot shutdown.

The wording of this EAL is an attempt to clarify the concern of NUREG 0654.

The use of the term "any function" in the NUREG could result in inappropriate GSEP activation and was therefore avoided. For example, the loss of a single system would generate a Site Emergency declaration despite the fact that numerous methods exist for achieving a Hot Shutdown condtion. The term "Hot Shutdown" was not used since the Technical Specification definition is not applicable to the concerns of this accident classification. The Technical Specification definition relates only to the Mode Switch position and to coolant temperature. In the case of "Hot Shutdown", Technical Specifications placed no upper boundary on coolant temperature. This emergency action level is addressed as a condition in which reactor pressure cannot be maintained below the lowest relief valve setting. This is an indication that pressure is not being controlled by normal means but still allows for manual operation of the Safety Relief Valves if needed to keep pressure below the Safety Limit. Note that the wording chosen for the EAL does not require that "all rods be inserted" or that "shutdown margin be met" but rather that the reactor be "subcritical". Subcriticality is a condition that can be indicated by rod insertion and/or decaying power level.

The use of the words "by any means" allows personnel the opportunity to use normally available systems to achieve the condition before issuing a declaration. This wording is not intended to delay declaration once it is recognized that the desired condition cannot be achieved or maintained.

Condition 3. System Malfunctions (cont'd)

EAL#3J Loss of DC Power

This emergency action level addressses the concerns of Example #8 under Alert and Example #7 under Site Emergency in NUREG 0654. These examples read as follows:

#8 (Alert) Loss of all onsite DC power

#7 (Site Emergency) Loss of all vital onsite DC power for more than 15 minutes.

The NUREG addresses an Alert condition for a loss of all DC power and upgrades to Site Emergency if loss is for greater than 15 minutes. The 15 minutes is of no consequence. The time to restore power once lost and to complete notification is expected to take more than 15 minutes. The event is of such magnitude that offsite assistance would be required. Therefore, the 15 minute time frame and the Alert EAL has been dropped. This EAL is more conservative than the NUREG without being more restrictive. Such a massive degradation of power sources would more appropriately justify a Site Emergency declaration without an interim Alert declaration. Stations may chose to list busses by number if so desired.

Condition 3. System Malfunctions (cont'd)

EAL#3K Loss of All AC Power

This emergency action level addresses the concerns of Example #7 under Alert and Example #6 under Site Emergency of NUREG 0654. These examples read as follows:

#7 (Alert) Loss of offsite power and loss of all onsite AC power.

#8 (Site Emergency) Complete loss of any function needed for plant hot shutdown.

The NUREG addresses an Alert condition for a loss of all AC power and upgrades to Site Emergency if loss is for greater than 15 minutes. The 15 minutes is of no consequence. The time to restore power once lost and to complete notification is expected to take more than 15 minutes. The event is of such magnitude that offsite assistance would be required. Therefore, the 15 minute time frame and the Alert EAL has been dropped. Such a massive degradation of power sources more appropriately justifies a Site Emergency. This EAL is more conservative than the NUREG wthout being more restrictive. Credit is not taken for the Unit cross ties. This EAL is based on the loss of all Diesel Generators associated with a Unit in conjunction with loss of the Station Auxiliary Transformer and of the Unit Auxiliary Transformer.

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Condition 3. System Malfunctions (cont'd)

EAL#3L General Emergency Class Description

This is general guidance extracted from NUREG 0654. This EAL is written to address Examples #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

#4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.

#5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.)

The term "probable" was substituted for the term "potential" to be consistent with GSEP and with other EALs.

EAL#3M Imminent Core Melt

This emergency action level is a gradation of Example #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

#4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.

#5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.

This emergency action level is based on the definition of adequate core cooling described in the BWR Emergency Operating Procedure Guidelines. The time selected should be the nominal evacuation time for the 2 mile radius.

1667A

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 4. Secondary System Malfunctions

Condition #4 will be events dealing with PWR's and are not applicable to BWR's. The numbering has been created for consistency and to avoid confusion when dealing with State Agencies.

1667A/wjm

Condition 5. Fuel Handling Accident

EAL#5A This emergency action level addresses the concern of Examples #6 and #12 under Alert in NUREG 0654. These examples read as follows:

#6 Radiation levels or airborne contamination which indicate a severe degradation in the control of radioactive materials (e.g., increase of factor of 1000 in direct radiation readings within facility.)

#12 Fuel damage accident with release of radioactivity to containment or fuel handling building.

Fuel pool exhaust monitors were not chosen to initiate this EAL since their isolation signal is set relatively low and would essentially halt the tracking of higher readings. In addition, the exhaust monitors may not provide a sufficiently high reading in the case of an exposed spent fuel element.

The 1 R/hr on the Refuel Floor ARM was chosen based upon Example #6 under Alert in NUREG 0654 and upon the range of the Refuel Floor ARM.

EAL#5B Fuel Pool Level

This emergency action level is a gradation of Example #10 under Site Emergency in NUREG 0654. Example #10 reads as follows:

Major damage to spent fuel in containment or fuel handling building (e.g., large object damages fuel or water loss below fuel level.)

1667A/wjm

Condition 5. Fuel Handling Accident (cont'd)

EAL#5C Damage to Irradiated Fuel and High Radiation in the Fuel Handling Building

This emergency action level addresses the concern of Example #10 under Site Emergency in NUREG 0654. Example #10 reads as follows:

> Major damage to spent fuel in containment or fueld handling building (e.g., large object damages fuel or water loss below fuel level.)

Fuel pool exhaust monitors were not chosen to initiate this EAL since their isolation signal is set relatively low and would essentially halt the tracking of higher readings. In addition, the exhaust monitors would not provide a sufficiently high reading in the case of an exposed spent fuel element.

The 1 R/hr on the Refuel Floor ARM was chosen based upon Example #6 under Alert in NUREG 0654 and upon the range of the Refuel Floor ARM.

EAL#5D Fuel Pool Level

This emergency action level addresses the concern of Example #10 under Site Emergency in NUREG 0654. Example #10 reads as follows:

> Major damage to spent fuel in containment or fueld handling building (e.g., large object damages fuel or water loss below fuel level.)

1667A/wjm

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 6. Natural and Destructive Phenomena

EAL#6A Technical Specification Requiring Shutdown

This emergency action level (EAL) addresses the concerns of Example #9, #11 and #15 under Unusual Event of NUREG 0654. These examples read as follows:

#9 Loss of engineered safety feature or fire protection system function requiring shutdown by Technical Specification (e.g., because of malfunction, personnel error or procedural inadequacy.)

#11 Indications or alarms on process or effluent parametes not functional in control room to an extent requiring plant shutdown or other significant loss of assessment or communication capability (e.g., plant computer, Safety Parameter Display System, all meteorological instrumentation.)

#15 Other plant conditions exist that warrant increased awareness on the part of a plant operating staff or State and/or local offsite authorities or require plant shutdown under Technical Specification requirements or involve other than normal controlled shutdown (e.g., cooldown rate exceeding Technical Specification limits, pipe cracking found during operation.)

The EAL is provided to allow for equipment degradations the combinations of which could place a unit in jeopardy. Rather than listing all possible combinations of equipment failures, and thereby establish a "pseudo" Technical Specification, reference is made to existing Technical Specifications. Operating personnel and Station management are intimately familiar with Technical Specifications.

The words ""and reactor power is or has been reduced to less than or equal to 50% as indicated by power range instrumentation" were added to clearly define when the Unusual Event is to be declared. 50% power allows for repairs to be accomplished during load drop from 100%. If repairs have not been accomplished by the 50% power mark, an Unusual Event will be declared. For a BWR control rod insertion will have commenced. Since control rod insertion can occur at any power level for a PWR, the 50% power mark was selected. Power reduction to less than or equal to 50% is indicative of a commitment to fully shutdown. Termination of this event should be considered once the Unit has been placed in a shutdown condition.

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BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6B Offsite Assistance

Although not specifically addressed in NUREG 0654, this emergency action level addresses several examples listed in the NUREG. This EAL provides a symptomatic approach based on damage to the facility and/or equipment. This approach allows other initiating events to be covered by the same EAL, for example, explosion, fire, flood, earthquake, etc. The statement "to prevent further degradation..." was used to segregate events which might require off-site assistance for "clean up" measures but which would not constitute an Unusual Event.

EAL#6C Rupture of Cooling Pond

Although not specifically addressed in NUREG 0654, this emergency action level has the potential for public interest and impact off-site.

EAL#6D High River Level

This emergency action level addresses the concern of Example #13b under Unusual Event in NUREG 0654. Example #13b reads as follows:

> 50 year floor or low water, tsunami, hurricane surge, seiche.

The river level chosen should correspond to the 50 year flood level or to the river level that first endangers vital equipment motors, ie. Service Water Pump Motors, whichever is lower. This EAL relates to a <u>projection</u> of reaching the level selected.

Not applicable to LSCS..

EAL#6E Low Lake or River Level

This emergency action level addresses the concern of Example #13b under Unusual Event in NUREG 0654. Example #13b reads as follows:

> 50 year floor or low water, tsunami, hurricane surge, seiche.

The river level chosen should correspond to the point at which cribhouse pumps, ie. Circulating Water Pumps or Service Water Pumps, would start to lose suction. This EAL relates to a <u>projection</u> of reaching the level selected.

Not applicable to LSCS.

1667A/wjm

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6F Aircraft Crash Onsite

This emergency action level addresses the concern of Example #14a under Unusual Event in NUREG 0654. Example 14a reads as follows:

> Aircraft crash on-site or unusual aircraft activity over facility.

The wording selected is consistent with the NUREG.

EAL#6G Earthquake

This emergency action level addresses the concern of Example #13a under Unusual Event in NUREG 0654. Example #13a reads as follows:

> Any earthquake felt in-plant or detected on station seismic instrumentation.

The wording is consistent with the NUREG. The term "in house" was added to alleviate the problem of free field monitors which are often activated by trains or thunder.

1667A/wjm

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6H Loss of Ability To Reach Cold Shutdown

This emergency action level addresses the concern of Example #10 under Alert in NUREG 0654. Example #10 reads as follows:

> Complete loss of any function needed for plant cold shutdown.

The wording of this EAL is an attempt to clarify the concern of NUREG 0654.

The use of the term "any function" in the NUREG could result in inappropriate GSEP activation and was therefore avoided.

For example, the loss of a single system would generate an Alert declaration despite the fact that numerous methods exist for achieving Cold Shutdown.

The term "Cold Shutdown" was not used since the Technical Specification definition is not applicable to the concerns of this accident classification. The Technical Specification definition relates only to the Mode Switch position and to coolant temperature.

Note that the wording chosen for the EAL does not require that "all rods be inserted" or that "shutdown margins be met" but rather that the reactor be "subcritical". Subcritically is a condition that can be indicated by rod insertion and/or decaying power level.

The use of the words "by any means" allows personnel the opportunity to use available systems to achieve the condition before issuing a declaration. Cool down using main steam line drains clean up systems, feed and bleed or other methods using normally available systems are acceptable means of achieving Cold Shutdown. This wording is not intended to delay declaration once it is recognized that the desired condition cannot be achieved or maintained.

1667A/wjm

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6I Safety Systems

This emergency action level addresses the concern of Example #13 under Alert in NUREG 0654. Example #13 reads as follows:

> Fire potentially affecting safety system.

The wording of this EAL requires some indication that the system may not perform its required function. It also applies this criteria to damage caused by explosion, tornado, earthquake, etc.

EAL#6J Control Room Evacuation

This emergency action level has been adopted word for word from Example #20 under Alert in NUREG 0654. Example #20 reads as follows:

> Evacuation of control room anticipated or required with control of shutdown systems established from local stations.

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BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6K Sustained Winds

This emergency action level addresses the concern of Example #17d under Alert in NUREG 0654. Example #17d reads as follows:

> Hurricane winds near design basis level.

The wind speed chosen should be approximately 90% of the design basis wind speed for the containment.

EAL#6L High River Level

This emergency action level addresses the concern of Example #17b under Alert in NUREG 0654. Example #17b reads as follows:

> Flood, low water, tsunami, hurricane surge, seiche near design levels

The river level chosen should be the same as the level projected in EAL#6D for the Unusual Event. The river level chosen should correspond to the 50 year flood level or to the river level that first endangers vital equipment motors, ie. Service Water Pump Motors, whichever is lower. This EAL is declared when the projection described in EAL#6D has been reached.

Not applicable to LSCS.

1667A

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6M Low Lake or River Level

This emergency action level addresses the concern of Example #17b under Alert in NUREG 0654. Example #17b reads as follows:

> Flood, low water, tsunami, hurricane surge, seiche near design levels

The river level chosen should be the same as the level projected in EAL#6E for the Unusual Event. The river level chosen should correspond to the point at which cribhouse pumps, ie. Circulating Water Pumps or Service Water Pumps, would start to lose suction. This EAL is declared when the projection described in EAL#6E has been reached.

All EALS addressing river level at La Salle have been dropped. Lake level has been adopted. Should the Lake level drop 10 feet from normal elevation of 700 to 690 the only source of water to the plant would be the CSCS Pond. Abnormal procedures require that both Units be shutdown well in advance of this level. However, an event of this nature would be severe enough to warrant a declaration of an Alert.

1667A

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6N Aircraft Crash Inside Protected Area

This emergency action level addresses the concern of Example #18A under Alert in NUREG 0654. Example 18A reads as follows:

Aircraft crash on facility.

The wording is consistent with the concerns of the NUREG.

EAL#6O Earthquake

This emergency action level addresses the concern of Example #17A under Alert in NUREG 0654. Example #17A reads as follows:

Earthquake greater than OBE levels.

The level selected is that of the Operating Basis Earthquake. The words "is confirmed" were added for stations which do not have direct readout instrumentation and to avoid declaration due to spurious actuations.

EAL#6P Safety Limit

Although not specifically addressed in NUREG 0654, violation of a Technical Specification Safety Limit constitutes a degradation in the level of safety of the plant consistent with the Alert class description provided in the NUREG.

EAL#6Q Turbine Failure

This emergency action level addresses the concern of Example #18e under Alert in NUREG 0654. Example #18E reads as follows:

Turbine failure causing casing penetration.

This EAL is word for word from the NUREG and, although concerns are covered by other EAL statements, is retained at the request of the NRC.

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6R Loss of Ability to Reach Hot Shutdown

This emergency action level addresses the concern of Example #8 under Site Emergency in NUREG 0654. Example #8 reads as follows:

> Complete loss of any function needed for plant hot shutdown.

The wording of this EAL is an attempt to clarify the concern of NUREG 0654.

The use of the term "any function" in the NUREG could result in inappropriate GSEP activation and was therefore avoided. For example, the loss of a single system would generate a Site Emergency declaration despite the fact that numerous methods exist for achieving a Hot Shutdown condtion. The term "Hot Shutdown" was not used since the Technical Specification definition is not applicable to the concerns of this accident classification. The Technical Specification definition relates only to the Mode Switch position and to coolant temperature. In the case of "Hot Shutdown", Technical Specifications placed no upper boundary on coolant temperature. This emergency action level is addressed as a condition in which reactor pressure cannot be maintained below the lowest relief valve setting. This is an indication that pressure is not being controlled by normal means but still allows for manual operation of the Safety Relief Valves if needed to keep pressure below the Safety Limit. Note that the wording chosen for the EAL does not require that "all rods be inserted" or that "shutdown margin be met" but rather that the reactor be "subcritical". Subcriticality is a condition that can be indicated by rod insertion and/or decaying power level.

The use of the words "by any means" allows personnel the opportunity to use normally available systems to achieve the condition before issuing a declaration. This wording is not intended to delay declaration once it is recognized that the desired condition cannot be achieved or maintained.

1667A

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6S Control Room Evacuation

This emergency action level addresses the concern of Example #18 under Site Emergency in NUREG 0654. Example #18 reads as follows:

> Evacuation of control room and control of shutdown systems not established from local stations in 15 minutes.

This EAL is adopted word for word except that the 15 minute requirement to establish control has been dropped with concurrence of the NRC. Stations with Remote Shutdown Panels may be able to meet the 15 minute requirement. However, stations with local control modifications may not meet the arbitrary 15 minutes. The need to upgrade from Alert to Site Emergency is in the judgment of the Shift Engineer.

EAL#6T Sustained Winds

This emergency action level addresses the concern of Example #15c under Site Emergency in NUREG 0654. Example #15c reads as follows:

> Sustained winds or tornadoes in excess of design levels.

The wind speed chosen is the design basis wind speed for the containment. The words "with a unit not in Cold Shutdown or Refuel" were added to indicate that if units are in Cold Shutdown or Refuel, a Site Emergency need not be declared.

EAL#6U High River Level

This emergency action level addresses the concerns of Example #15b under Site Emergency in NUREG 0654. Example #15b reads as follows:

> Flood, low water, tsunami, hurricane surge, seiche greater than design levels or failure of protection of vital equipment at lower levels.

The river level chosen should correspond to the 100 year flood levels. The words "with a unit not in Cold Shutdown or Refuel" were added to indicate that if units are in Cold Shutdown or Refuel, a Site Emergency need not be declared.

Not applicable to LSCS.

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6V Low Lake or River Level

This emergency action level addresses the concern of Example #15b under Site Emergency in NUREG 0654. Example 15b reads as follows:

> Flood, low water, tsunami, hurricane surge, seiche greater than design levels or failure of protection of vital equipment at lower levels.

The river level chosen should be the level at which containment cooling service water pumps start to lose suction.

All EALS addressing river level at La Salle have been dropped and lake level has been adopted. Should the lake level drop 10 feet from normal elevation of 700 to 690 the only source of water to the plant would be the CSCS Pond. Abnormal procedures require that both Units be shutdown well in advance of this level. However, an event of this nature would be severe enough to warrant declaration of an Alert. If this event would further degrade to the extent that the CSCS Pond were lost, elevation 685 feet is the bottom of the pond, a Site Emergency will be declared.

EAL#6W Aircraft Crash Affecting Vital Areas

This emergency action level addresses the concern of Example #16a under Site Emergency in NUREG 0654. Example 16a reads as follows:

> Aircraft crash affecting vital structures by impact or fire.

This EAL is worded similar to the NUREG example.

EAL#6X Earthquake

This emergency action level addresses the concern of Example #15a under Site Emergency in NUREG 0654. Example #15a reads as follows:

> Earthquake greater than SSE levels.

The level chosen should equate to the Safe Shutdown Earthquake. The words "with a unit not in Cold Shutdown or Refuel" were added to indicate that if units are in Cold Shutdown or Refuel, a Site Emergency need not be declared.

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 6. Natural and Destructive Phenomena (cont'd)

EAL#6Y General Emergency Class Description

This is general guidance extracted from NUREG 0654. This EAL is written to address Example #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

#4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.

#5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.)

The term "probable" was substituted for the term "potential" to be consistent with GSEP and with other EALs.

EAL#6Z Imminent Core Melt

This emergency action level is a gradation of Example #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

#4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.

#5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.)

This emergency action level is based on the definition of adequate core cooling described in the BWR Emergency Operating Procedure Guidelines. The time selected should be the nominal evacuation time for the 2 mile radius.

1667A

Condition 7. Hazardous, Toxic or Flammable Materials

EAL#7A Life Threatening Levels Onsite

This emergency action level addresses the concern of Example #14d under Unusual Event in NUREG 0654. Example #14d reads as follows:

Near or onsite toxic or flammable gas release.

The significant wording is "life threatening levels" and "confirmed". Placing specific limits for all the toxic, hazardous and flammable materials in the table would be difficult. However, to determine if the release of these materials is life threatening may be easier to assess. Unless personnel have been affected and until analysis confirms the release and quantity of such materials, the GSEP condition need not be declared.

EAL#7B Plant Operation Affected

This emergency action level addresses the concern of Example #14d under Unusual Event in NUREG 0654. Example #14d reads as follows:

Near or onsite toxic or flammable gas release.

This particular EAL addresses releases that may occur offsite but which impact plant operation.

EAL#7C Hazardous Material

This emergency action level also relates to Example 14d under Unusual Event in NUREG 0654. Example #14d reads as follows:

Near or onsite toxic or flammable gas release.

This EAL addresses the State of Illinois Public Act 79-1442 Hazardous Materials Regulation.

1667A

Condition 7. Hazardous, Toxic or Flammable Materials (cont'd)

EAL#7D Life Threatening Levels Within Protected Area

This emergency action level addresses the concerns of Example #18d under Alert in NUREG 0654. Example #18D reads as follows:

> Entry into facility environs of uncontrolled toxic or flammable gases.

The significant wording is "life threatening levels" and "confirmed within the protected area". Placing specific limits for all the toxic, hazardous and flammable materials in the table would be difficult. However, to determine if the release of these materials is life threatening may be easier to assess. Unless personnel have been affected and until analysis confirms the release and quantity of such materials, the GSEP condition need not be declared.

EAL#7E Control Room Evacuation

This emergency action level has been adopted word for word from Example #20 under Alert in NUREG 0654. Example #20 reads as follows:

> Evacuation of control room anticipated or required with control or shutdown systems established from local stations.

Toxic or flammable material entry into the Control Room is foreseen as one possible cause for a Control Room evacuation.

1667A

Condition 7. Hazardous, Toxic or Flammable Materials (cont'd)

EAL#7F Control Room Emergency Filtration System Operable

This emergency action level addresses the concerns of Example #18D under Alert in NUREG 0654. Example #18D reads as follows:

> Entry into facility environs of uncontrolled toxic or flammable gases.

The limits should be based on the alarm or trip setpoint for the emergency filtration system. These limits should be based on the maximum concentration allowable in the Control Room for two minutes "without physical incapacitation of an average human." The basis for this is given in NUREG -195. The specific toxic materials identified will be site specific.

EAL#7G Life Threatening Levels Within Vital Areas

This emergency action level addresses the concerns of Example #16c under Site Emergency in NUREG 0654. Example #16C reads as follows:

> Entry of uncontrolled flammable gases into vital areas. Entry of uncontrolled toxic gases into vital areas where lack of access to the area constitutes a safety problem.

The significant wording is "life threatening levels" and "confirmed within the vital area." Placing specific limits for all the toxic, hazardous and flammable materials in the table would be difficult. However, to determine if the release of these materials is life threatening may be easier to assess. Unless personnel have been affected and until analysis confirms the release and quantity of such materials, the GSEP condition need not be declared.

1667A

Condition 7. Hazardous, Toxic or Flammable Materials (cont'd)

EAL#7H Control Room Evacuation

This emergency action level addresses the concern of Example #18 under Site Emergency in NUREG 0654. Example #18 reads as follows:

> Evacuation of control room and control of shutdown systems not established from local stations in 15 minutes.

This EAL is adopted word for word except that the 15 minute requirement to establish control has been dropped with concurrence of the NRC.

Stations with Remote Shutdown Panels may be able to meet the 15 minute requirement. However, stations with local control modifications may not meet the arbitrary 15 minutes. The need to upgrade from Alert to Site Emergency is in the judgment of the Shift Engineer.

Toxic or flammable material entry into the Control Room is foreseen as one possible cause for Control Room evacuation.

EAL#7I Control Room Filtration System Inoperable

This emergency action level addresses the concern of Example #16c under Site Emergency in NUREG 0654. Example #16C reads as follows:

> Entry of uncontrolled flammable gases into vital areas. Entry of uncontrolled toxic gases into vital areas where lack of access to the area constitutes a safety problem.

The limits should be based on the alarm or trip setpoint for the emergency filtration system. These limits should be based on the maximum concentration allowable in the Control Room for two minutes "without physical incapacitation of an average human." The basis for this is given in NUREG -195. The specific toxic materials identified will be site specific.

1667A

Condition 8. Security Threat

EAL#8A Attempt to Sabotage

This emergency action level addresses the concern of Example #12 under Unusual Event in NUREG 0654. Example #12 reads as follows:

> Security threat or attempted entry or attempted sabotage.

This is adopted from the list of Security Plan Contingencies.

EAL#8B Internal Disturbance

This emergency action level addresses the concern of Example #12 under Unusual Event in NUREG 0654. Example #12 reads as follows:

> Security threat or attempted entry or attempted sabotage.

This is adopted from the list of Security Plan Contingencies.

EAL#8C Bomb Device Discovered

This emergency action level addresses the concern of Example #12 under Unusual Event in NUREG 0654. Example #12 reads as follows:

> Security threat or attempted entry or attempted sabotage.

This is adopted from the list of Security Plan Contingencies.

EAL#8D Hostage

This emergency action level addresses the concern of Example #12 under Unusual Event in NUREG 0654. Example #12 reads as follows:

> Security threat or attempted entry or attempted sabotage.

This is adopted from the list of Security Plan Contingencies. A hostage situation, which does not disrupt normal operations, should not be declared as a GSEP Event.

1667A

Condition 8. Security Threat (cont'd)

EAL#8E Civil Disturbance

This emergency action level addresses the concern of Example #12 under Unusual Event in NUREG 0654. Example #12 reads as follows:

> Security threat or attempted entry or attempted sabotage.

This is adopted from the list of Security Plan Contingencies.

EAL#8F Armed or Forced Protected Area Intrusion

This emergency action level addresses the concern of Example #12 under Unusual Event in NUREG 0654. Example #12 reads as follows:

> Security threat or attempted entry or attempted sabotage.

This is adopted from the list of Security Plan Contingencies.

EAL#8G Ongoing Security Threat

This emergency action level addresses the concern of Example #16 under Alert in NUREG 0654. Example #16 reads as follows:

> Ongoing security compromise.

EAL#8H Security Threat That Generates An Unusual Event

This particular emergency action level is not required by NUREG 0654. However, some criteria for escalation was needed above and beyond that presented in EAL#8G.

This emergency action level provides guidance for escalating security event. For example, if a bomb device were to explode there is no EAL that requires escalation above Unusual Event. However, if as a result of the detonation, equipment degradation meets the criteria for an Unusual Event escalation to an Alert would be required by this EAL..

1667A

Condition 8. Security Threat (cont'd)

EAL#8I Armed or Forced Vital Area Intrusion

This emergency action level addresses the concern of Example #16 under Alert in NUREG 0654. Example #16 reads as follows:

Ongoing security compromise.

This is adopted from the list of Security Plan Contingencies

EAL#8J Imminent Loss of Physical Control of Facility

This emergency action level addresses the concern of Example #14 under Site Emergency in NUREG 0654. Example #14 reads as follows:

Imminent loss of physical control of the plant.

EAL#8K Loss of Control of Vital Areas

This emergency action level addresses the concern of Example #14 under Site Emergency in NUREG 0654. Example #14 reads as follows:

Imminent loss of physical control of the plant.

This is a gradation upward from EAL#8I and is more definitive than #8J.

EAL#8L Loss of Physical Control of Facility

This emergency action level addresses the concern of Example #3 under General Emergency in NUREG 0654. Example #3 reads as follows:

Loss of physical control of the facitity.

EAL#8M Loss of the Control Room

This emergency action level addresses the concern of Example #3 under General Emergency in NUREG 0654. Example #3 reads as follows:

Loss of physical control of the facitity.

This is a gradation upward from EAL #8K and is more definitive than 8L.

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 9. Other Conditions of Equivalent Magnitude

EAL#9A Unusual Event Class Description

This is general guidance extracted from Example #15 under Unusual Event in NUREG 0654. Example #15 reads as follows:

> Other plant conditions exist that warrant increased awareness on the part of a plant operating staff or State and/or local offsite authorities or require plant shutdown under technical specification requirements or involve other than normal controlled shutdown (e.g., cooldown rate exceeding technical specificiation limits, pipe cracking found during operation.)

EAL#9B Alert Class Description

This is general guidance extracted from Example #19 under Alert in NUREG 0654. Example #19 reads as follows:

> Other plant conditions exist that warrant precautionary activtion of technical support center and placing near-site Emergency Operations Facility and other key emergency personnel on standby.

EAL#9C Fuel Pool Level

This emergency action level is a gradation of Example #10 under Site Emergency in NUREG 0654. Example #10 reads as follows:

> Major damage to spent fuel in containment or fuel handling building (e.g., large object damages fuel or water loss below fuel level.)

EAL#9D ARM Readings and Survey Results

This emergency action level addresses the concern of Example #6 under Alert in NUREG 0654. Example #6 reads as follows:

> Radiation levels or airborne contamination which indicate a severe degradation in the control of radioactive materials (e.g., increase of factor of 1000 in direct radiation readings within facility.)

1667A

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 9. Other Conditions of Equivalent Magnitude

EAL#9E Site Emergency Class Description

This is general guidance extracted from Example #17 under Site Emergency in NUREG 0654. Example #17 reads as follows:

> Other plant conditions exist that warrant activation of emergency centers and monitoring teams or a precautionary notification to the public near the site.

EAL#9F Fuel Pool Level

This emergency action level addresses the concern of Example #10 under Site Emergency in NUREG 0654. Example #10 reads as follows:

> Major damage to spent fuel in containment or fuel handling building (e.g., large object damages fuel or water loss below fuel level.)

EAL#9G General Emergency Class Description

This is general guidance extracted from NUREG 0654. This EAL is written to address Example #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

> #4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.
>
> #5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.)

The term "probable" was substituted for the term "potential" to be consistent with GSEP and with other EALs.

1667A

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 9. Other Conditions of Equivalent Magnitude

EAL#9H Imminent Core Melt

This emergency action level is a gradation of Example #4 and #5 under General Emergency in NUREG 0654. These examples read as follows:

#4 Other plant conditions exist, from whatever source, that make release of large amounts of radioactivity in a short time period possible, e.g., any core melt situation.

#5 Example PWR Sequences (That could lead to eventual core melt and likely failure of the containment.)

This emergency action level is based on the definition of adequate core cooling described in the BWR Emergency Operating Procedure Guidelines. The time selected should be the nominal evacuation time for the 2 mile radius.

1667A

BWR EMERGENCY ACTION LEVEL (EAL) PHILOSOPHY

Condition 10. Personal Injurey

EAL#10A Transportation of Contaminated Injured Person
This emergency action level addresses the concern of Example #16 under Unusual Event in NUREG 0654. Example #16 reads as follows:

> Transportation of contaminated injured individual from site to offsite hospital.

1667A

ATTACHMENT A

LSCS EMERGENCY ACTION LEVEL INDEX

1) Aircraft crash or missiles from whatever source.

2) Control Room evacuation.

3) Earthquake.

4) Explosion causing damage.

5) Fire.

6) Flood.

7) FSAR Analyzed Accidents.

8) Security threat.

9) Tornado/Severe winds.

10) Toxic gas.

11) Loss of AC power.

12) Loss of DC power.

13) Plant shutdown functions.

14) Other systems required by Technical Specifications.

15) Loss of fission product barriers.

16) Loss of primary coolant.

17) Fuel Handling Accident.

18) Radiation releases from the plant.

19) Personnel injury.

20) Hazardous materials.

21) Other conditions.

22) Transportation Accident.

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
Class Description	Events in progress or have occurred which indicate a potential degradation of the level of safety of the plant.	Events in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant.	Events in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public.	Events in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity.
1) Aircraft Crash or missiles from whatever source.	Impacted on-site	Impacted on site AND requiring unit shutdown due to the implementation of an ACTION statement of the Technical Specifications.	Impacted on site AND requiring unit shutdown due to the implementation of Technical Specifications Section 3.0.3.	
2) Control Room Evacuation		Evacuation is anticipated or required with control established from remote shutdown panel.	Evacuation is required AND control is not established from remote shutdown panel within 15 min.	

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
3) Earthquake (Activation of seismic monitoring alarm with level verification from the Aux. Electric Room) (Not spurious or testing).	Equipment activated at the setpoint level (≤ 0.02 g).	At a level greater than an operating basis Earthquake (0.1 g horizontal 0.066 g vertical)	At a level greater than a Safe Shutdown Earthquake with a unit not in cold shutdown or refueling (0.2 g horizontal 0.133 g vertical).	
4) Explosion causing Damage.	Onsite.	Requiring unit shutdown due to the implementation of an Action statement of the Technical Specifications.	Requiring unit shutdown due to the implementation of Technical Specifications Section 3.0.3.	
5) Fire (Ongoing as detected by observation or alarm, and verified by the Fire brigade)	Requiring offsite assistance	Requiring offsite assistance AND requiring unit shutdown due to the implementation of an Action state ment of the Technical Specifications.	Requiring offsite assistance AND requiring unit shutdown due to the implementation of Technical Specification 3.0.3.	

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
6) Flood	Rupture of cooling pond dike affecting offsite property.	1) Illinois River > 610' MSL (88 feet above max probable flood) 2) > 25 inches of rain in a 48 hour period as determined from the National Weather Service.	1) Illinois River > 710' MSL (188 feet above max probable flood) 2) > 25 inches of rain in a 6 hour period.	
7) FSAR Analyzed Accidents NOTE: For Fuel Handling Accident (FSAR 15.7.4), see Condition No. 11.		1) Control Rod Drop (FSAR 15.4.9). 2) Pipe Breaks outside Primary Containment (FSAR Appendix C).	1) Pipe Breaks inside Primary Containment (FSAR 6.2, 6.3, 7.1, 7.3, 8.3, 15.6.5). 2) Gaseous Radwaste Adsorber Tank Rupture (FSAR 15.7.1).	

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
8) Security Threat	The following events as described in the Security Plan: 1) Obvious attempt to sabotage. 2) Internal disturbance (disturbance which is not short lived or is not a harmless outburst involving one or more individuals within the protected area). 3) Bomb device discovered. 4) Hostage. 5) Civil disturbance (spontaneous collective group gathering which disrupts normal operations.) 6) Armed or forced protected area intrusion. 7) Armed or forced vital area intrusion.	Security Threat of increasing severity that persists for more than 60 minutes.	Imminent loss of physical control of facility.	Loss of physical control of facility.

ATTACHMENT 8
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
9) Tornado or severe winds being experienced (Wind speed as indicated in Control Room).	1) Tornado near facility a) Control room informed by Load Dispatcher OR b) Informed by Station personnel who have made visual sighting. 2) Sustained winds of > 60 mph.	1) Tornado strikes facility 2) Sustained winds of > 75 mph.	Sustained winds of > 90 mph (Designed Winds).	
10) Toxic Gas (Chlorine, Ammonia).	Incident observed near or onsite.	Detected by the Chlorine and Ammonia Detection System with Control Room and Auxiliary Electric equipment Room Emergency Filtration System operable.	Detected by the Chlorine and Ammonia Detection System without Emergency Filtration System operable. Chlorine detected at 5 ppm Ammonia detected at 25 ppm	
11) Loss of AC Power	Unit shutdown due to implementation of Technical Specification ACTION statement 3.8.1.1.	Unit shutdown due to implementation of Technical Specification Section 3.0.3.	Loss of ALL the following 4160 VAC Busses for > 15 minutes: 141y (241y), 142 (242y) and 143 (243).	

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
(12) DC Power	Unit shutdown due to implementation of Technical Specification ACTION statement 3.8.2.3.	Unit shutdown due to implementation of Technical Specification Section 3.0.1.	Loss of ALL the following 125 VDC Distribution Panels for > 15 minutes: 111Y(211Y), 112Y(212Y), 113(213).	
(13) Plant Shutdown Functions.		1) Loss of ALL systems capable of maintaining cold shutdown, or 2) Failure of the Reactor Protection System instrumentation to initiate and complete a SCRAM which brings the reactor sub critical once a limiting Safety system setting, as specified in Technical Specifications Section 2.2.1, has been exceeded.	Loss of ALL systems capable of maintaining hot shutdown.	

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
(14) Other Systems required by any Technical Specification (such as ECCS, fire protection systems, control room ventilation, etc.).	Unit shutdown due to the implementation of a Technical Specifications Action Statement.	Unit shutdown due to implementation of Technical Specification Section 3.0.3.		

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
(15) Loss of Fission Product Barriers.		A. 2.0×10^2 R/hr Primary Containment Activity. OR B. Loss of 1 of the following 3 fission product barriers: 1) Cladding: grab sample > 300 uci/cc equivalent of I-131. 2) Reactor Coolant Sys: > 1.69 psig drywell pressure and < 129 inches Reactor Vessel Level.	A. 4.0×10^2 R/hr Primary Containment Activity. OR B. Loss of 2 of the following 3 fission product barriers: 1) Cladding: grab sample > 300 uci/cc equivalent of I-131. 2) Reactor Coolant Sys: > 1.69 psig drywell pressure and < 129 inches Reactor Vessel Level.	A. 2.0×10^3 R/hr Primary Containment Activity. OR B. Loss of 2 of the following 3 fission product barriers, with an imminent loss of the 3rd fission product barrier: 1) Cladding: grab sample > 300 uci/cc equivalent of I-131. 2) Reactor Coolant Sys: > 1.69 psig drywell pressure and < 129 inches Reactor Vessel Level.

EAL 15 IS Continued On Following Page

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
15) Loss of Fission Product Barriers (continued).		3) Primary Containment: a) >45 psig Containment pressure, OR b) >340°F drywell temperature, OR c) >275°F wetwell air temp., OR d) >200°F wetwell water temp.	3) Primary Containment: a) >45 psig Containment pressure, OR b) >340° drywell temperature, OR c) >275°F wetwell air temp., OR d) >200°F wetwell water temp. OR e) Loss of Primary Containment Integrity when Containment Integrity is required.	3) Primary Containment: a) >45 psig Containment pressure, OR b) >340°F drywell temperature, OR c) >275°F wetwell air temp., OR d) >200°F wetwell water temp., OR e) Loss of Primary Containment Integrity when Containment Integrity is required.

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
(16) Loss of Primary Coolant.	1) ECCS initiation (Not spurious) examples: a) Loss of F.W. b) Loss of Condensate 2) Failure of a Primary System Safety Valve to close as indicated by position indication.	A > 50 gpm leakage increase in a 4 hour period as indicated by monitors* or totalizer.	1) A > 500 gpm leakage increase in a 4 hour period as indicated by monitors*. 2) A Main Steam Line Break Outside Containment without Isolation (MSIV closure) as indicated by the following alarms: MS line area temp HI; Main Steam line flow high.	Imminent core melt.
(17) Fuel Handling Accident (Report of damage to irradiated fuel assemblies and fuel pool exhaust monitor >100 mR/hr).		Standby gas treatment system operable.	Standby gas treatment system not operable.	

*Monitors are: Primary Containment sump flow monitors; or air coolers condensate flow rate monitors.

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
18) Radiation Releases From the Plant.	1) Gaseous Effluents 10CFR20 instantaneous release limits (10CFR20.105) are exceeded as measured by the vent stack radiation monitor and/or counting equipment.	1) Gaseous Effluents > 10 times the 10CFR20 instantaneous release limits (10CFR20.105) as measured by the vent stack radiation monitor and/or counting equipment.	1) Gaseous Effluents Effluent monitors detect level corresponding to > 50 mR/hr (1.3×10^7 uCi/sec) for 1/2 hour OR > 500 mR/hr (1.3×10^8 uCi/sec) for 2 minutes at the site boundary (adverse meteorology).	1) Gaseous Effluents Effluent monitors detect levels corresponding to > 1 Rem/hr whole body at the site boundary. This condition exists when: $Q/u > 4.5 \times 10^7$ where Q=release rate in uCi/sec u=mean wind speed in mph OR $Q/u > 1 \times 10^8$ where Q=release rate in uCi/sec u=mean wind speed in meters/sec.
	2) Liquid effluents estimated liquid release > 4 Ci but ≤ 40 Ci ** sampled and measured by counting equipment.	2) Liquid Effluents > 10^{-6} uCi/ml as measured by monitors* and/or counting equipment OR Estimated liquid release > 40 Ci but ≤ 200Ci	2) Liquid Effluents Estimated liquid release > 2000 Ci but ≤ 20,000 Ci	2) Liquid Effluents Estimated liquid release > 2×10^4 Ci

*Monitors: Radioactive liquid waste effluent radiation monitors
Service water effluent monitor.
**> 1×10^{-7} of uCi/ml but ≤ 1×10^{-6} uCi/ml.

ATTACHMENT B
LSCS EMERGENCY ACTION LEVELS

CONDITION	UNUSUAL EVENT	ALERT	SITE EMERGENCY	GENERAL EMERGENCY
(19) Personnel Injury	Transportation of radio activity contaminated injured person to hospital.			
(20) Hazardous Materials	As a direct result of hazardous materials a person is killed or hospitalized or esti mated property damage exceeds $50,000.			
(21) Any other conditions of equival ent magni tude to the criteria used to de fine the accident category as determined Station Director.*	Warrants increased awareness on the part of the state and/or local offsite officials.			

*Condition that may or may not warrant classification under GSEP include:

a. Incident reporting per 10CFR50.72.
b. Incident reporting per 10CFR20.401 or Illinois Rules and Regulations, Part D.401.
c. Discharges of oil or hazardous substances into waterways per 10CFR151.
d. Security contingency events per the Station Security Plan.

The Station Director may, at his discretion, categorize the above situations as GSEP emergencies, depending upon the seriousness of the situation. (Refer to Section 5 of the generic plan for additional information).

ATTACHMENT B
ISCS EMERGENCY ACTION LEVELS

Transportation Accident

(22)

A. A vehicle transporting radioactive materials or non radioactive hazardous materials from a Commonwealth Edison generating station is involved in a situation which:

1. Fire, breakage or suspected radioactive contamination occurs involving a shipment of radioactive material or:

2. As a direct result of hazardous materials,

(a) A person is killed; or
(b) A person receives injuries requiring hospitalization; or
(c) Estimated carrier or other property damage exceeds $50,000.

B. Any other condition involving hazardous material transportation and equivalent to the criteria in Item A.