

Attachment II to IPN-95-068

**Indian Point 3 Emergency Action Levels
Volume II
Initiating Conditions and Emergency Action Levels**

Revision 0
June 15, 1995

New York Power Authority
Indian Point 3 Nuclear Power Plant
Docket 50-286

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Initiating Conditions and Emergency Action Levels

1.0 PURPOSE

This procedure is to be used prior to an emergency classification. This procedure is to be used for declaring an event into one of the four emergency classification.

2.0 RESPONSIBILITIES

2.1 The Shift Manager (SM), and/or Emergency Director (ED) shall implement this procedure.

2.2 The Control Room Supervisor (CRS) shall implement this procedure if the SM is unavailable to do so.

3.0 REFERENCES

3.1 AP-21, "Conduct of Operations"

3.2 IP-2001, "Emergency Director (ED), Plant Operations Manager (POM), Shift Manager (SM) Procedure"

3.3 IP-2301, "Emergency Director Procedure"

3.4 Emergency Action Levels Technical Bases

3.5 IP-2600, "Emergency Termination and Transition to Recovery"

3.6 NUREG-0654

4.0 PROCEDURE

4.1 Initial Declaration:

A. The SM or CRS shall use the Emergency Action Levels Attachment 5.1 to select categories related to plant events or conditions.

B. The SM or CRS shall determine the most appropriate emergency classification.

NOTE

If the Emergency Action Level is not clear, reference the Emergency Action Levels Technical Bases for clarification. It is located in the CR with Emergency Plan procedures.

6. Upon determining the emergency classification, the SM or CRS shall declare the emergency classification.

NOTE

The initial emergency classification shall be made as soon as possible following the event or combination of events to ensure that proper protective and corrective actions are taken.

The initial emergency classification will normally be made by the SM. It is the SM's primary responsibility to act in accordance AP-21 to ensure necessary actions are taken to return equipment or systems to a safe, stable condition. The emergency classification shall not interfere with this primary responsibility.

An event that occurs and ends in a very short period of time, or an event occurs and goes unnoticed until after the event has terminated, must still be classified and required notifications (IP-2001) made. The implementation of the Emergency Plan should be used as appropriate in these circumstances.

- D. Upon declaration of an emergency, the SM shall implement IP-2001 and assume the role as ED.

4.2 Reclassification:

- A. If reclassification to a higher level is necessary, the ED shall repeat the classification steps above ensuring input from the Control Room (CR) staff.

NOTE

The Emergency Operations Facility (EOF) ED shall use IP-2301.

4.3 Termination/Recovery:

- A. An emergency classification will not be declassified but will be terminated or go into Recovery using criteria established in IP-2600 Vol II of the Emergency Plan.

5.0 ATTACHMENTS

5.1 Initiating Conditions and Emergency Action Levels

CATEGORY 1.0 CSFST STATUS

Category	General	Site Area	Alert	Unusual Event
1.1 Subcriticality	1.1.3 {1,2} RED path in F-0.1, Subcriticality AND Actual or imminent entry into either: RED Path in F-0.2, Core Cooling OR Red Path in F-0.3, Heat Sink	1.1.2 {1,2} RED path in F-0.1 Subcriticality AND Emergency boration is required	1.1.1 {1,2} Any Failure of an automatic trip signal to reduce power range < 5% AND Manual trip is successful	
1.2 Core Cooling	1.2.2 {1,2} RED path in F-0.2, Core Cooling AND Functional restoration procedures not effective within 15 minutes.	1.2.1 {1,2} ORANGE or RED path in F-0.2, Core Cooling		
1.3 Heat Sink		1.3.1 {1,2} RED path in F-0.3, HEAT SINK AND Heat sink is required		
1.4 Integrity			1.4.1 {1,2} Red Path on F-0.4, Integrity	
1.5 Containment	1.5.1 {1,2} Red Path F-0.5, Containment resulting from loss of coolant.			

{1} = Power Operations {2} = Hot Shutdown
 {3} = Cold Shutdown {4} = Refuel {5} = Defuel

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CATEGORY 2.0 REACTOR FUEL

Category	General	Site Area	Alert	Unusual Event
2.1 Coolant Activity		2.1.3 {1,2} Coolant activity > 300 $\mu\text{Ci/cc}$ dose equivalent I-131 and any of the following: <ul style="list-style-type: none"> • RED path on F-0.4, Integrity • Primary system leakage > 75 gpm • RCS subcooling < SI initiation setpoint • > 0.06 $\mu\text{Ci/cc}$ on R-11 or R-12 due to RCS leakage 	2.1.2 {1,2} Coolant Activity > 300 $\mu\text{Ci/cc}$ dose equivalent I-131	2.1.1 {1,2,3,4,5} Coolant sample activity: <ul style="list-style-type: none"> > 1.0 $\mu\text{Ci/cc}$ dose equivalent I-131 OR > 100/(E Bar) $\mu\text{Ci/cc}$ for all noble gases with half-lives > 10 minutes
2.2 Containment Radiation	2.2.3 {1,2} Containment Radiation monitor R-25 or R-26 > 68 R/HR	2.2.2 {1,2} Containment Radiation monitor R-25 or R-26 > 17 R/HR	2.2.1 {1,2} > 0.06 $\mu\text{Ci/cc}$ on R-11 OR R-12 due to RCS leakage.	

{1} = Power Operations {4} = Refuel
 {2} = Hot Shutdown {5} = Defuel
 {3} = Cold Shutdown

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CATEGORY 2.0 REACTOR FUEL

Category	General	Site Area	Alert	Unusual Event
<p>2.3 Refueling Accidents or Other Radiation Monitors</p>			<p>2.3.2 {1,2,3,4,5} Confirmed sustained alarm on ANY of the following radiation monitors resulting from an uncontrolled fuel handling process:</p> <ul style="list-style-type: none"> • R-2 or R-7 Vapor Containment Area Monitors • R-5 Fuel Storage Building Area Monitor • R-25 or 26 Vapor Containment High Radiation Area Monitors • R-12 Containment Gas activity <p>2.3.3 {1,2,3,4,5} Report of visual observation of irradiated fuel uncovered</p>	<p>2.3.1 {1,2,3,4,5} Spent fuel pool (reactor cavity during refueling) water level cannot be restored and maintained above the spent fuel pool low water level alarm setpoint</p>

{1} = Power Operations {4} = Refuel
 {2} = Hot Shutdown {5} = Defuel
 {3} = Cold Shutdown

CATEGORY 3.0 REACTOR COOLANT SYSTEM

Category	General	Site Area	Alert	Unusual Event
3.1 RCS Leakage		<p>3.1.3 {1,2,3,4} RVLIS cannot be maintained > 39% with no RCP's running OR With the reactor vessel head removed, it is reported that water level in the reactor vessel is dropping in an uncontrolled manner and core uncover is likely</p>	<p>3.1.2 {1,2} Primary system leakage > 75 gpm</p>	<p>3.1.1 {1,2} Unidentified or pressure boundary leakage > 10 gpm OR Identified leakage > 25 gpm</p>
3.2 Primary to Secondary Leakage		<p>3.2.2 {1,2} Unisolable release of secondary side to atmosphere from the affected steam generator(s) with primary to secondary leakage > 75 gpm</p> <p>3.2.3 {1,2} Unisolable release of secondary side to atmosphere from the affected steam generator(s) with primary to secondary leakage > 0.3 gpm in any steam generator AND Coolant activity > 300 μCi/cc of dose equivalent I-131</p>		<p>3.2.1 {1,2} Unisolable release of secondary side to atmosphere from the affected steam generator(s) with primary to secondary leakage > 0.3 gpm in any steam generator.</p>

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 {5} = Defuel

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CATEGORY 3.0 REACTOR COOLANT SYSTEM

Category	General	Site Area	Alert	Unusual Event
3.3 RCS Subcooling			3.3.1 {1,2} RCS Subcooling < SI initiation setpoint	

{1} = Power Operations {3} = Cold Shutdown
{2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

CATEGORY 4.0 CONTAINMENT

Category	General	Site Area	Alert	Unusual Event
<p>4.1 Containment Integrity Status</p>	<p>4.1.4 {1,2} Confirmed Phase "B" isolation signal following confirmed LOCA with less than minimum containment cooling safeguards equipment operating, Table 4.3</p> <p style="text-align: center;">AND</p> <p>Any indicators of fuel clad loss, Table 4.1</p> <p>4.1.5 {1,2}</p> <p>EITHER:</p> <p>Rapid uncontrolled decrease in containment pressure following initial increase</p> <p style="text-align: center;">OR</p> <p>Loss of primary coolant inside containment with containment pressure or sump level response not consistent with LOCA conditions</p> <p style="text-align: center;">AND</p> <p>Any indicators of fuel clad damage, Table 4.2</p>	<p>4.1.2 {1,2} Rapid uncontrolled decrease in containment pressure following initial increase</p> <p style="text-align: center;">OR</p> <p>Loss of primary coolant inside containment with containment pressure or sump level response not consistent with LOCA conditions</p>		<p>4.1.1 {1,2} Both doors open on a VC airlock for > 4 hrs.</p> <p style="text-align: center;">OR</p> <p>Inability to close containment pressure relief or purge valves which results in a radiological release pathway to the environment for > 4 hrs.</p> <p style="text-align: center;">OR</p> <p>Any Phase "A" or Phase "B" or containment ventilation isolation valve(s) not closed when required which results in a radiological release pathway to the environment</p>

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 4.0 CONTAINMENT

Category	General	Site Area	Alert	Unusual Event
4.2 SG Tube Rupture w/ Secondary Release	4.2.2 {1,2} Unisolable secondary side line break with SG tube rupture as identified in E-3 "Steam Generator Tube Rupture" <p style="text-align: center;">AND</p> Any indicators of fuel clad damage, Table 4.2	4.2.1 {1,2} Unisolable secondary side line break with SG tube rupture as identified in E-3 "Steam Generator Tube Rupture"		
4.3 Combustible Gas Concentrations	4.3.1 {1,2} ≥4% Hydrogen concentration in containment			

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 4.0 CONTAINMENT

Table 4.1 Fuel Clad Loss Indicators	
1.	Coolant activity > 300 $\mu\text{Ci/cc}$ dose equivalent of I-131
2.	Containment radiation monitor R-25/R-26 reading > 17 R/hr
3.	RED path in F-0.2, CORE COOLING

Table 4.2 Fuel Clad Damage Indicators	
1.	ORANGE or RED path in F-0.2, CORE COOLING
2.	RED path in F-0.3, HEAT SINK AND Heat sink is required
3.	Coolant activity > 300 $\mu\text{Ci/cc}$ of I-131
4.	Containment radiation monitor R-25 or R-26 reading > 17 R/hr

Table 4.3 Minimum Containment Cooling Safeguards Equipment	
Fan Cooler Units Operating Required	Spray Pumps
< 3	2
3	1
5	0

CATEGORY 5.0 RADIOACTIVITY RELEASE

Category	General	Site Area	Alert	Unusual Event
5.1 Effluent Monitors	5.1.4 {1,2,3,4,5} A valid reading on any monitors Table 5.1 column "GE" for > 15 minutes unless dose assessment can confirm releases are below Table 5.2 column "GE" within this time period.	5.1.3 {1,2,3,4,5} A valid reading on any monitors Table 5.1 column "SAE" for > 15 minutes unless dose assessment can confirm releases are below Table 5.2 column "SAE" within this time period.	5.1.2 {1,2,3,4,5} A valid reading on any monitors Table 5.1 column "Alert for > 15 minutes unless dose assessment can confirm releases are below Table 5.2 column "Alert" within this time period.	5.1.1 {1,2,3,4,5} A valid reading on any monitors Table 5.1 column "NUE" for > 60 minutes unless sample analysis can confirm release rates < 2 x technical specifications within this time period.

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 5.0 RADIOACTIVITY RELEASE

Category	General	Site Area	Alert	Unusual Event
<p>5.2 Dose Projections/ Environmental Measurements/ Release Rates</p>	<p>5.2.5 {1,2,3,4,5} Dose projections or field surveys resulting from actual or imminent release which indicate doses / dose rates > Table 5.2 column "GE" at the site boundary or beyond.</p>	<p>5.2.4 {1,2,3,4,5} Dose projections or field surveys resulting from actual or imminent release which indicate doses / dose rates > Table 5.2 column "SAE" at the site boundary or beyond.</p>	<p>5.2.2 {1,2,3,4,5} Confirmed sample analysis for gaseous or liquid release rates > 200 x technical specifications limits for > 15 minutes</p> <p>5.2.3 {1,2,3,4,5} Dose projections or field surveys resulting from actual or imminent release which indicate doses/ dose rate > Table 5.2 column "Alert" at the site boundary or beyond</p>	<p>5.2.1 {1,2,3,4,5} Confirmed sample analysis for gaseous or liquid release rates > 2 x technical specifications limits for > 60 minutes.</p>

{1} = Power Operations {3} = Cold Shutdown
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CATEGORY 5.0 RADIOACTIVITY RELEASE

Category	General	Site Area	Alert	Unusual Event
5.3 Area Radiation Levels			5.3.2 {1,2,3,4,5} Sustained area radiation levels > 15 mRem/hr in EITHER: Control Room OR Central Alarm Station and Secondary Alarm Station 5.3.3 {1,2,3,4,5} Sustained abnormal area radiation levels > 8 R/hr within any areas, Table 5.3 AND Access is required for safe operation or shutdown	5.3.1 {1,2,3,4,5} Any sustained direct ARM readings > 100 x alarm or offscale high resulting from an uncontrolled process

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 5.0 RADIOACTIVITY RELEASE

Table 5.1 Effluent Monitor Classification Thresholds				
Monitor	GE	SAE	Alert	NUE
R-27	360 Ci/sec	36.0 Ci/sec	36.0 Ci/sec	7.24 μCi/sec
R-12	N/A	N/A	N/A	150,000cpm
R-19	N/A	N/A	475 μCi/cc	9.50 μCi/cc

Table 5.3 Plant Areas
<ul style="list-style-type: none"> • Auxiliary Feedpump Building • P.A.B. • Fuel Storage Building • Control Building • Service Water Pumps • Refueling Water Tank • Diesel Fuel Tank • Vital Area Access to Containment • Appendix R Diesel Generator • Backup Service Water

Table 5.2 Dose Projection/Env. Measurement Classification Thresholds			
	GE	SAE	Alert
TEDE	1000 mRem	100 mRem	10 mRem
CDE Thyroid	5000 mRem	500 mRem/hr	N/A
External Exposure Rate	1000 mRem/hr	100 mRem/hr	10 mRem/hr
Thyroid exposure rate (for 1 hr. of inhalation)	5000 mRem/hr	500 mRem/hr	N/A

CATEGORY 6.0 ELECTRICAL FAILURES

Category	General	Site Area	Alert	Unusual Event
6.1 Loss of AC Power Sources	<p>6.1.5 {1,2} Loss of all safeguard bus AC power</p> <p>AND EITHER:</p> <p>Power restoration to any emergency bus is not likely in ≤ 4 hrs.</p> <p>OR</p> <p>Actual or imminent entry into ORANGE or RED path on F-0.2, "Core Cooling"</p>	<p>6.1.4 {1,2} Loss of all safeguard bus AC power > 15 minutes.</p>	<p>6.1.2 {3,4,5} Loss of all safeguard bus AC power > 15 minutes.</p> <p>6.1.3 {1,2} Available safeguard bus AC power REDUCED TO ONLY ONE of the following for > 15 minutes:</p> <ul style="list-style-type: none"> • 480V EDG 31 • 480V EDG 32 • 480V EDG 33 • Appendix R Diesel transformer • Unit Auxiliary transformer • Station Auxiliary transformer • 13W92 and 13W93 feeders 	<p>6.1.1 {1,2,3,4,5} Loss of power to all Station Transformers 5,2,3,6 for > 15 minutes from ALL of the following offsite sources:</p> <ul style="list-style-type: none"> • Unit Auxiliary transformer • Station Auxiliary transformer • 13W92 and 13W93 feeders

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 6.0 ELECTRICAL FAILURES

Category	General	Site Area	Alert	Unusual Event
6.2 Loss of DC Power Sources		6.2.2 {1,2} < 105 vdc bus voltage indications for > 15 minutes on the switchable voltmeter for all of the following panels: <ul style="list-style-type: none"> • 31 • 32 • 33 • 34 		6.2.1 {3,4} < 105 vdc bus voltage indications for > 15 minutes on the switchable voltmeter for all of the following panels: <ul style="list-style-type: none"> • 31 • 32 • 33 • 34

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

CATEGORY 7.0 EQUIPMENT FAILURES

Category	General	Site Area	Alert	Unusual Event
7.1 Technical Specifications/ Requirements				7.1.1 {1,2} Plant is not brought to required operating mode within Technical Specifications LCO Action Statement Time.
7.2 System Failures or Control Room Evacuation		7.2.5 {1,2,3,4,5} Control Room Evacuation AND Plant control cannot be established per ONOP-FP-1A, "Safe Shutdown From Outside the Control Room" in ≤ 30 minutes	7.2.2 {1,2} Turbine failure generated missiles which causes or potentially causes any required safety related system or structure to become inoperable. 7.2.3 {1,2,3,4,5} Entry into ONOP-FP-1A, "Safe Shutdown From Outside the Control Room" 7.2.4 {3,4} Reactor coolant temperature cannot be maintained < 200°F	7.2.1 {1} Report of main turbine failure requiring turbine trip resulting in: Damage to turbine generator seals OR Casing penetration

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 7.0 EQUIPMENT FAILURES

Table 7.3 Vital Control Room Panels						
SAF	SBF-1	SBF-2	SCF	SDF	SEF	SFF
SGF	SHF	SJF	SKF	SLF	SMF	SNF
SOF	FAF	FBF	FCF	FDF	---	---

CATEGORY 8.0 HAZARDS

Category	General	Site Area	Alert	Unusual Event
8.1 Security Threats	8.1.4 {1,2,3,4,5} Security Event which results in: Loss of plant control from the Control Room OR Loss of remote shutdown capability	8.1.3 {1,2,3,4,5} Intrusion into a plant security vital area by an adversary OR Any security event which represents actual or likely failures of plant systems needed to protect the public.	8.1.2 {1,2,3,4,5} Intrusion into plant Protected Area by an adversary OR Any security event which represents an actual substantial degradation of the level of safety of the plant.	8.1.1 {1,2,3,4,5} Bomb Device or other indication of attempted sabotage discovered within plant Protected Area but outside Plant Vital Areas, Table 8.1 OR Any security event which represents a potential degradation in the level of safety of the plant

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 8.0 HAZARDS

Category	General	Site Area	Alert	Unusual Event
8.2 Fire or Explosion			8.2.3 {1,2,3,4,5} Fire or explosion in any plant area, Table 8.1, which causes or potentially causes any required safety related system or structure to become inoperable	8.2.1 {1,2,3,4,5} Confirmed fire in or contiguous to any plant area, Table 8.1 not extinguished in ≤ 15 minutes of Control Room notification. 8.2.2 {1,2,3,4,5} Report by plant personnel of an explosion within Protected Area boundary resulting in visible damage to non-vital permanent structures or equipment.

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel
 {5} = Defuel

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CATEGORY 8.0 HAZARDS

Table 8.1 Plant Areas

- Auxiliary Feedpump Building
- P.A.B.
- CAS/SAS
- Fuel Storage Building
- Control Building
- Control Room
- Service Water Pump
- Refueling Water Tank
- EDG Rooms
- Diesel Fuel Tanks
- Vital Area Access to Containment
- Appendix R Diesel Generator
- Backup Service Water

CATEGORY 9.0 OTHER

Category	General	Site Area	Alert	Unusual Event
<p>9.1 Other</p>	<p>9.1.7 {1,2,3,4,5} As determined by the Shift Manager or Emergency Director, events are in progress which indicate actual, or imminent core damage and the potential for a large release of radioactive material in excess of EPA PAGs outside the site boundary.</p> <p>9.1.8 {1,2} Any event, as determined by the Shift Manager or Emergency Director, that could lead or has led to a loss of any two fission product barriers and loss or potential loss of the third</p>	<p>9.1.5 {1,2,3,4,5} As determined by the Shift Manager or Emergency Director, events are in progress which indicate actual or likely failures of plant systems needed to protect the public. Any releases are not expected to result in exposures which exceed EPA PAGs.</p> <p>9.1.6 {1,2} Any event, as determined by the Shift Manager or Emergency Director, that could lead or has led to EITHER: Loss or potential loss of both fuel clad and RCS barrier OR Loss or potential loss of either fuel clad or RCS barrier in conjunction with a loss of containment</p>	<p>9.1.3 {1,2,3,4,5} Any event, as determined by the Shift Manager or Emergency Director, that could cause or has caused actual substantial degradation of the level of safety of the plant.</p> <p>9.1.4 {1,2} Any event, as determined by the Shift Manager or Emergency Director, that could lead or has led to a loss or potential loss of either fuel clad or RCS barrier</p>	<p>9.1.1 {1,2,3,4,5} Any event, as determined by the Shift Manager or Emergency Director, that could lead to or has led to a potential degradation of the level of safety of the plant.</p> <p>9.1.2 {1,2} Any event, as determined by the Shift Manager or Emergency Director, that could lead to a loss or potential loss of containment</p>

{1} = Power Operations {3} = Cold Shutdown
 {2} = Hot Shutdown {4} = Refuel {5} = Defuel