ATTACHMENT I

IP-2 TECHNICAL SPECIFICATION
PROPOSED PAGE REVISIONS

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
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c. In either case, if the WC & PP System is not restored to an operable status within an additional 48 hours, the reactor shall be brought to the cold shutdown condition utilizing normal operating procedures. The shutdown shall start no later than the end of the 48-hour period.

E. COMPONENT COOLING SYSTEM

1. The reactor shall not be made critical unless the following conditions are met:

   a. Three component cooling pumps together with their associated piping and valves are operable.

   b. Two auxiliary component cooling pumps together with their associated piping and valves are operable.

   c. Two component cooling heat exchangers together with their associated piping and valves are operable.

2. During power operation, the requirements of 3.3.E.1 may be modified to allow one of the following components to be inoperable at any one time. If the system is not restored to meet the conditions of 3.3.E.1 within the time period specified, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If the requirements of 3.3.E.1 are not satisfied within an additional 48 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.

   a. One of the three operable component cooling pumps may be out of service provided the pump is restored to operable status within 14 days.

   b. An additional component cooling pump may be out of service provided a second pump is restored to operable status within 24 hours.

c. One auxiliary component cooling pump may be out of service provided the pump is restored to operable status within 24 hours and the other pump is demonstrated to be operable.

d. One component cooling heat exchanger or other passive component may be out of service for a period not to exceed 48 hours provided the system may still operate at design accident capability.

F. SERVICE WATER SYSTEM

1. DESIGNATED ESSENTIAL HEADER

a. The reactor shall not be above 350°F unless three service water pumps with their associated piping and valves are operable on the designated essential header.

b. When the reactor is above 350°F and one of the three service water pumps or any of its associated piping or valves is found inoperable, and an essential service water header that meets the requirements of 3.3.F.1.a. cannot be restored within 12 hours, the reactor shall be placed in the hot shutdown condition within the next 6 hours and subsequently cooled below 350°F using normal operating procedures.

2. DESIGNATED NON-ESSENTIAL HEADER

a. The reactor shall not be above 350°F unless two service water pumps with their associated piping and valves are operable on the designated non-essential header.

b. When the reactor is above 350°F and one of the two service water pumps or any of its associated piping or valves is found inoperable, and a non-essential service water header that meets the requirements of 3.3.F.2.a cannot be restored within 24 hours, the reactor shall be placed in the hot shutdown condition within the next 6 hours and subsequently cooled below 350°F using normal operating procedures.

If offsite power is available or all diesel generators are operating to provide emergency power, the remaining installed iodine removal equipment (two charcoal filters and their associated fans, and one containment spray pump and sodium hydroxide addition) can be operated to provide iodine removal in excess of the minimum requirements. Adequate power for operation of the redundant containment heat removal systems (i.e., five fan-cooler units or two containment spray pumps) is assured by the availability of offsite power or operation of all emergency diesel generators.

One of the five fan cooler units is permitted to be inoperable during power operation. This is an abnormal operating situation, in that the normal plant operating procedures require that an inoperable fan-cooler be repaired as soon as practical.

However, because of the difficulty of gaining access to make repairs, it is important on occasion to be able to operate temporarily without at least one fan-cooler. Compensation for this mode of operation is provided by the high degree of redundancy of containment cooling systems during a Design Basis Accident.

The Component Cooling System is different from the system discussed above in that the pumps are so located in the Auxiliary Building as to be accessible for repair after a loss-of-coolant accident[6]. During the recirculation phase following a loss-of-coolant accident, only one of the three component cooling pumps is required for minimum safeguards[7]. With two operable component cooling pumps, 100% redundancy will be provided. A total of three operable component cooling pumps will provide 200% redundancy. The 14 day out of service period for the third component cooling pump is allowed since this is the 200% redundant pump.

A total of six service water pumps are installed. Only two of the set of three service water pumps on the header designated the essential header are required immediately following a postulated loss-of-coolant accident[8]. The limit on the service water maximum inlet temperature assures that the service water and component cooling water systems will be able to dissipate the heat loads generated in the limiting design basis accident.[12]

3.7 AUXILIARY ELECTRICAL SYSTEMS

Applicability

Applies to the availability of electrical power for the operation of plant auxiliaries.

Objective

To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation and (2) to provide for the continuing availability of engineered safety features.

Specifications

A. The reactor shall not be made critical without:

1. two 138 kV lines to Buchanan fully operational,

2. the 6.9 kV buses 5 and 6 energized from the 138 kV source,

3. one 13.8 kV source fully operational and the 13.8/6.9 kV transformer available to supply 6.9 kV power,

4. the four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A and between buses 3A and 6A open,

5. three diesel generators operable with onsite supply of 19,000 gallons of fuel available in the individual storage tanks and 29,000 gallons of fuel available at the Buchanan Substation, or onsite other than the normal supply tanks, and

6. station batteries Nos. 21, 22, 23, & 24 and their associated battery chargers and dc distribution systems operable.

B. During power operation, the following components may be inoperable:

1. Power operation may continue for seven days if one diesel is inoperable provided the 138 kV and the 13.8 kV sources of offsite power are available and the remaining diesel generators are tested daily to ensure operability and the engineered safety features associated with these diesel generator buses are operable.

2. Power operation may continue for 24 hours, if the 138 kV or the 13.8 kV source of power is lost, provided the three diesel generators are operable. This operation may be extended beyond 24 hours provided the failure is reported to the NRC within the subsequent 24-hour period with an outline of the plans for restoration of offsite power.

3. If the 138 kV power source is lost, in addition to satisfying the requirements of Specification 3.7.B.2 above, the 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 in the CCR shall be placed in the "pull-out" position and tagged to prevent an automatic transfer of the 6.9 kV buses 1, 2, 3 and 4.

4. One battery may be inoperable for 24 hours provided the other batteries and four battery chargers remain operable with one battery charger carrying the dc load of the failed battery's supply system.

5. One battery charger may be inoperable for 24 hours provided the following conditions are satisfied:

   a. The other three battery chargers and their associated batteries are operable; and

   b. The affected battery shall have the Specification 4.6.C.1 surveillance initiated within one hour of the time the battery charger is determined to be inoperable and the surveillance shall be repeated every eight hours thereafter to determine battery operability. This surveillance frequency shall be maintained until the battery is declared inoperable or until the battery charger is declared operable.

C. Gas Turbine Generators:

1. At least one gas turbine generator (GT-1, GT-2 or GT-3) and associated switchgear and breakers shall be operable at all times.

2. A minimum of 54,200 gallons of fuel for the operable gas turbine generator shall be available at all times.

3. If the requirements of 3.7.C.1 or 3.7.C.2 cannot be met, then, within the next seven (7) days, either the inoperable condition shall be corrected or an alternate independent power system shall be established.

4. If the requirements of 3.7.C.3 cannot be satisfied, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If the requirements of 3.7.C.3 cannot be met within an additional 48 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.

The requirements of Specification 3.7.A may be modified for an emergency "Black Start" of the unit by using the requirements of either Specification 3.7.D.1 or 3.7.D.2 below:

D.1.
a. all 138 kV lines to Buchanan de-energized,

b. the 13.8 kV line de-energized,

c. the 6.9 kV buses 5 and 6 energized from the onsite gas turbine through the 13.8/6.9 kV transformer,

d. the four 480-volt buses 2A, 3A, 5A and 6A energized from the diesels and the tie breakers between buses 5A and 2A and between buses 3A and 6A open,

e. three diesel generators operable with onsite supply of 19,000 gallons of fuel available in the individual storage tanks and 29,000 gallons of fuel available at the Buchanan Substation, or on-site other than the normal supply tanks,

f. station batteries Nos. 21, 22, 23 & 24 and their associated battery chargers and dc distribution systems operable, and

g. the 480-volt tie breakers 52/2A, 52/3A, 52/5A and 52/6A open.

D.2. a. establish 138 kV bus sections at Buchanan with at least 37 MW power (nameplate rating) from any combination of gas turbines at Buchanan and onsite,

b. two 138 kV lines to Buchanan energized from the gas turbines with breakers to Millwood, the 138/345 kV tie to Buchanan and to the Peekskill Refuse Plant open,

c. the 13.8 kV line to Buchanan operable and the 13.8/6.9 kV transformer available to supply 6.9 kV power,

d. the 6.9 kV buses energized from the 138 kV source,

e. the four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A and between buses 3A and 6A open,

f. three diesel generators operable with onsite supply of 19,000 gallons of fuel available in the individual storage tanks and 29,000 gallons of fuel available at the Buchanan Substation, or on-site other than the normal supply tanks, and

g. station batteries Nos. 21, 22, 23 & 24 and their associated battery chargers and dc distribution systems operable.

E. Whenever the reactor is critical, the circuit breaker on the electrical feeder to emergency lighting panel 218 inside containment shall be locked open except when containment access is required.

Basis

The electrical system equipment is arranged so that no single contingency can inactivate enough safeguards equipment to jeopardize plant safety. The 480-volt equipment is arranged in four buses. The 6.9 kv equipment is supplied from six buses.

In addition to the unit transformer, three separate sources supply station service power to the plant(1).

The plant auxiliary equipment is arranged electrically so that multiple items receive their power from different sources. The charging pumps are supplied from the 480-volt buses Nos. 3A, 5A, and 6A. The five containment fans are divided among the 480-volt buses. The two residual heat pumps are on separate 480-volt buses. Valves are supplied from separate motor control centers.

The station auxiliary transformer or a gas turbine is capable of providing sufficient power for plant startup. The station auxiliary transformer can supply the required plant auxiliary power during normal operation.

The bus arrangements specified for operation ensure that power is available to an adequate number of safeguards auxiliaries. With additional switching, more equipment could be out of service without infringing on safety.

Two diesel generators have sufficient capacity to start and run, at design load, the minimum required engineered safeguards equipment(1). The minimum diesel fuel oil inventory in the storage tanks is maintained at all times to assure the operation of two diesels carrying their associated engineered safeguards equipment for at least seventy three hours(2). Additional fuel oil suitable for use in the diesel generators will be stored either onsite or at the Buchanan Substation. The minimum storage of 29,000 gallons of additional fuel oil will assure continuous operation of two diesels for at least one hundred and twelve hours at the minimum load for engineered safeguards. Commercial oil supplies and trucking facilities exist to assure deliveries within one day's notice.

One battery charger shall be in service on each battery so that the batteries will always be at full charge in anticipation of a loss-of-ac power incident. This ensures that adequate dc power will be available for starting the emergency diesel generators and other emergency uses.

The plant can be safely shut down without the use of offsite power since all vital loads (safety systems, instruments, etc.) can be supplied from the emergency diesel generators.

Any two of three diesel generators, the station auxiliary transformer or the separate 13.8 to 6.9 kV transformer are each capable of supplying the minimum safeguards loads and therefore provide separate sources of power immediately available for operation of these loads. Thus, the power supply system meets the single failure criteria required of the safety systems.

Three (3) gas turbine generators are directly available to the Indian Point site. One is located onsite (GT-1) and two additional units are located at the adjacent Buchanan Substation (GT-2 and GT-3). One gas turbine generator is more than adequate to provide an additional contingency of backup electrical power for maintaining the plant in a safe shutdown condition. The specified gas turbine generator minimum fuel inventory of 54,200 gallons assures that one gas turbine generator will be capable of supplying more than the maximum electrical load for the Indian Point Unit No. 2 alternate safe shutdown power supply system (i.e., 750 kW) for at least three (3) days. Commercial oil supplies and trucking facilities exist to assure deliveries of additional fuel oil within one day's notice.

Conditions of a system-wide blackout could result in a unit trip. Since normal offsite power supplies as required in Specification 3.7.A are not available for startup, it is desirable to be able to blackstart this unit with onsite power supplies as a first step in restoring the system to an operable status and restoring power to customers for essential service. Specification 3.7.D.1 provides for startup using the onsite gas turbine to supply the 6.9 kV loads and the diesels to supply the 480-volt loads. Tie breakers between the 6.9 kV and 480-volt systems are open so that the diesels would not be jeopardized in the event of any incident and would be able to continue to supply 480-volt safeguards power. The scheme consists of starting two reactor coolant pumps, one condensate pump, 2 circulating water pumps and necessary auxiliaries to bring the unit up to approximately 10% power. At this point, loads can be assumed by the main generator and power supplied to the system in an orderly and routine manner.

Specification 3.7.D.2 is identical with normal start-up requirements as in Specification 3.7.A except that offsite power is supplied exclusively from gas turbines with a minimum total power of 37 MW (nameplate rating), which is sufficient to carry out normal plant startup.

As a result of an investigation of the effect components, that might become submerged following a LOCA, may have on ECCS, containment isolation, and other safety-related functions, a fuse and a locked-open circuit breaker were provided on the electrical feeder to emergency lighting panel 218 inside containment. With the circuit breaker in the open position, containment electrical penetration H-70 is de-energized during the accident condition. Personnel access to containment may be required during power operation. Since it is highly improbable that a LOCA would occur during this short period of time, the circuit breaker may be closed during that time to provide emergency lighting inside containment for personnel safety.

When the 138 kV source of offsite power is out of service, the automatic transfer of 6.9 kV Buses 1, 2, 3 and 4 to offsite power after a unit trip could result in overloading of the 20 MVA 13.8 kV/6.9 kV auto-transformer. Accordingly, the intent of Specification 3.7.B.3 is to prevent the automatic transfer when only the 13.8 kV source of offsite power is available. However, this specification is not intended to preclude subsequent manual operations or bus transfers once sufficient loads have been stripped to assure that the 20 MVA auto-transformer will not be overloaded by these manual actions.

References

(1) UFSAR Section 8.2.1

(2) UFSAR Section 8.2.3

4.6 EMERGENCY POWER SYSTEM PERIODIC TESTS

Applicability

Applies to periodic testing and surveillance requirements of the emergency power systems.

Objective

To verify that emergency power systems will respond promptly and properly when required.

Specifications

The following tests and surveillances shall be performed as stated:

A. DIESEL GENERATORS

1. Each month, each diesel generator shall be manually started and synchronized to its bus or buses and shall be allowed to assume the normal bus load.

2. At each refueling outage, each diesel generator shall be manually started, synchronized and loaded up to its continuous (nameplate) and short term ratings.

3. At each refueling outage, to assure that each diesel generator will automatically start and assume the required load within 60 seconds after the initial start signal, the following shall be accomplished: by simulating a loss of all normal AC station service power supplies and simultaneously simulating a Safety Injection signal, observations shall verify automatic start of each diesel generator, required bus load shedding and restoration to operation of particular vital equipment. To prevent Safety Injection flow to the core, certain safeguards valves will be closed and made inoperable.

4. Each diesel generator shall be given a thorough inspection at least annually following the manufacturer's recommendations for this class of stand-by service.

The above tests will be considered satisfactory if the required minimum safeguards equipment operated as designed.

B. DIESEL FUEL TANKS

A minimum oil storage of 48,000 gallons will be maintained for the station at all times.

C. STATION BATTERIES (NOS. 21, 22, 23 & 24)

1. Every month, the voltage of each cell, the specific gravity and temperature of a pilot cell in each battery and each battery voltage shall be measured and recorded.

2. Every 3 months, each battery shall be subjected to a 24-hour equalizing charge, and the specific gravity of each cell, the temperature reading of every fifth cell, the height of electrolyte, and the amount of water added shall be measured and recorded.

3. Each time data is recorded, new data shall be compared with old to detect signs of abuse or deterioration.

4. At each refueling interval, each battery shall be subjected to a load test and a visual inspection of the plates.

D. GAS TURBINE GENERATORS

1. At monthly intervals, at least one gas turbine generator shall be started and synchronized to the power distribution system for a minimum of thirty (30) minutes with a minimum electrical output of 750 kW.

E. GAS TURBINE FUEL SUPPLY

1. At weekly intervals, the minimum gas turbine fuel volume shall be verified to be available and shall be documented in the plant log.

Basis

The tests specified in Specifications 4.6.A, 4.6.B and 4.6.C are designed to demonstrate that the diesel generators will provide power for operation of equipment. They also assure that the emergency diesel generator system controls and the control systems for the safeguards equipment will function automatically in the event of a loss of all normal 480v ac station service power.

The testing frequency specified will be often enough to identify and correct any mechanical or electrical deficiency before it can result in a system failure. The fuel supply is continuously monitored. An abnormal condition in these systems would be signaled without having to place the diesel generators themselves on test.

Each diesel generator has a continuous rating of 1750 kW with a 2 hours within an 24 hour period rating of 2100 kW and a 1/2 hour within any 24 hour period rating of 2300 kW. Two diesels operating within these ratings can power the minimum safeguards loads. A minimum oil storage of 48,000 gallons will provide for operation of the minimum required engineered safeguards on emergency diesel power for a period of 168 hours.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide an indication of a cell becoming unserviceable long before it fails. The periodic equalizing charge will ensure that the ampere-hour capability of the batteries is maintained.

The refueling interval load test for each battery, together with the visual inspection of the plates, will assure the continued integrity of the batteries. The batteries are of the type that can be visually inspected, and this method of assuring the continued integrity of the battery is proven standard power plant

c. In either case, if the WC & PP System is not restored to an operable status within an additional 48 hours, the reactor shall be brought to the cold shutdown condition utilizing normal operating procedures. The shutdown shall start no later than the end of the 48-hour period.

E. COMPONENT COOLING SYSTEM

1. The reactor shall not be made critical unless the following conditions are met:

   a. Three ~~Two~~ component cooling pumps ~~on busses supplied by different diesels~~ together with their associated piping and valves are operable.

   b. Two auxiliary component cooling pumps together with their associated piping and valves are operable.

   c. Two component cooling heat exchangers together with their associated piping and valves are operable.

2. During power operation, the requirements of 3.3.E.1 may be modified to allow one of the following components to be inoperable at any one time. If the system is not restored to meet the conditions of 3.3.E.1 within the time period specified, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If the requirements of 3.3.E.1 are not satisfied within an additional 48 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.

   INSERT 3.3.E.2.a

   b ~~a.~~ An additional ~~One of the two operable~~ component cooling pump~~s~~ may be out of service provided a second ~~the~~ pump is restored to operable status within 24 hours.

Insert 3.3.E.2.a

a. One of the three operable component cooling pumps may be out of service provided the pump is restored to operable status within 14 days.

c ~~b.~~ One auxiliary component cooling pump may be out of service provided the pump is restored to operable status within 24 hours and the other pump is demonstrated to be operable.

d ~~e.~~ One component cooling heat exchanger or other passive component may be out of service for a period not to exceed 48 hours provided the system may still operate at design accident capability.

F. SERVICE WATER SYSTEM

1. DESIGNATED ESSENTIAL HEADER

a. The reactor shall not be above 350°F unless three service water pumps with their associated piping and valves are operable on the designated essential header.

b. When the reactor is above 350°F and one of the three service water pumps or any of its associated piping or valves is found inoperable, and an essential service water header that meets the requirements of 3.3.F.1.a. cannot be restored within 12 hours, the reactor shall be placed in the hot shutdown condition within the next 6 hours and subsequently cooled below 350°F using normal operating procedures.

2. DESIGNATED NON-ESSENTIAL HEADER

a. The reactor shall not be above 350°F unless two service water pumps with their associated piping and valves are operable on the designated non-essential header.

b. When the reactor is above 350°F and one of the two service water pumps or any of its associated piping or valves is found inoperable, and a non-essential service water header that meets the requirements of 3.3.F.2.a cannot be restored within 24 hours, the reactor shall be placed in the hot shutdown condition within the next 6 hours and subsequently cooled below 350°F using normal operating procedures.

If offsite power is available or all diesel generators are operating to provide emergency power, the remaining installed iodine removal equipment (two charcoal filters and their associated fans, and one containment spray pump and sodium hydroxide addition) can be operated to provide iodine removal in excess of the minimum requirements. Adequate power for operation of the redundant containment heat removal systems (i.e., five fan-cooler units or two containment spray pumps) is assured by the availability of offsite power or operation of all emergency diesel generators.

One of the five fan cooler units is permitted to be inoperable during power operation. This is an abnormal operating situation, in that the normal plant operating procedures require that an inoperable fan-cooler be repaired as soon as practical.

However, because of the difficulty of gaining access to make repairs, it is important on occasion to be able to operate temporarily without at least one fan-cooler. Compensation for this mode of operation is provided by the high degree of redundancy of containment cooling systems during a Design Basis Accident.

The Component Cooling System is different from the system discussed above in that the pumps are so located in the Auxiliary Building as to be accessible for repair after a loss-of-coolant accident(6). During the recirculation phase following a loss-of-coolant accident, only one of the three component cooling pumps is required for minimum safeguards(7). ← INSERT B 3.3

A total of six service water pumps are installed. Only two of the set of three service water pumps on the header designated the essential header are required immediately following a postulated loss-of-coolant accident(8). The limit on the service water maximum inlet temperature assures that the service water and component cooling water systems will be able to dissipate the heat loads generated in the limiting design basis accident.(12)

During the second phase of the accident, one additional service water pump on the non-essential header will be manually started to supply the minimum cooling water requirements for the component cooling loop.

Insert B3.3

With two operable component cooling pumps, 100% redundancy will be provided. A total of three operable component cooling pumps will provide 200% redundancy. The 14 day out of service period for the third component cooling pump is allowed since this is the 200% redundant pump.

3.7 AUXILIARY ELECTRICAL SYSTEMS

Applicability

Applies to the availability of electrical power for the operation of plant auxiliaries.

Objective

To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation and (2) to provide for the continuing availability of engineered safety features.

Specifications

A. The reactor shall not be made critical without:

1. two 138 kV lines to Buchanan fully operational,

2. the 6.9 kV buses 5 and 6 energized from the 138 kV source,

3. one 13.8 kV source fully operational and the 13.8/6.9 kV transformer available to supply 6.9 kV power,

4. the four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A and between buses 3A and 6A open,

5. three diesel generators operable with onsite supply of 19,000 gallons of fuel available in the individual storage tanks and ~~22,000~~ 29,000 gallons of fuel available at the Buchanan substation, or onsite other than the normal supply tanks, and

6. station batteries Nos. 21, 22, 23, & 24 and their associated battery chargers and dc distribution systems operable.

B. During power operation, the following components may be inoperable:

C. Gas Turbine Generators:

1. At least one gas turbine generator (GT-1, GT-2 or GT-3) and associated switchgear and breakers shall be operable at all times.

2. A minimum of 54,200 gallons of fuel for the operable gas turbine generator shall be available at all times.

3. If the requirements of 3.7.C.1 or 3.7.C.2 cannot be met, then, within the next seven (7) days, either the inoperable condition shall be corrected or an alternate independent power system shall be established.

4. If the requirements of 3.7.C.3 cannot be satisfied, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If the requirements of 3.7.C.3 cannot be met within an additional 48 hours, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.

The requirements of Specification 3.7.A may be modified for an emergency "Black Start" of the unit by using the requirements of either Specification 3.7.D.1 or 3.7.D.2 below:

D.1. a. all 138 kV lines to Buchanan de-energized,

b. the 13.8 kV line de-energized,

c. the 6.9 kV buses 5 and 6 energized from the onsite gas turbine through the 13.8/6.9 kV transformer,

d. the four 480-volt buses 2A, 3A, 5A and 6A energized from the diesels and the tie breakers between buses 5A and 2A and between buses 3A and 6A open,

e. three diesel generators operable with onsite supply of 19,000 gallons of fuel available in the individual storage tanks and ~~22,000~~ 29,000 at the Buchanan substation, or

gallons of fuel available on-site other than the normal supply tanks,

f. station batteries Nos. 21, 22, 23 & 24 and their associated battery chargers and dc distribution systems operable, and

g. the 480-volt tie breakers 52/2A, 52/3A, 52/5A and 52/6A open.

D.2. a. establish 138 kV bus sections at Buchanan with at least 37 MW power (nameplate rating) from any combination of gas turbines at Buchanan and onsite,

b. two 138 kV lines to Buchanan energized from the gas turbines with breakers to Millwood ~~and Orange and Rockland~~ open,

, the 138/345 kV tie to Buchanan and to the Peekskill Refuse Plant

c. the 13.8 kV line to Buchanan operable and the 13.8/6.9 kV transformer available to supply 6.9 kV power,

d. the 6.9 kV buses energized from the 138 kV source,

e. the four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A and between buses 3A and 6A open,

f. three diesel generators operable with onsite supply of 19,000 gallons of fuel available in the individual storage tanks and ~~22,000~~ 29,000 gallons of fuel available on-site other than the normal supply tanks, and

at the Buchanan substation, or

g. station batteries Nos. 21, 22, 23 & 24 and their associated battery chargers and dc distribution systems operable.

E. Whenever the reactor is critical, the circuit breaker on the electrical feeder to emergency lighting panel 218 inside containment shall be locked open except when containment access is required.

Basis

The electrical system equipment is arranged so that no single contingency can inactivate enough safeguards equipment to jeopardize plant safety. The 480-volt equipment is arranged in four buses. The 6.9 kv equipment is supplied from six buses.

In addition to the unit transformer, three separate sources supply station service power to the plant[1].

The plant auxiliary equipment is arranged electrically so that multiple items receive their power from different sources. The charging pumps are supplied from the 480-volt buses Nos. 3A, 5A, and 6A. The five containment fans are divided among the 480-volt buses. The two residual heat pumps are on separate 480-volt buses. Valves are supplied from separate motor control centers.

The station auxiliary transformer or a gas turbine is capable of providing sufficient power for plant startup. The station auxiliary transformer can supply the required plant auxiliary power during normal operation.

The bus arrangements specified for operation ensure that power is available to an adequate number of safeguards auxiliaries. With additional switching, more equipment could be out of service without infringing on safety.

Two diesel generators have sufficient capacity to start and run, at design load, the ~~minimum required~~ engineered safeguards equipment[1]. The minimum diesel fuel oil inventory [in the storage tanks] at all times is maintained to assure the operation of two diesels carrying ~~the load of the minimum required~~ [their associated] engineered safeguards equipment for at least ~~eighty~~ [seventy-three] hours[2]. Additional fuel oil suitable for use in the diesel generators will be stored [either] onsite [or at the Buchanan Substation]. The minimum storage of ~~22,000~~ [29,000] gallons [of additional fuel oil] will assure [continuous] operation of two diesels for ~~ninety hours~~ [at least one hundred and twelve hours] at the ~~minimum~~ load for engineered safeguards. Commercial oil supplies and trucking facilities exist to assure deliveries within one day's notice.

One battery charger shall be in service on each battery so that the batteries will always be at full charge in anticipation of a loss-of-ac power incident. This

4.6 EMERGENCY POWER SYSTEM PERIODIC TESTS

Applicability

Applies to periodic testing and surveillance requirements of the emergency power systems.

Objective

To verify that emergency power systems will respond promptly and properly when required.

Specifications

The following tests and surveillances shall be performed as stated:

A. DIESEL GENERATORS

1. Each month, each diesel generator shall be manually started and synchronized to its bus or buses and shall be allowed to assume the normal bus load.

2. At each refueling outage, each diesel generator shall be manually started, synchronized and loaded up to its ~~nameplate rating.~~ continuous (nameplate) and short term ratings.

3. At each refueling outage, to assure that each diesel generator will automatically start and assume the required load within 60 seconds after the initial start signal, the following shall be accomplished: by simulating a loss of all normal AC station service power supplies and simultaneously simulating a Safety Injection signal, observations shall verify automatic start of each diesel generator, required bus load shedding and restoration to operation of particular vital equipment. To prevent Safety Injection flow to the core, certain safeguards valves will be closed and made inoperable.

4. Each diesel generator shall be given a thorough inspection at least annually following the manufacturer's recommendations for this class of stand-by service.

The above tests will be considered satisfactory if the required minimum safeguards equipment operated as designed.

B. DIESEL FUEL TANKS

A minimum oil storage of ~~41,000~~ 48,000 gallons will be maintained ~~at~~ for the station at all times.

C. STATION BATTERIES (NOS. 21, 22, 23 & 24)

1. Every month, the voltage of each cell, the specific gravity and temperature of a pilot cell in each battery and each battery voltage shall be measured and recorded.

2. Every 3 months, each battery shall be subjected to a 24-hour equalizing charge, and the specific gravity of each cell, the temperature reading of every fifth cell, the height of electrolyte, and the amount of water added shall be measured and recorded.

3. Each time data is recorded, new data shall be compared with old to detect signs of abuse or deterioration.

4. At each refueling interval, each battery shall be subjected to a load test and a visual inspection of the plates.

D. GAS TURBINE GENERATORS

1. At monthly intervals, at least one gas turbine generator shall be started and synchronized to the power distribution system for a minimum of thirty (30) minutes with a minimum electrical output of 750 kW.

E. GAS TURBINE FUEL SUPPLY

1. At weekly intervals, the minimum gas turbine fuel volume shall be verified to be available and shall be documented in the plant log.

Basis

The tests specified in Specifications 4.6.A, 4.6.B and 4.6.C are designed to demonstrate that the diesel generators will provide power for operation of equipment. They also assure that the emergency diesel generator system controls and the control systems for the safeguards equipment will function automatically in the event of a loss of all normal 480v ac station service power.

The testing frequency specified will be often enough to identify and correct any mechanical or electrical deficiency before it can result in a system failure. The fuel supply is continuously monitored. An abnormal condition in these systems would be signaled without having to place the diesel generators themselves on test.

Each diesel generator has a continuous rating of 1750 kW with a 2 hr within any 24 hr period rating of 2100 kW and a 1/2 hr within any 24 hr period rating of 2300kW. ~~2000 hr rating of 2000 kW.~~ Two diesels operating ~~at their continuous~~ within these ratings can power the minimum safeguards loads. A minimum oil storage of ~~41,000~~ 48,000 gallons will provide for operation of the minimum required engineered safeguards on emergency diesel power for a period of 168 hours.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide an indication of a cell becoming unserviceable long before it fails. The periodic equalizing charge will ensure that the ampere-hour capability of the batteries is maintained.

The refueling interval load test for each battery, together with the visual inspection of the plates, will assure the continued integrity of the batteries. The batteries are of the type that can be visually inspected, and this method of assuring the continued integrity of the battery is proven standard power plant practice.

ATTACHMENT II

SAFETY ASSESSMENT

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT UNIT NO. 2
DOCKET NO. 50-247
SEPTEMBER, 1990

Description of Change

The changes that are proposed for Technical Specifications 3.3.E, 3.7.A, 3.7.D, 4.6.A and 4.6.B, and Technical Specification Bases 3.3, 3.7 and 4.6 would modify the Component Cooling System Technical Specification to reflect changes made to the power feeds for the Component Cooling Pumps (CCP), increase the EDG fuel oil minimum required storage, and clarify the text with respect to increasing the Emergency Diesel Generator (EDG) short term rating, the EDG nameplate rating, the tanks designated to store the EDG 7 day minimum EDG fuel oil inventory, and the 138/345 kv feeds at the Buchanan Substation.

Background

On April 24, 1989, while in a refueling outage, Con Edison issued LER 89-06 stating that a preliminary analysis indicated that under certain assumed conditions, EDGs could become overloaded. Further analyses were undertaken, including a review of the Technical Specifications, to determine if any changes were needed. The proposed changes are a result of these analyses.

As a result of the above mentioned analyses and Con Edison's commitment to enhance the availability of the Component Cooling System, PAB Ventilation System, Control Room Emergency Filtration System, Auxiliary Feedwater System and the 480 VAC Distribution System, Con Edison is upgrading the IP-2 EDGs to enable an increase in their short term ratings. The existing EDG rating is 1750 kW continuous and 1950 kW for 2 hours within any 24 hour period. The proposed new rating is 1750 kW continuous, 2100 kW for 2 hours within any 24 hour period, and 2300 kW for 1/2 hour within any 24 hour period. The enhancements are summarized as follows:

a) The current power configuration of the IP-2 Component Cooling System is such that CCP 21 is powered from EDG 21 and CCPs 22 and 23 are powered from EDG 22. The power feed for CCP 23 will be moved to EDG 23, resulting in all three pumps being powered from separate diesels. The feeder cable for CCP 22 will be re-routed such that adequate separation will exist between it and the associated cable for CCP 21.

b) The PAB Ventilation System power supply will be upgraded such that PAB Exhaust Fan 22 will be powered from EDG 22.

c) The Control Room Emergency Filtration System power supply will be upgraded such that Booster Fan 22, the backup fan, and dampers will all be powered from EDG 22.

d) As a result of EDG loads as discussed in LER 89-06, Con Edison implemented interim Emergency Operating Procedures (blue set) which direct the operators to manually open circuit breakers to various non-essential loads prior to MCC re-set. Proposed modifications to 480 VAC MCCs 24, 27 and 29 and the addition of new MCC 26C will permit elimination of the manual actions and provide for simplification of the Emergency Operating Procedures.

All the above mentioned enhancements will be implemented during the 1991 refueling outage.

At Indian Point 2, Con Edison is required to provide sufficient on-site fuel oil storage to power two EDGs (the minimum required) for 7 days (168 hours). As a result of NRC Information Notice No. 89-50 and our plans to upgrade the EDGs, a review of the Technical Specifications has determined that the existing EDG fuel oil inventory should be enhanced. A new diesel fuel oil calculation used the maximum load profile for the two EDGs. This load profile, based upon the guidance provided in ANSI N195-1976, assumed that the two EDGs ran continuously for 7 days and that the first 2 hours of every 24 hours was at 2100 kW followed by 1/2 hour at 2300 kW and the remaining 21.5 hours at 1750 kW. Since the EDGs are rated at 1750 kW continuous and 2100 kW for 2 hours in any 24 hours of operation and 2300 kW for a 1/2 hour in any 24 hours of operation, the above utilized load profile envelopes the postulated accident load profile and is thus conservative. The results of the calculation showed a fuel oil inventory requirement of 44,143 gallons. Therefore, a minimum requirement of 48,000 gallons is proposed, which includes a 9 percent margin. Finally, it has been determined that this increase in the fuel oil inventory from 41,000 gallons to 48,000 gallons does not impact the results or analysis presented in the Indian Point Probabilistic Safety Study (IPPSS).

Due to the increase in the fuel oil requirements discussed above, the minimum required inventory of additional fuel oil stored at the Buchanan Substation or in the other on-site tanks has been increased from 22,000 gallons to 29,000 gallons. The fuel consumption rates based upon the proposed upgraded engine were used to determine how long the 19, 000 gallons in the tanks and the 29,000 gallons stored at the Buchanan Substation would each last. Assuming 7 days continuous operation of two EDGs, with the first 2 hours of every 24 hours at 2100 kW followed by a 1/2 hour at 2300 kW and the remaining 21.5 hours at 1750 kW, it was determined that these supplies would last at least 73 hours and 112 hours respectively.

The Technical Specification review also proposed the following administrative changes:

a) In Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and Technical Specification Basis 3.7 with respect to the fuel oil storage locations. This administrative change corrects the Technical Specifications wording to be consistent with IP-2 FSAR Section 8.2.3.2.

b) In Technical Specification 4.6.A.2 to clarify the text with respect to the EDG nameplate rating.

c) In Technical Specification 3.7.D.2.b to clarify the text with respect to the configuration of the 138 kv distribution lines at the Buchanan Substation.

Since these proposed changes either clarify the as-built conditions of the plant or are just editorial, no safety assessment is needed or provided.

Basis for "No Significant Hazards Considerations" Determination

The Commission has provided guidance concerning the application of the standards for determining whether a "Significant Hazards Consideration" exists by providing examples in 51 FR 7751 (dated March 5, 1986). Example (i) of the Commission's Examples of Amendments That Are Considered Not Likely to Involve Significant Hazards Considerations relates to an administrative change. This is the case with the proposed changes to Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and Technical Specification Basis 3.7 with respect to fuel oil storage location. The existing text is erroneous, while the proposed text clearly references the location of the additional 29,000 gallons of fuel oil. The proposed change would correct the Technical Specifications wording to be consistent with IP-2 FSAR Section 8.2.3.2. This is also the case with the proposed changes to Technical Specification 4.6.A.2 with respect to the EDG nameplate rating. Thus, the above discussed changes are similar to Example (i).

Example (ii) of the Commission's Examples of Amendments that Are Considered Not Likely to Involve Significant Hazards Considerations relates to a change which constitutes a more stringent surveillance requirement. The proposed revisions to Technical Specifications 3.3.E.1.a and 3.3.E.2.a and Technical Specification Basis 3.3 with respect to the component cooling pumps and to Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and 4.6.B; and Technical Specification Bases 3.7 and 4.6 with respect to minimum required fuel oil inventory are such changes.

In accordance with the requirements of 10 CFR 50.92, the proposed changes to Technical Specifications 3.3.E.1.a and 3.3.E.2.a with respect to component cooling pump (CCPs) on busses supplied by different diesels are deemed not to involve a "Significant Hazards Consideration" because operation of Indian Point Unit No. 2 in accordance with this change would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The current power feed configuration to CCPs 21, 22 and 23 has EDG 21 feeding CCP 21 and EDG 22 feeding both CCPs 22 and 23. The subject technical specification addresses the availability of pumps, not by specific tag number, but by their EDG supply busses. Since both CCP 22 and 23 are powered off the same EDG, their operable status, should CCP 21 be out of service, would not satisfy the requirements of Technical Specification 3.3.E.1.a in its current form.

   In addition, power cables for CCP 21 and 22 are routed in the same cable tray compromising the independence of having two EDGs providing power. Due to the above circumstances CCP 22 cannot be taken credit for in determining the operable status of the component cooling system, should CCP 21 or 23 be inoperable. As a result of the limitations discussed above, a modification will be performed to 1) re-route the power feed for CCP 23 from EDG 22 to 23 and 2) provide adequate separation between the feeder cables for CCP 21 and 22. This modification is an enhancement of the existing component cooling system since it increases the level of redundancy and independence of the CCPs. Technical Specification Basis 3.3 states that "following a loss-of-coolant accident, only one of the three component cooling pumps is required for minimum safeguards". The proposed modification as discussed above will enable any one of the three CCPs to be credited for in meeting minimum safeguards requirements. The proposed changes to Technical Specifications 3.3.E.1.a and 3.3.E.2.a with respect to CCPs deleting "on busses supplied by different diesels," constitutes a more stringent surveillance requirement since now, a third CCP (i.e., CCP 22) can be credited for meeting minimum safeguards. Therefore, the proposed changes to Technical Specification 3.3.E.1.a and 3.3.E.2.a do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   The modification is an enhancement of the existing component cooling system since it increases the level of redundancy and independence of the CCPs. No mechanical changes to the CCPs are required with respect to these proposed changes. All changes are electrical in nature and/or are associated with providing for the physical separation of cables. Therefore, the proposed changes to Technical Specifications 3.3.E.1.a and 3.3.E.2.a with respect to CCPs, deleting "on busses supplied by different diesels," does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Involve a significant reduction in a margin of safety.

   The modification is an enhancement of the existing component cooling system since it increases the level of redundancy and independence of the CCPs. The re-estabishment of continuous motor-driven AFW pump operation will maintain the margin of safety as defined in the FSAR with respect to minimum safeguards equipment. Technical Specification Basis 3.3 and the IP-2 FSAR define the availability of one CCP during the recirculation phase as required for minimum safeguards. The modifications to the component cooling system will not reduce the margin of safety as described in the Technical Specifications. Therefore, the proposed changes to Technical Specifications 3.3.E.1.a and 3.3.E.2.a with respect to CCPs, deleting "on busses supplied by different diesels," does not involve a significant reduction in a margin of safety.

In accordance with the requirements of 10 CFR 50.92, the proposed changes to Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and 4.6.B and Technical Specification Bases 3.7 and 4.6 with respect to minimum required fuel oil inventory are deemed not to involve a "Significant Hazards Consideration" because operation of Indian Point Unit No. 2 in accordance with this change would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   Since this proposed change is only an increase in the minimum required amount of fuel oil stored on-site (from 41,000 gallons to 48,000 gallons), since there are no physical changes being made to the fuel oil storage tanks with respect to this proposed change and since there is no impact on IPPSS, there is no increase in the probability of an accident previously evaluated.

   With respect to a significant increase in the consequences of an accident previously evaluated, it is important to note that the proposed change increases the minimum required amount of additional fuel oil stored at the Buchanan Substation (via the use of the most conservative calculation possible) to assure that the minimum required 2 EDGs can operate for a minimum of 7 days prior to replenishing the fuel supply. Since this is and has been the requirement of Indian Point 2, this proposed change does not increase the consequences of an accident previously evaluated.

   Therefore, these proposed changes to Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and 4.6.B and Technical Specification Bases 3.7 and 4.6 with respect to minimum required fuel oil inventory do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously evaluated.

   The proposed change provides for an increase in the minimum required fuel oil inventory on-site (from 41,000 gallons to 48,000 gallons). No physical changes to the fuel oil storage tanks are required with respect to these proposed changes. Therefore, the proposed changes to Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and 4.6.B and Technical Specification Basis 3.7 and 4.6 with respect to the minimum required fuel oil inventory do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Involve a significant reduction in a margin of safety.

At Indian Point 2, Con Edison is required to provide sufficient on-site fuel oil storage to power 2 EDGs (the minimum required) for 7 days (168 hours). A diesel fuel oil calculation used the maximum load profile for the 2 EDGs. This load profile assumed that the 2 EDGs ran continuously for 7 days and that the first 2 hours of every 24 hours was at 2100 kW followed by a 1/2 hour at 2300 kW and the remaining 21.5 hours at 1750 kW. Since the EDGs are rated at 1750 KW continuous and 2100 KW for 2 hours in any 24 hours of operation and 2300 kW for a 1/2 hour in any 24 hours of operation, the above utilized load profile envelopes the postulated accident load profile and is thus conservative. The result of the calculation showed the need of a minimum fuel oil inventory of 44,143 gallons. Therefore, a minimum requirement of 48,000 gallons is proposed, which includes a 9 percent margin. Finally, it has been determined that this increase in the fuel oil inventory from 41,000 gallons to 48,000 gallons has no impact on IPPSS.

Due to the increase in the fuel oil requirements discussed above, the minimum required inventory of the additional fuel oil stored at the Buchanan Substation has been increased from 22,000 gallons to 29,000 gallons. The fuel consumption rates were provided by the EDG manufacturer, ALCO, based upon the proposed upgraded engine and were used to determine how long the 19,000 gallons in the storage tanks and the 29,000 gallons stored at Buchanan would each last. Assuming 7 days continuous operation of 2 EDGs, with the first 2 hours of every 24 hours at 2100 kW followed by a 1/2 hour at 2300 kW and the remaining 21.5 hours at 1750 kW, it was determined that these supplies would last at least 73 hours and 112 hours respectively.

Thus, based on the conservative assumptions used in the diesel fuel oil calculation the margin of safety has either been maintained (i.e., the 7 day fuel oil supply requirement) or has been increased (i.e., the 41,000 gallons to 48,000 gallons increase in the minimum required diesel fuel oil inventory). Therefore, the proposed changes to Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and 4.6.B and Technical Specification Bases 3.7 and 4.6 with respect to minimum required fuel oil inventory do not involve a significant reduction in a margin of safety.

Based on the above discussion, Con Edison has determined that the proposed changes to Technical Specifications 3.3.E.1.a and 3.3.E.2.a with respect to the component cooling pumps and to Technical Specifications 3.7.A.5, 3.7.D.1.e, 3.7.D.2.f and 4.6.B and Technical Specification Bases 3.7 and 4.6 with respect to minimum required fuel oil inventory are similar to Example (ii) and do not involve a "Significant Hazards Consideration".

Therefore, since these proposed changes to Technical Specification 3.3.E, 3.7.A, 3.7.D, 4.6.A and 4.6.B and Technical Specification Bases 3.7 and 4.6 satisfy the criteria specified in 10 CFR 50.92, are similar to examples for which "No Significant Hazards Consideration" exists, and are not similar to examples for which"Significant Hazards Consideration" exists, Con Edison has determined that these changes do not involve a "Significant Hazards Consideration".

The proposed changes to Technical specifications 3.3.E, 3.7.A, 3.7.D, 4.6.A and 4.6.B and Technical Specification Bases 3.7 and 4.6 have been reviewed by the Indian Point Unit No. 2 Station Nuclear Safety Committee and by the Con Edison Nuclear Facilities Safety Committee. Both Committees concur that these proposed changes do not represent a "Significant Hazards Consideration".