Attachment 1

Proposed Amendment to Unit 1 Proof and Review
Technical Specification Tables 3.3-1 and 3.3-3 Concerning
Action Statements 6.b and 19.b, Respectively

The proposed amendments clarify the fact that some of the instrumentation performs dual functions for reactor trip and engineered safety features actuation.

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TABLE 3.3-1 (Continued)

ACTION STATEMENTS (Continued)

ACTION 4 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, suspend all operations involving positive reactivity changes.

ACTION 5 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable, within 1 hour and at least once per 12 hours thereafter.

ACTION 6 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 1 hour.

b. The Minimum Channels OPERABLE requirement is met; however, the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels per Specification 4.3.1.1 and Specification 4.3.2.1.

ACTION 7 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed until performance of the next required ANALOG CHANNEL OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 8 - With less than the Minimum Number of Channels OPERABLE, within 1 hour determine by observation of the associated permissive status light(s) that the interlock is in its required state for the existing plant condition, or apply Specification 3.0.3.

ACTION 9 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.1.1, provided the other channel is OPERABLE.

ACTION 10 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or open the Reactor trip breakers within the next hour.

ACTION 11 - With the number of OPERABLE channels less than the Total Number of Channels, operation may continue provided the inoperable channels are placed in the tripped condition within 1 hour.

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TABLE 3.3-3 (Continued)

TABLE NOTATIONS

#Trip function may be blocked in this MODE below the P-11 (Pressurizer Pressure Interlock) setpoint.

##Trip function automatically blocked above P-11 and may be blocked below P-11 when Safety Injection on low steam line pressure is not blocked.

*The provisions of Specification 3.0.4 are not applicable.

ACTION STATEMENTS

ACTION 14 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours; however, one channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1, provided the other channel is OPERABLE.

ACTION 15 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed until performance of the next required ANALOG CHANNEL OPERATIONAL TEST provided the inoperable channel is placed in the tripped condition within 1 hour.

ACTION 16 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed provided the inoperable channel is placed in the bypassed condition and the Minimum Channels OPERABLE requirement is met. One additional channel may be bypassed for up to 2 hours for surveillance testing per Specification 4.3.2.1.

ACTION 17 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge supply and exhaust valves are maintained closed.

ACTION 18 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION 19 - With the number of OPERABLE channels one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may proceed provided the following conditions are satisfied:

a. The inoperable channel is placed in the tripped condition within 1 hour.

b. The Minimum Channels OPERABLE requirement is met; however, one additional channel may be bypassed for up to 2 hours for surveillance testing of other channels per Specification 4.3.2.1.



4.3.1.1 and Specification

Attachment 2

Catawba Nuclear Station
Unit 1

Proposed Amendment to Proof and Review Technical Specifications to
Allow Changing between Operational Modes 5 and 6
with the Control Area Ventilation System Inoperable

The proposed amendments would make Specification 3.0.4 not applicable in modes 5 (cold shutdown) and 6 (refueling) for the Control Area Ventilation Systems. This would allow changing between modes 5 and 6 with the systems inoperable.

The Control Area Ventilation Systems ensure that the control room remains habitable after postulated accidents. Changing between modes 5 and 6 with the system(s) inoperable is acceptable for the following reasons:

(1) Whether in mode 5 or 6, there is no significant difference in the probability of a reactor accident occurring for which the system would be required to function. In either case, the reactor is substantially subcooled and subcritical.

(2) The fact that mode 5 is acceptably safe is clear because the ACTION section requires proceeding to mode 5 from higher modes but does not require proceeding to mode 6. Per the ACTION section, the remaining operable system would be placed in the recirculation mode. The ACTION section also restricts positive reactivity changes with both systems inoperable and with emergency power unavailable; however, changing from mode 6 to mode 5 does not necessarily involve positive reactivity changes. Therefore, passage from mode 6 to mode 5 is acceptable.

(3) Because the reactivity and temperature limits for mode 6 are lower than for mode 5, passage into mode 6 does not place the unit in a more degraded condition. Therefore, passage from mode 5 to mode 6 is acceptable.

The wording changes to ACTION statements 3.3.3.7a & b, 3.7.6.a & b and Specification 4.7.6.e.2 describe the way in which the Catawba Control Room Ventilation System functions.

The proposed amendments would not involve a significant increase in the probability of an accident previously evaluated because the Control Area Ventilation System is designed to mitigate the consequences of accidents and can have no effect on cause mechanisms. The consequences of accidents previously evaluated would not be significantly increased because accidents which might occur in modes 5 or 6 would be much less severe than the design basis accidents. Further, the ACTION requirements provide for appropriate measures to compensate for the system inoperability (such as placing the remaining operable system in recirculation and suspending core alterations and positive reactivity changes).

The proposed amendments would not create the possibility of a new or different kind of accident than previously evaluated. The Control Area Ventilation System cannot cause an accident to occur. Safety margins are not significantly reduced by the proposed amendments because the design basis accidents involve initial conditions more severe than those conditions (modes 5 and 6) for which the proposed amendments would apply.

PLANT SYSTEMS

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3/4.7.6 CONTROL ROOM AREA VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.6 Two independent Control Room Area Ventilation Systems shall be OPERABLE.

APPLICABILITY: ALL MODES

ACTION:

MODES 1, 2, 3 and 4:

With one Control Room Area Ventilation System inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

MODES 5 and 6:

a. With one Control Room Area Ventilation System inoperable, restore the inoperable system to OPERABLE status within 7 days or initiate and maintain operation of the remaining OPERABLE Control Room Area Ventilation System ~~in the recirculation mode~~ with flow through the HEPA filters and charcoal adsorbers.

b. With both Control Room Area Ventilation Systems inoperable, or with the OPERABLE Control Room Area Ventilation System, required to be ~~in the recirculation mode~~ by ACTION a., not capable of being powered by an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

directing flow through the HEPA filters and charcoal adsorbers

c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.6 Each Control Room Area Ventilation System shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the control room air temperature is less than or equal to 80°F;

b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

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PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire, or chemical release in any ventilation zone communicating with the system by:

1) Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 1% and uses the test procedure guidance in Regulatory Position C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revisions 2, March 1978, and the sytem flow rate is 6000 cfm ± 10%;

2) Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 1%; and

3) Verifying a system flow rate of 6000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

d. After every 720 hours of charcoal adsorber operation, by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, meets the laboratory testing criteria of Regulatory Position C.6.a of Regulatory Guide 1.52, Revision 2, March 1978, for a methyl iodide penetration of less than 1%;

e. At least once per 18 months by:

1) Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches Water Gauge while operating the system at a flow rate of 6000 cfm ± 10%;

2) Verifying that on a Loss-of-Offsite Power, or High Radition-Air Intake, or Smoke Density-High test signal, the system automatically ~~switches into a recirculation mode of operation~~ isolates the affected intake from outside air with flow through the HEPA filters and charcoal adsorber banks; Arecirculating

3) Verifying that the system maintains the control room at a positive pressure of greater than or equal to 1/8 inch Water Gauge relative to the outside atmosphere during system operation;

4) Verifying that the heaters dissipate 25 ± 2.5 kW when tested in accordance with ANSI N510-1975; and

5) Verifying that on a High Chlorine/Toxic Gas test signal, the system automatically isolates the affected intake from outside air with recirculating flow through the HEPA filters and charcoal adsorbers banks within 10 seconds.

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

* With fuel in the fuel storage pool areas.
** With irradiated fuel in the fuel storage pool areas.
*** Must satisfy the requirements of Specification 3.11.2.1.

ACTION STATEMENTS

ACTION 26 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge and exhaust valves are maintained closed.

ACTION 27 - With the number of operable channels one less than the Minimum Channels OPERABLE requirement, within 1 hour isolate the affected Control Room Ventilation System ~~and initiate operation of the Control Room Ventilation System in the recirculation mode.~~ intake from outside air with recirculating flow through the HEPA filters and charcoal adsorbers.

ACTION 28 - With less than the Minimum Channels OPERABLE requirement, operation may continue for up to 30 days provided an appropriate portable continuous monitor with the same Alarm Setpoint is provided in the fuel storage pool area. Restore the inoperable monitors to OPERABLE status within 30 days or suspend all operations involving fuel movement in the fuel building.

ACTION 29 - Must satisfy the ACTION requirement for Specification 3.4.6.1.

ACTION 30 - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue provided the Fuel Handling Ventilation Exhaust System is operating and discharging through the HEPA filters and charcoal adsorbers. Otherwise, suspend all operations involving fuel movement in the fuel building.

ACTION 31 - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue provided the Auxiliary Building Ventilation System is operating and discharging through the HEPA filter and charcoal adsorbe.s.

INSTRUMENTATION

CHLORINE DETECTION SYSTEMS

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LIMITING CONDITION FOR OPERATION

3.3.3.7 Two independent Chlorine Detection Systems, with their Alarm/Trip Setpoints adjusted to actuate at a chlorine concentration of less than or equal to 5 ppm, shall be OPERABLE.

APPLICABILITY: All MODES

ACTION:

a. With one Chlorine Detection system inoperable, restore the inoperable system to OPERABLE status within 7 days or within the next 6 hours initiate and maintain operation of the Control Room Emergency Ventilation System ~~in the recirculation mode of operation~~ with flow through the HEPA filters and charcoal adsorbers.

b. With both Chlorine Detection Systems inoperable, within 1 hour initiate and maintain operation of the Control Room Emergency Ventilation System ~~in the recirculation mode of operation~~ with flow through the HEPA filters and charcoal adsorbers.

c. The provisions of Specification 3.0.4 are not applicable.

SURVELLIANCE REQUIREMENTS

4.3.3.7 Each Chlorine Detection System shall be demonstrated OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours, an ANALOG CHANNEL OPERATIONAL TEST at least once per 31 days and a CHANNEL CALIBRATION at least once per 18 months.

Attachment 3

Proposed Amendments to Catawba Unit 1 Proof and Review
Technical Specification Concerning Verifying the
Position of Inaccessible Fire Suppression and
Sprinkler System Valves

Specifications 4.7.10.1.1.b and 4.7.10.2.a currently require verifying at least once per 31 days that fire suppression and sprinkler system valves are in their correct positions. The proposed amendments would make these specifications not applicable to valves which are inaccessible during plant operation and would add specifications to require verifying the positions of those valves at least once per 18 months.

Each of these valves is either locked in position or electrically supervised which is consistent with the guidelines in the Standard Review Plan. Because of this and because personnel entry into lower containment is controlled to a minimum, verifying the positions of inaccessible valves every 18 months is adequate to ensure the operability of the systems.

The proposed amendments only affect surveillance frequencies and do not affect test methods, acceptance criteria, or operating conditions. Therefore, new or different kinds of accidents are not created. Also, since no changes to accident analyses or surveillance acceptance criteria are proposed, the proposed amendments will not affect a margin of safety.

4.7.10.1.1 The Fire Suppression Water System shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by starting each electric motor-driven pump and operating it for at least 15 minutes on recirculation flow,

b. At least once per 31 days by verifying (which is accessible during plant operation) that each valve (manual, power-operated, or automatic) in the flow path is in its correct position,

c. At least once per 6 months by performance of a system flush of the outside distrubtion loop to verify no flow blockage,

d. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel,

e. At least once per 18 months, By performing (P 2) a system functional test which includes simulated automatic actuation of the system throughout its operating sequence, and:

a. ~~1~~) Verifying that each automatic valve in the flow path actuates to its correct position,

b. ~~2~~) Verifying that each pump develops at least 2500 gpm at a system pressure of 144 psig,

c. ~~3~~) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel, and

d. ~~4~~) Verifying that each fire suppression pump starts (sequentially) to maintain the Fire Suppression Water System pressure greater than or equal to 144 psig.

f. At least once per 3 years by performing a flow test of the system in accordance with Chapter 8, Section 16 of the Fire Protection Handbook, 15th Edition, published by the National Fire Protection Association.

2) By verifying that each valve (manual, power-operated or automatic) in the flow path which is inaccessible during plant operation is in its correct position.

4.7.10.2 Each of the above required Spray and/or Sprinkler Systems shall be demonstrated OPERABLE:

a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path, which is accessible during plant operation, is in its correct position,

b. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel, and

c. At least once per 18 months:

1) By performing a system functional test which includes simulated automatic actuation of the system, and:

a) Verifying that the automatic valves in the flow path actuate to their correct positions on a Fire Detection test signal, and

b) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel.

2) By a visual inspection of the sprinkler headers to verify their integrity; and

3) By a visual inspection of each nozzle's spray area to verify the spray pattern is not obstructed.

4) By verifying that each valve (manual, power-operated or automatic) in the flow path which is inaccessible during plant operation is in its correct position.

Attachment 4

Proposed Addition to Catawba Unit 1 Proof and Review
Technical Specifications

Technical Specification 6.12 - HIGH RADIATION AREA

It is requested that Technical Specification 6.12 - HIGH RADIATION AREA be added to the Catawba Technical Specifications. The proposed specification is the same as the Comanche Peak specification with two minor plant specific corrections.

6.12 HIGH RADIATION AREA

6.12.1 In lieu of the "control device" or "alarm signal" required by paragraph 20.203(c)(2) of 10 CFR Part 20, each high radiation area, as defined in 10 CFR Part 20, in which the intensity of radiation is equal to or less than 1000 mR/h at 45 cm (18 in.) from the radiation source or from any surface which the radiation penetrates shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit (RWP). Individuals qualified in radiation protection procedures (e.g., Health Physics Technician) or personnel continuously escorted by such individuals may be exempt from the RWP issuance requirement during the performance of their assigned duties in high radiation areas with exposure rates equal to or less than 1000 mR/h, provided they are otherwise following plant radiation protection procedures for entry into such high radiation areas. Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

a. A radiation monitoring device which continuously indicates the radiation dose rate in the area, or

b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate levels in the area have been established and personnel have been made knowledgeable of them, or

c. An individual qualified in radiation protection procedures with a radiation dose rate monitoring device, who is responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the [~~Radiation Protection Manager~~ Station Health Physicist] in the RWP.

6.12.2 In addition to the requirements of Specification 6.12.1, areas accessible to personnel with radiation levels greater than 1000 mR/h at 45 cm (18 in.) from the radiation source or from any surface which the radiation penetrates shall be provided with locked doors to prevent unauthorized entry, and the keys shall be maintained under the administrative control of the Shift ~~Foreman~~ Supervisor on duty and/or health physics supervision. Doors shall remain locked except during periods of access by personnel under an approved RWP which shall specify the dose rate levels in the immediate work areas and the maximum allowable stay time for individuals in that area. In lieu of the stay time specification of the RWP, direct or remote (such as closed circuit TV cameras) continuous surveillance may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities being performed within the area.

For individual high radiation areas accessible to personnel with radiation levels of greater than 1000 mR/h that are located within large areas, such as PWR containment, where no enclosure exists for purposes of locking, and where no enclosure can be reasonably constructed around the individual area, that individual area shall be barricaded, conspicuously posted, and a flashing light shall be activated as a warning device.

Attachment 5

Proposed Amendment to Catawba Unit 1 Proof and Review
Technical Specification 6.2.2.f Concerning the Unit Staff

The Catawba operating personnel will be working 12-hour shifts with a four shift rotation. Under this schedule adequate shift coverage will be maintained without routine heavy use of overtime.

The term "deputy" is not used to describe any position in the Catawba organization. The Station Manager's "designee" is the person charged with the duties of the Manager in the Manager's absence.

Also, a new Figure 6.2-2 "UNIT ORGANIZATION" is provided which shows the organization that will be in place at Catawba at the time of fuel load.

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UNIT STAFF (Continued)

f. Administrative procedures shall be developed and implemented to limit the working hours of unit staff who perform safety-related functions (e.g., licensed Senior Operators, licensed Operators, health physicists, auxiliary operators, and key maintenance personnel).

Adequate shift coverage shall be maintained without routine heavy use of overtime. The objective shall be to have operating personnel work a nominal 40-hour week while the unit is operating. However, in the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance, or major plant modification, on a temporary basis the following guidelines shall be followed:

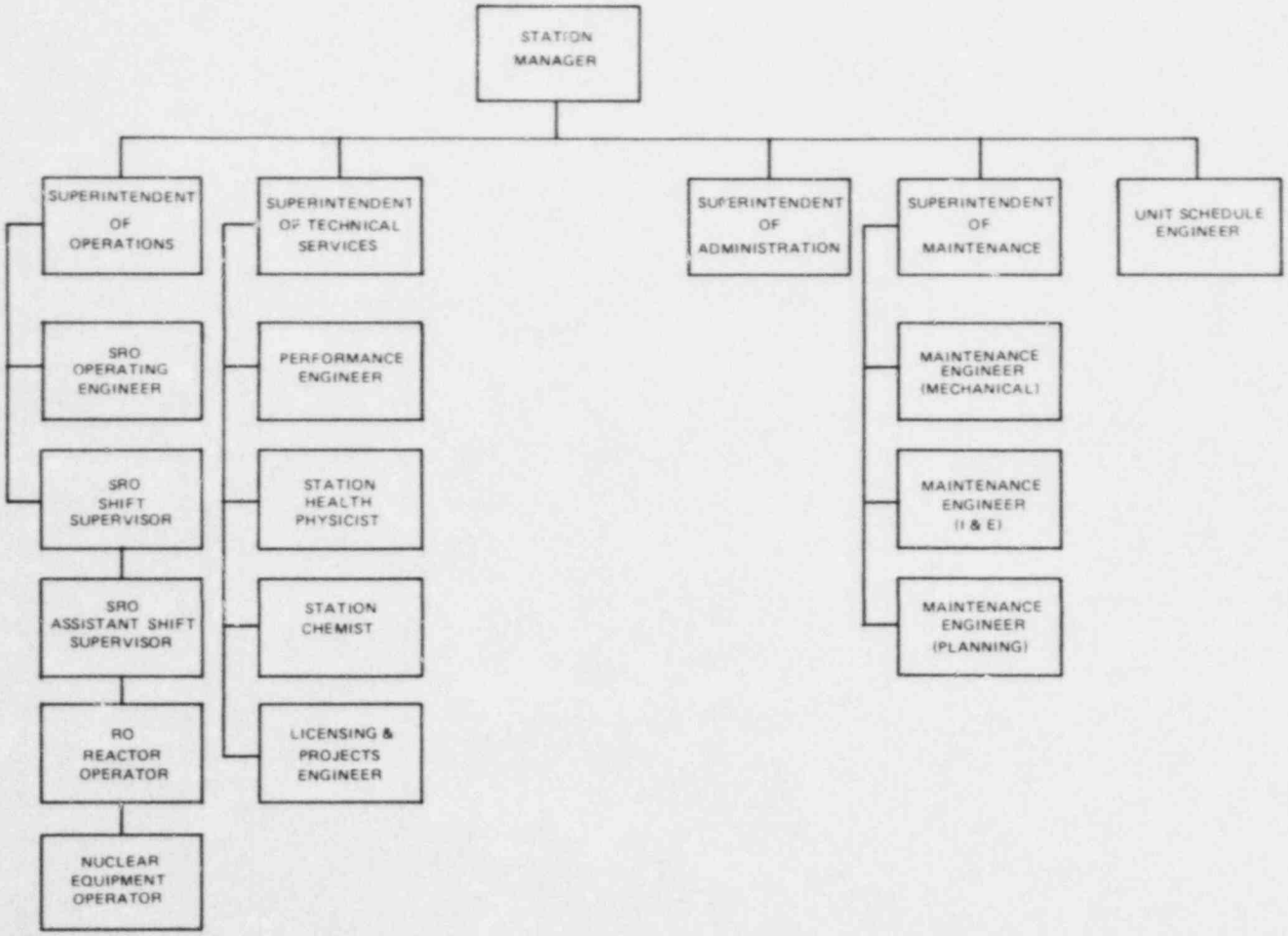
1. An individual should not be permitted to work more than 16 hours straight, excluding shift turnover time.

2. An individual should not be permitted to work more than 16 hours in any 24-hour period, nor more than 24 hours in any 48-hour period, nor more than 72 hours in any 7-day period, all excluding shift turnover time.

3. A break of at least 8 hours should be allowed between work periods, including shift turnover time.

4. Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on a shift.

Any deviation from the above guidelines shall be authorized by the Station Manager or his designee, or higher levels of management, in accordance with established procedures and with documentation of the basis for granting the deviation. Controls shall be included in the procedures such that individual overtime shall be reviewed monthly by the Station Manager or his designee to assure that excessive hours have not been assigned. Routine deviation from the above guidelines is not authorized.




LEGEND
SRO– SENIOR REACTOR OPERATOR
RO– REACTOR OPERATOR
*Superintendent of Operations must hold or have held SRO License

UNIT ORGANIZATION
CATAWBA NUCLEAR STATION
Figure 6.2-2

Attachment 6

Proposed Amendment to Catawba Unit 1 Proof and Review
Technical Specification Tables 3.12-1, 3.12-2 and 4.12-1
Concerning the Radiological Environmental Monitoring Program

The proposed changes are intended to clarify some ambiguous areas and to remove some specifications which do not apply to Catawba.

In Table 3.12-1, item 2 several changes are proposed. The wording "I-131 analysis weekly" is changed to "weekly gamma isotopic.(4)." The term I-131 analysis implies a low-level I-131 analysis is being performed when the test actually being performed is a gamma isotopic analysis; the change therefore clarifies the type of test being performed. Also, the wording "Gross beta radioactivity analysis following filter change (3); and gamma isotopic analysis(4) of composite (by location) quarterly" is changed to "weekly gamma isotopic.(3)(4)." Since gamma isotopic analysis is required for filters with high gross beta activity and since gamma isotopic analysis provides much more information than does gross beta analysis, a change is necessary to replace the weekly gross beta analysis with a weekly gamma isotopic analysis. The above change necessitates the change of Table notation (3) of Table 3.12-1 to read, "Airborne particulate sample filters shall be held for 24 hours or more after sampling, to allow for radon and thoron daughter decay, before gamma isotopic analysis is performed," since gross beta analysis would no longer be required.

The next change proposed is to delete item 3b of Table 3.12-1 which calls for quarterly ground water samples from one or two sources when groundwater is likely to be affected by radioactive effluent releases. The Catawba FSAR shows that groundwater is not likely to be affected, since any radioactivity released to the groundwater will reach Lake Wylie only after a delay of at least 40 years. It will not travel to any offsite locations as groundwater because groundwater flows toward the lake. FSAR paragraph 2.4.14concludes:

> "With the exception of the Technical Specifications describing remedial action required in the event of a rise in groundwater as described in Section 2.4.13.5, the hydrologic design bases developed in the preceding sections do not necessitate technical specifications or emergency procedures to ensure safety-related plant functions. In the event of an accidental radioactive release, industries and municipalities that utilize Lake Wylie and the Catawba River downstream as a water supply are notified of possible contamination."

The above change also necessitates the deletion of table notation (7), Table 3.12-1.

In item 3c of Table 3.12-1 the wording "I-131 analysis" is to be changed to "low-level I-131 analysis." The change specifies the type of test required for drinking water samples. The same wording change is applied to item 4 of Table 3.12-1.

In item 4b of Table 3.12-1 the wording, "One sample of each commercially and recreationally important species" and "One sample of same species" are changed to "One sample each of a predatory species, a bottom feeder, and a forage species." This change is justified in the attached memo from the Duke Power Environmental Laboratory.

In item 4c of Table 3.12-1, the wording which refers to broad leaf vegetation is changed to vegetation sampling. The change is made to avoid confusion in the definition of broad leaf vegetation. Another change made to this item is a change in the wording, "Monthly during growing season" to "Monthly when available," reflecting the fact that crops are not always available during the growing season. Also omitted from this item are the words "and I-131" from the "Type and Frequency of Analysis" column since gamma isotopic analysis automatically includes analysis for I-131.

Table notation (6) of Table 3.12-1 is changed from,

> "A composite sample is one in which the quantity (aliquot) of liquid samples is proportional to the quantity of flowing liquid and in which the method of sampling employed results in a specimen that is representative of the liquid flow."

to

> "A composite sample is one in which the rate of which the liquid is sampled is uniform and in which the method of sampling employed results in a specimen that is representative of the time averaged concentration at the location being sampled."

The change allows for the use of a simple, reliable time average concentration sampling device instead of an unreliable and complicated flow proportional sampling device. Also, a time average sample is more representative of what is in the environment than is a flow proportional sample. Finally, since the flow of the waters being sampled, station discharge canal and inlets to water purification facilities, is fairly constant, the data acquired would be approximately the same for both sampling devices.

The next change involves Table 3.12-2 and the reporting levels for I-131. Since the table does not specify what type of test is being performed, it is proposed that the reporting level listed in the table be that for gamma isotopic analysis, 20 pCi/l, with the reporting level for low-level I-131 analysis being included in table notation (4). Table notation (4) is changed to read, "Reporting level for gamma isotopic analysis. If the calculated dose for drinking water exceeds 1 mrem/yr, low level I-131 analysis shall be performed and a reporting level of 2pCi/l is used." A similar change is made in Table 4.12-1, analysis LLD. The gamma isotopic analysis LLD of 15 pCi/l is listed in the table and table notation (5) used to specify the low level I-131 analysis LLD of 1 pCi/l. Another change in Table 4.12-1 is the deletion of a LLD for gross beta analysis on airborne particulate or gas samples since this test is not performed on this type of sample.

January 6, 1984

Memo to: File

Subject: CNS Environmental Radiological Monitoring
Tech Spec Requirements For Fish Sampling
GS-752.05

The purpose of this memorandum is to document the rationale for proposing a change to the proposed CNS Technical Specifications regarding the subject program. This proposal would change the wording of Table 3.12-1 from "One sample of each commercially and recreationally important species in vicinity of plant discharge area," to "One sample of representative gamefish, forage fish, and bottom feeders in the vicinity of the plant discharge." This change is substantiated by extensive fisheries data available on Lake Wylie, and will provide a meaningful monitoring program which will ensure the health and safety of the public.

A primary purpose of environmental radiological monitoring is to monitor all potential pathways of radiation exposure or uptake in the environment. In fish the primary concern is from radionuclides that are incorporated into fish tissue via the food chain. Radionuclides discharged from a nuclear station are either incorporated directly into lower organisms residing in the water column (bacteria, phytoplankton, zooplankton) or settle into the bottom sediments. Once radionuclides reach the bottom sediments they may remain there or can be incorporated in the tissues of benthic invertebrates. From either of these two pathways, discharged radionuclides may eventually be incorporated into the tissues of either sport or commercial fishes and then become available to human consumption.

In Lake Wylie there is no documentable commercial fishery, however, there is a substantial recreational fishery based on creel survey work conducted by Duke Power Company in 1980 and 1983. A potential commercial fishery does exist, consisting of catfish (Ictaluridae), carp (Cyprinus carpio), and possibly quillback carpsucker (Carpiodes cyprinus) and smallmouth buffalo (Ictiobus bubalus). There is considerable overlap with recreational fisheries, particularly with carp and catfish. Recreational fisheries consist primarily of white bass (Morone chrysops), largemouth bass (Micropterus salmoides), black and white crappies (Pomoxis nigromaculatus and P. annularis), bluegill (Lepomis macrochirus), and redear sunfish (L. microlophus). Although not directly important to recreational fisheries catches, threadfin shad (Dorosoma petenense) and gizzard shad (D. cepedianum) are important in radionuclide pathways because they serve as forage fish for some of the most important recreational fish species. All species mentioned above can be roughly divided into three trophic levels. Predatory species (white bass, largemouth bass, and crappies) and their forage species (threadfin shad and gizzard shad) incorporate radionuclides primarily through the water column pathway since the chain goes roughly from phytoplankton/zooplankton to forage fish to predatory fish. Although there is considerable overlap, the remaining species could be termed benthic invertebrate/detritus (sediment) feeders and would be expected to incorporate radionuclides via the bottom sediments.

Since there are basically two pathways leading to radionuclide incorporation into fish tissue, since there is considerable overlap between potential commercial fisheries and recreational fisheries, and since metabolic processes among species of fish do not vary drastically, we feel that monitoring of one predatory species, one bottom feeder, and one forage species will provide sufficient information to meet the objective of the CNS Environmental Radiological Monitoring Program. The use of indicator species is a commonly accepted practice in pollution biology and we feel that the suggested changes in the program would provide a more cost-effective indicator of radionuclide accumulation in fish than monitoring several species from each pathway.

Steven R. Johnson

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TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

| EXPOSURE PATHWAY AND/OR SAMPLE | NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS(1) | SAMPLING AND COLLECTION FREQUENCY | TYPE AND FREQUENCY OF ANALYSIS |
|---|---|---|---|
| 2. Airborne Radioiodine and Particulates | Samples from five locations<br><br>Three samples from close to the three SITE BOUNDARY locations, in different sectors, of the highest calculated annual average ground-level D/Q;<br><br>One sample from the vicinity of a community having the highest calculated annual average ground-level D/Q; and<br><br>One sample from a control location, as for example 15 to 30 km distant and in the least prevalent wind direction. | Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading. | Radioiodine Cannister:<br~~I-131 analysis weekly~~<br>Weekly gamma isotopic (4)<br><br>Particulate Sampler:<br~~Gross beta radioactivity analysis following filter change;(3) and gamma isotopic analysis(4) of composite (by location) quarterly.~~<br>Weekly gamma isotopic (3)(4) |
| 3. Waterborne | | | |
| a. Surface(5) | One sample upstream<br>One sample downstream | Composite sample over 1-month period.(6) | Gamma isotopic analysis(4) monthly. Composite for tritium analysis quarterly. |
| ~~b. Ground~~ | ~~Samples from one or two sources only if likely to be affected(7)~~ | ~~Quarterly~~ | ~~Gamma isotopic(4) and tritium analysis quarterly~~ |

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

| EXPOSURE PATHWAY AND/OR SAMPLE | NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS(1) | SAMPLING AND COLLECTION FREQUENCY | TYPE AND FREQUENCY OF ANALYSIS |
|---|---|---|---|
| 3. Waterborne (Continued) | | | |
| c. Drinking | One sample of each of one to three of the nearest water supplies that could be affected by its discharge.<br><br>One sample from a control location. | Composite sample over 2-week period(6) when I-131 analysis is performed; monthly composite otherwise. | I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year(8)(7). Composite for gross beta and gamma isotopic analyses(4) monthly. Composite for tritium analysis quarterly. |
| d. Sediment from Shoreline | One sample from downstream area with existing or potential recreational value. | Semiannually. | Gamma isotopic analysis(4) semiannually. |
| 4. Ingestion | | | |
| a. Milk | Samples from milking animals in three locations within 5 km distance having the highest dose potential. If there are none, then one sample from milking animals in each of three areas between 5 to 8 km distant where doses are calculated to be greater than 1 mrem per yr.(8)(7) One sample from milking animals at a control location 15 to 30 km distant and in the least prevalent wind direction. | Semimonthly when animals are on pasture; monthly at other times. | Gamma isotopic(4) and I-131 analysis semimonthly when animals are on pasture; monthly at other times. |

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

| EXPOSURE PATHWAY AND/OR SAMPLE | NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS(1) | SAMPLING AND COLLECTION FREQUENCY | TYPE AND FREQUENCY OF ANALYSIS |
|---|---|---|---|
| 4. Ingestion (Continued) | | | |
| b. Fish and Invertebrates | ~~One sample of each commercially and recreationally important species~~ in vicinity of plant discharge area. | Sample in season, or semiannually if they are not seasonal. | Gamma isotopic analysis(4) on edible portions. |
| | ~~One sample of same species~~ in areas not influenced by plant discharge. | | |
| c. Food Products | One sample of each principal class of food products from any area that is irrigated by water in which liquid plant wastes have been discharged. | At time of harvest(8). | Gamma isotopic analyses(4) on edible portion. |
| | Samples of ~~three different kinds of broad leaf~~ vegetation grown nearest each of two different offsite locations of highest predicted annual average ground level D/Q if milk sampling is not performed. | Monthly ~~during growing season~~, when available. | Gamma isotopic(4) ~~and I-131~~ analysis. |
| | One sample of ~~each of the~~ similar ~~broad leaf~~ vegetation grown 15 to 30 km distant in the least prevalent wind direction if milk sampling is not performed. | Monthly ~~during growing season~~, when available. | Gamma isotopic(4) ~~and I-131~~ analysis. |

One sample each of a predatory species, a bottom feeder and a forage species.

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TABLE 3.12-1 (Continued)

TABLE NOTATIONS

(1) Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 3.12-1 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants," October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to circumstances such as hazardous conditions, seasonal unavailability, and malfunction of automatic sampling equipment. If specimens are unobtainable due to sampling equipment malfunction, effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be documented in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.6. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable specific alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the Radiological Environmental Monitoring Program given in the ODCM. Pursuant to Specification 6.14, submit in the next Semiannual Radioactive Effluent Release Report documentation for a change in the ODCM including a revised figure(s) and table for the ODCM reflecting the new location(s) with supporting information identifying the cause of the unavailability of samples for that pathway and justifying the selection of the new location(s) for obtaining samples.

(2) One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The 40 stations is not an absolute number. The number of direct radiation monitoring stations may be reduced according to geographical limitations; e.g., at an ocean site, some sectors will be over water so that the number of dosimeters may be reduced accordingly. The frequency of analysis or readout for TLD systems will depend upon the characteristics of the specific system used and should be selected to obtain optimum dose information with minimal fading.

(3) Airborne particulate sample filters shall be ~~analyzed for gross beta radioactivity~~ held for 24 hours or more after sampling to allow for radon and thoron daughter decay. ~~If gross beta activity in air particulate samples is greater than 10 times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.~~ before gamma isotopic analysis is performed.

TABLE 3.12-1 (Continued)

TABLE NOTATIONS (Continued)

(4) Gamma isotopic analysis means the identification and quantification of gamma-emitting radionuclides that may be attributable to the effluents from the facility.

(5) The "upstream sample" shall be taken at a distance beyond significant influence of the discharge. The "downstream" sample shall be taken in an area beyond but near the mixing zone. "Upstream" samples in an estuary must be taken far enough upstream to be beyond the plant influence. Salt water shall be sampled only when the receiving water is utilized for recreational activities.

(6) A composite sample is one in which the ~~quantity (aliquot) of~~ liquid sampled is ~~proportional to the quantity of flowing liquid~~ and in which the method of sampling employed results in a specimen that is representative of the ~~liquid flow~~. In this program composite sample aliquots shall be collected at time intervals that are very short (e.g., hourly) relative to the compositing period (e.g., monthly) in order to assure obtaining a representative sample.

uniform

rate at which the

time averaged concentration at the location being sampled

~~(7) Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.~~

7 (8) The dose shall be calculated for the maximum organ and age group, using the methodology and parameters in the ODCM.

8 (9) If harvest occurs more than once a year, sampling shall be performed during each discrete harvest. If harvest occurs continuously, sampling shall be monthly. Attention shall be paid to including samples of tuberous and root food products.

TABLE 3.12-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

REPORTING LEVELS

| ANALYSIS | WATER (pCi/ℓ) | AIRBORNE PARTICULATE OR GASES (pCi/m³) | FISH (pCi/kg, wet) | MILK (pCi/ℓ) | FOOD PRODUCTS (pCi/kg, wet) |
|---|---|---|---|---|---|
| H-3 | 20,000(1) | | | | |
| Mn-54 | 1,000 | | 30,000 | | |
| Fe-59 | 400 | | 10,000 | | |
| Co-58 | 1,000 | | 30,000 | | |
| Co-60 | 300 | | 10,000 | | |
| Zn-65 | 300 | | 20,000 | | |
| Zr-Nb-95 | 400 | | | | |
| I-131 | ≤ 20(4) | 0.9 | | 3 | 100 |
| Cs-134 | 30 | 10 | 1,000 | 60 | 1,000 |
| Cs-137 | 50 | 20 | 2,000 | 70 | 2,000 |
| Ba-La-140 | 200 | | | 300 | |

(1) For drinking water samples. This is 40 CFR Part 141 value. If no drinking water pathway exists, a value of 30,000 pCi/ℓ may be used.

TABLE 4.12-1

DETECTION CAPABILITIES FOR ENVIRONMENTAL SAMPLE ANALYSIS(1) (2)

LOWER LIMIT OF DETECTION (LLD)(3)

| ANALYSIS | WATER (pCi/l) | AIRBORNE PARTICULATE OR GASES (pCi/m³) | FISH (pCi/kg, wet) | MILK (pCi/l) | FOOD PRODUCTS (pCi/kg, wet) | SEDIMENT (pCi/kg, dry) |
|---|---|---|---|---|---|---|
| Gross Beta | 4 | ~~0.01~~ | | | | |
| H-3 | 2000* | | | | | |
| Mn-54 | 15 | | 130 | | | |
| Fe-59 | 30 | | 260 | | | |
| Co-58,60 | 15 | | 130 | | | |
| Zn-65 | 30 | | 260 | | | |
| Zr-Nb-95 | 15 | | | | | |
| I-131 | ~~1(4)~~ 15(5) | 0.07 | | 1 | 60 | |
| Cs-134 | 15 | 0.05 | 130 | 15 | 60 | 150 |
| Cs-137 | 18 | 0.06 | 150 | 18 | 80 | 180 |
| Ba-La-140 | 15 | | | 15 | | |

*If no drinking water pathway exists, a value of 3000 pCi/l may be used.

TABLE 4.12-1 (Continued)

TABLE NOTATIONS (Continued)

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement. Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.6.

(4) ~~LLD for drinking water samples. If no drinking water pathway exists, the LLD of gamma isotopic analysis may be used.~~
Reporting level for gamma isotopic analysis. If the calculated dose for drinking water exceeds 1 mrem/yr, low-level I-131 analysis shall be performed and a reporting limit of 2 pCi/l used.

(5) LLD for gamma isotopic analysis. If low-level I-131 analysis is performed, an LLD of 1 pCi/l shall be used.

Attachment 7

Proposed Amendment to Catawba Unit 1 Proof and Review
Technical Specifications 6.5.1.4 and 6.8.1 Concerning the
Administrative Control for the
Environmental Radiological Monitoring Program

The Proof and Review Technical Specifications require the Station Manager or a member of his staff to review and approve changes to procedures involving radiological environmental monitoring. Since the Duke Power Environmental Radiological Laboratory provides this service to all Duke nuclear stations, such a requirement would lead to unnecessary confusion because each Station Manager would be required to review the Environmental Radiological Laboratory's procedures.

The following proposed changes to the Catawba Technical Specifications would place the responsibility for quality assurance of the environmental radiological monitoring program under the corporate System Health Physicist. First, paragraph 6.5.1.4 should read,

> "Individuals responsible for reviews performed in accordance with Specification 6.5.1.1, 6.5.1.2, and 6.5.1.3 shall be members of the station supervisory staff, previously designated by the Station Manager to perform such reviews. Review of environmental radiological analysis procedures shall be performed by the System Health Physicist or his staff. Each such review shall include a determination of whether or not additional, cross-disciplinary, review is necessary. If deemed necessary, such review shall be performed by the appropriate designated review personnel."

To make the change complete the words "and environmental" will be omitted from paragraph 6.8.1, item g which will now read:

> "6.8.1 Written procedures shall be established, implemented, and maintained covering the activities referenced below:
>
> a. . . .
>
> g. Quality Assurance Program for effluent monitoring."

With the above changes, all quality assurance responsibilities for environmental radiological monitoring are given to the corporate System Health Physicist or his designee.

## 6.5 REVIEW AND AUDIT

### 6.5.1 TECHNICAL REVIEW AND CONTROL ACTIVITIES

6.5.1.1 Each procedure and program required by Specification 6.8 and other procedures which affect nuclear safety, and changes thereto, shall be prepared by a qualified individual/organization. Each such procedure, and changes thereto, shall be reviewed by an individual/group other than the individual/group which prepared the procedure, or changes thereto, but who may be from the same organization as the individual/group which prepared the procedure, or changes thereto.

6.5.1.2 Proposed changes to the Appendix A Technical Specifications shall be prepared by a qualified individual/organization. The preparation of each proposed Technical Specification change shall be reviewed by an individual/group other than the individual/group which prepared the proposed change, but who may be from the same organization as the individual/group which prepared the proposed change. Proposed changes to the Technical Specifications shall be approved by the Station Manager.

6.5.1.3 Proposed modifications to unit nuclear safety-related structures, systems, and components shall be designed by a qualified individual/organization. Each such modification shall be reviewed by an individual/group other than the individual/group which designed the modification, but who may be from the same organization as the individual/group which designed the modification. Proposed modifications to nuclear safety-related structures, systems, and components shall be approved prior to implementation by the Station Manager; or by the Operating Superintendent, the Technical Services Superintendent, or the Maintenance Superintendent, as previously designated by the Station Manager.

6.5.1.4 Individuals responsible for reviews performed in accordance with Specifications 6.5.1.1, 6.5.1.2, and 6.5.1.3 shall be members of the station supervisory staff, previously designated by the Station Manager to perform such reviews. Each such review shall include a determination of whether or not additional, cross-disciplinary, review is necessary. If deemed necessary, such review shall be performed by the appropriate designated station review personnel.

6.5.1.5 Proposed tests and experiments which affect station nuclear safety and are not addressed in the FSAR or Technical Specifications shall be reviewed by the Station Manager; or by the Operating Superintendent, the Technical Services Superintendent or the Maintenance Superintendent, as previously designated by the Station Manager.

Review of environmental radiological analysis procedures shall be performed by the Corporate System Health Physicist or his designee.

6.8 PROCEDURES AND PROGRAMS

6.8.1 Written procedures shall be established, implemented, and maintained covering the activities referenced below:

a. The applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978;

b. The applicable procedures required to implement the requirements of NUREG-0737 and Supplement No. 1 to NUREG-0737 as stated in Generic Letter No. 82-33;

c. Security Plan implementation;

d. Emergency Plan implementation;

e. PROCESS CONTROL PROGRAM implementation;

f. OFFSITE DOSE CALCULATION MANUAL implementation; and

g. Quality Assurance Program for effluent ~~and environmental~~ monitoring.

6.8.2 Each procedure of Specification 6.8.1, and changes thereto, shall be reviewed and approved by the Station Manager; or by: (1) Operating Superintendent, (2) Technical Services Superintendent, or (3) Maintenace Superintendent, as previously designated by the Station Manager; prior to implementation and shall be reviewed periodically as set forth in administrative procedures.

6.8.3 Temporary changes to procedures of Specification 6.8.1 may be made provided:

a. The intent of the original procedure is not altered;

b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Operator license on the unit affected; and

c. The change is documented, reviewed, and approved by the Station Manager; or by: (1) Operating Superintendent, (2) Technical Services Superintendent, or (3) Maintenance Superintendent, as previously designated by the Station Manager, within 14 days of implementation.

6.8.4 The following programs shall be established, implemented, and maintained:

a. Primary Coolant Sources Outside Containment

A program to reduce leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. The systems include the containment spray, Safety Injection, chemical and volume control, and nuclear sampling. The program shall include the following: