



J. Phillip Bayne
Executive Vice President
Nuclear Generation

June 29, 1984
IPN-84-20

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Regulatory Guide 1.97, Revision 2
Implementation Program

Dear Sir:

Pursuant to the Emergency Planning Confirmatory Order dated February 21, 1984, this letter serves to transmit the Indian Point 3 program for the implementation of Regulatory Guide 1.97, Revision 2. Please note that the Authority intends to prescribe the less stringent requirements of Regulatory Guide 1.97, Revision 3, as appropriate.

Initially, the Authority performed a survey in order to establish the degree of compliance with the Guide. In order to facilitate organizing the survey and the reporting of the survey findings, each variable listed in Table 2 of the Guide was assigned an index number. Enclosure A to this letter provides a User's Manual, which details the method of assigning an index number to each variable. The User's Manual should be utilized in interpreting the survey findings.

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The degree of compliance as defined by the survey is detailed in Enclosure B to this letter. The indicated degree of compliance for the instrumentation required by NUREG-0737 is indicated as it will exist at the time of the completion of installation. Deviations from the Guide are identified for each variable. For each identified deviation reference is made to a note which provides a detailed justification for that deviation or establishes the need for further action to eliminate that deviation. The referenced notes are presented in Enclosure C to this letter. Enclosure D to this letter provides an action plan and schedule for analysis and/or design modifications necessary to implement the Guide.

Should you or your staff have any questions regarding this matter, please contact Mr. P. Kokolakis of my staff.

Very truly yours,

G.M. Wilberding

for
J. P. Bayne
Executive Vice President
Nuclear Generation
JPB/KM:fh

cc: Resident Inspector's Office
Indian Point Unit 3
U.S. Nuclear Regulatory Commission
P. O. Box 66
Buchanan, New York 10511



New York Power
Authority

TO: NRC Document Control Desk

CONTROL COPY NO.:

FROM: TERRY RYAN

DATE: 3/8/84

SUBJECT: INDIAN POINT NO. 3 NUCLEAR POWER PLANT EMERGENCY PLAN AND PROCEDURES DOCUMENT

PROCEDURES

The enclosed sheets are the revised pages to your Emergency Plan/Procedures Document (assigned controlled copy). Please discard the old sheets, insert the attached sheets, initial and date this routing sheet and return it to Documents Control; Attention: Terry Ryan

In addition, please review the section revision numbers shown on the new index attached to ensure that you have the most recent of each section incorporated into your control copy.

| <u>Section</u> | <u>Pages</u> | <u>Date</u> | <u>Initials</u> |
|----------------|----------------------------------|-------------|-----------------|
| Index | Rev. 24 pgs. 1 and 2 | | |
| IP-1011 | Rev. 6 pgs. 1-3 and attachments | | |
| IP-1021 | Rev. 9 pgs. 1-10 and attachments | | |
| IP-1063 | Rev. 3 pgs. 1-2 and attachments | | |
| IP-1070 | Rev. 10 pgs. 1-3 and attachments | | |
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REGULATORY GUIDE 1.97, REVISION 2 IMPLEMENTATION PROGRAM.

Docket # *50-286*
Control # *8407020346*
Date *6/29/84* of Document:
REGULATORY DOCKET FILE

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RECORDS FACILITY BRANCH

Enclosure A to IPN 84-20

New York Power Authority
Indian Point 3 Nuclear Power Plant
Docket No. 50-286

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|-----------------------|---------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 403C | No | 10 to 90% Volume | 84 to 92% Volume | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 403D | No | 10 to 90% Volume | 84 to 92% Volume | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 403E | No | 0 to 750 psig | 0 to 700 psig | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 403F | No | 0 to 750 psig | 0 to 700 psig | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 403G | No | 0 to 750 psig | 0 to 700 psig | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 403H | No | 0 to 750 psig | 0 to 700 psig | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 404A | Yes | Closed or Open | Open or Not Open | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 404B | Yes | Closed or Open | Open or Not Open | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 404C | Yes | Closed or Open | Open or Not Open | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 404D | Yes | Closed or Open | Open or Not Open | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 405A | Yes | 0 to 75 gpm | 0 to 125 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 406A | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 406B | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 406C | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 406D | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 406E | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 406F | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 403C | D2 | Safety Injection: Accumulator Tank 33 Level | L934C |
| 403D | D2 | Safety Injection: Accumulator Tank 34 Level | L934D |
| 403E | D2 | Safety injection: Accumulator Tank 31 Pressure | P937A |
| 403F | D2 | Safety Injection: Accumulator Tank 32 Pressure | P937B |
| 403G | D2 | Safety Injection: Accumulator Tank 33 Pressure | P937C |
| 403H | D2 | Safety Injection: Accumulator Tank 34 Pressure | P937D |
| 404A | D2 | Safety Injection: Accumulator Tank 31 Isolation Valve 894A Position | N/A |
| 404B | D2 | Safety Injection: Accumulator Tank 32 Isolation Valve 894B Position | N/A |
| 404C | D2 | Safety Injection: Accumulator Tank 33 Isolation Valve 894C Position | N/A |
| 404D | D2 | Safety Injection: Accumulator Tank 34 Isolation Valve 894D Position | N/A |
| 405A | D2 | Safety Injection: Boric Acid Charging Flow | F128 |
| 406A | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 1 | F926 |
| 406B | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 1 | F924A |
| 406C | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 2 | F981 |
| 406D | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 2 | F925 |
| 406E | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 3 | F980 |
| 406F | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 3 | F926A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> <u>R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|---------------------------|------------|-----------------|
| 311C | Yes/Yes | | Yes/Yes | | |
| 312A | Yes/Yes | | Yes/Yes | | Note M |
| 313A | No/- | | Yes/Yes | | Note L |
| 313B | No/- | | Yes/- | | Note L |
| 313C | No/- | | Yes/- | | Note L |
| 313D | No/- | | Yes/- | | Note L |
| 313E | No/- | | Yes/- | | Note L |
| 313F | No/- | | Yes/- | | Note L |
| 313G | No/- | | Yes/Yes | | Note L |
| 313H | No/- | | Yes/- | | Note L |
| 313J | No/- | | Yes/- | | Note L |
| 401A | No/- | | No/- | | Note B |
| 401B | No/- | | No/- | | Note B |
| 402A | No/- | | No/- | | Note A |
| 402B | No/- | | No/- | | Note A |
| 403A | No/- | | No/- | | Note Z |
| 403B | No/- | | No/- | | Note Z |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|-----------------------|-----------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 311C | Yes | -5 to 188 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 312A | No | 10E-6 to 10E-2 uCi/cc | 10E-6 to 10E-3 uCi/cc | Yes/No | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 313A | No | 10E-1 to 10E4 R/hr | 10E-2 to 10E3 R/hr | Yes/No | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 313B | - | 10E-1 to 10E4 R/hr | -- | Yes/- | No/- | No/- | No/- | Yes/_ | Yes/- |
| 313C | - | 10E-1 to 10E4 R/hr | -- | Yes/- | No/- | No/- | No/- | Yes/- | Yes/- |
| 313D | - | 10E-1 to 10E4 R/hr | -- | Yes/- | No/- | No/- | No/- | Yes/- | Yes/- |
| 313E | - | 10E-1 to 10E4 R/hr | -- | Yes/- | No/- | No/- | No/- | Yes/- | Yes/- |
| 313F | - | 10E-1 to 10E4 R/hr | -- | Yes/- | No/- | No/- | No/- | Yes/- | Yes/- |
| 313G | No | 10E-1 to 10E4 R/hr | 10E-5 to 10E1 R/hr | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 313H | - | 10E-1 to 10E4 R/hr | | Yes/- | No/- | No/- | No/- | Yes/- | Yes/- |
| 313J | - | 10E-1 to 10E4 R/hr | -- | Yes/- | No/- | No/- | No/- | Yes/- | Yes/- |
| 401A | Yes | 0 to 3300 gpm | 0 to 3500 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 401B | Yes | 0 to 3300 gpm | 0 to 3500 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 402A | Yes | 32 to 350°F | 0 to 400°F | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 402B | Yes | 32 to 350°F | 0 to 400°F | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 403A | No | 10 to 90% Volume | 84 to 92% Volume | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 403B | No | 10 to 90% Volume | 84 to 92% Volume | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|--|------------------|
| 311C | C1 | Containment: Pressure, Channel II | P1422 |
| 312A | C2 | Radiation: Effluent, Noble Gas from Containment | R12 |
| 313A | C2 | Radiation: Area, Penetration Area: Aux Feedwater Pump Bldg in Area of Main Steam & FW Penetrations | R10 |
| 313B | C2 | Radiation: Area, Penetration Area: Electrical Tunnel in Area of Electrical Penetrations | None |
| 313C | C2 | Radiation: Area, Penetration Area: 83' Personnel Airlock Area | None |
| 313D | C2 | Radiation: Area, Penetration Area: Containment Purge Valve Area between Containment & Fan House | None |
| 313E | C2 | Radiation: Area, Penetration Area: 95' Personnel & Equipment Hatch Area | None |
| 313F | C2 | Radiation: Area, Penetration Area: Fuel Transfer Area Between Containment & Fuel Sto Bldgs | None |
| 313G | C2 | Radiation: Area, Penetration Area: Fuel Storage Building in area of Fuel Transfer Tube | R5 |
| 313H | C2 | Radiation: Area, Penetration Area: Piping Tunnel in area of Containment Sump Drain Pent. 34' FL EL | None |
| 313J | C2 | Radiation: Area, Penetration Area: Piping Tunnel in area of Piping Penetrations. 54' FL EL | None |
| 401A | D2 | Residual Heat Removal: Flow Rate, Header 31 | F638 |
| 401B | D2 | Residual Heat Removal: Flow Rate, Header 32 | F640 |
| 402A | D2 | Residual Heat Removal: Temperature, Heat Exchanger 31 Outlet | T639 |
| 402B | D2 | Residual Heat Removal: Temperature, Heat Exchanger 32 Outlet | T641 |
| 403A | D2 | Safety Injection: Accumulator Tank 31 Level | L934A |
| 403B | D2 | Safety Injection: Accumulator Tank 32 Level | L934B |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND R/M</u> | <u>DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------|--------------------|---------------------|--|-----------------|
| 306F | Yes/Yes | Yes/Yes | Yes/Yes | Note H | |
| 306G | Yes/Yes | Yes/No | Yes/No | Note H | |
| 306H | Yes/Yes | Yes/No | Yes/No | Note H | |
| 306I | Yes/Yes | Yes/Yes | Yes/Yes | Note H | |
| 306J | Yes/Yes | Yes/Yes | Yes/Yes | Note H | |
| 307A | No/- | Yes/Yes | | | |
| 307B | No/- | Yes/Yes | | | |
| 308A | No/- | Yes/Yes | | Note M | |
| 309A | Yes/Yes | Yes/No | | E.Q.: Note B, Range: Note D, Redundancy: Note E, Recording: Note F | |
| 309B | Yes/Yes | Yes/Yes | | E.Q.: Note B, Redundancy: Note E | |
| 309C | Yes/Yes | Yes/No | | E.Q. - Seismic: Note H, Redundancy: Note E, Recording: Note F | |
| 310A | Yes/No | Yes/Yes | | Manual sampling, analysis and data recording. Note W | |
| 310B | Yes/Yes | Yes/Yes | | Note I | |
| 310C | Yes/Yes | Yes/Yes | | Note I | |
| 311A | Yes/Yes | Yes/No | | Recording: Note F, Range: Note X | |
| 311B | Yes/Yes | Yes/Yes | | | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>CAT</u> | <u>TYPE</u> <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|------------|---|------------------|
| 306F | C1 | Containment: Level, Wide Range Channel II | L1254 |
| 306G | C1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level | L938 |
| 306H | C1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level | L939 |
| 306I | C1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level-Channel I | L1251 |
| 306J | C1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level-Channel II | L1252 |
| 307A | C3 | Radiation: Area, Containment | R25 |
| 307B | C3 | Radiation: Area, Containment | R26 |
| 308A | C3 | Radiation: Effluent, Noble Gas from condenser air removal system exhaust | R15 |
| 309A | C1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 1 | P402 |
| 309B | C1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P403 |
| 309C | C1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P413 |
| 310A | C1 | Sampling: Containment Air, Hydrogen Concentration | N/A |
| 310B | C1 | Sampling: Containment Air, Hydrogen Concentration, Channel I | HCMC-A |
| 310C | C1 | Sampling: Containment Air, Hydrogen Concentration, Channel II | HCMC-B |
| 311A | C1 | Containment: Pressure | P949A |
| 311B | C1 | Containment: Pressure, Channel I | P1421 |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|-------------|------------|--|
| 215A | Yes/Yes | Yes/No | | | Recording: Note F |
| 215B | Yes/Yes | Yes/Yes | | | |
| 215C | Yes/Yes | Yes/Yes | | | |
| 301A | Yes/No | Yes/No | | | Note H |
| 302A | Yes/Yes | Yes/Yes | | | Gross failed fuel detector system. Note H. (Grab Sample) |
| 303A | No/- | No/- | | | Note W |
| 304A | Yes/Yes | Yes/No | | | E.Q.: Note B, Range: Note D, Redundancy: Note E, Recording: Note F |
| 304B | Yes/Yes | Yes/Yes | | | E.Q.: Note B, Redundancy: Note E |
| 304C | Yes/Yes | Yes/No | | | E.Q. - Seismic: Note H, Redundancy: Note E, Recording: Note F |
| 305A | Yes/Yes | Yes/No | | | E.Q.: Note A, Recording: Note F. |
| 305B | Yes/Yes | Yes/Yes | | | |
| 305C | Yes/Yes | Yes/Yes | | | |
| 306A | No/- | No/- | | | Note H |
| 306B | No/- | No/- | | | Note H |
| 306C | No/- | No/- | | | Note H |
| 306D | No/- | No/- | | | Note H |
| 306E | Yes/Yes | Yes/Yes | | | Note H |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|----------------------------|------------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 215A | Yes | -5 to 47 psig | -5 to 75 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 215B | Yes | -5 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 215C | Yes | -5 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 301A | Yes | 200 to 1650°F | 100 to 2500°F | Yes/No | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes |
| 302A | No | 0.5 to 100 times tech spec | Up to 0.1 Tech Spec | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 303A | Yes | 10uCi/gm to 10Ci/gm | 10 uCi/gm to 10Ci/gm | No/- | No/- | No/- | No/- | No/- | No/- |
| 304A | No | 0 to 3000 psig | 0 to 2500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 304B | Yes | 0 to 3000 psig | 0 to 3000 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 304C | No | 0 to 3000 psig | 0 to 1500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 305A | Yes | -5 to 47 psig | -5 to 75 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 305B | Yes | -5 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 305C | Yes | -5 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 306A | No | EL 38' 3" to EL 46' 0" | EL 38' 8" to EL 51' 2" | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 306B | No | EL 38' 3" to EL 46' 0" | EL 39' 2" to EL 51' 8" | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 306C | Yes | EL 38' 3" to EL 46' 0" | EL 38' 3" to 48' 3" | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 306D | Yes | EL 38' 3" to EL 46' 0" | EL 38' 3" to 48' 3" | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 306E | No | EL 19' 5" to EL 53' | EL 46' to EL 52' | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 215A | B1 | Containment: Pressure | P949A |
| 215B | B1 | Containment: Pressure, Channel I | P1421 |
| 215C | B1 | Containment: Pressure, Channel II | P1422 |
| 301A | C1 | Primary Coolant: Temperature, Core Exit | N/A |
| 302A | C1 | Radiation: Primary Coolant, Radioactivity Concentration | N/A |
| 303A | C3 | Radiation: Primary Coolant, Gamma Spectrum | N/A |
| 304A | C1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 1 | P402 |
| 304B | C1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P403 |
| 304C | C1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P413 |
| 305A | C1 | Containment: Pressure | P949A |
| 305B | C1 | Containment: Pressure, Channel I | P1421 |
| 305C | C1 | Containment: Pressure, Channel II | P1422 |
| 306A | C2 | Containment: Level, Containment Sump Water | L940 |
| 306B | C2 | Containment: Level, Containment Sump Water | L941 |
| 306C | C2 | Containment: Level, Containment Sump Water Channel I | L1255 |
| 306D | C2 | Containment: Level, Containment Sump Water Channel II | L1256 |
| 306E | C1 | Containment: Level, Wide Range Channel I | L1253 |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> <u>R/M</u> | <u>REC</u> <u>R/M</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|---------------------------|--|-----------------|
| 211A | Yes/Yes | Yes/No | E. Q.: | Note B, Range: Note D, Redundancy: Note E, Recording: Note F | |
| 211B | Yes/Yes | Yes/Yes | E. Q.: | Note B, Redundancy: Note E | |
| 211C | Yes/Yes | Yes/No | E.Q. - Seismic: | Note H, Redundancy: Note E, Recording: Note F | |
| 212A | No/- | No/- | Note H | | |
| 212B | No/- | No/- | Note H | | |
| 212C | No/- | No/- | Note H | | |
| 212D | No/- | No/- | Note H | | |
| 212E | Yes/Yes | Yes/Yes | Note H | | |
| 212F | Yes/Yes | Yes/Yes | Note H | | |
| 212G | Yes/Yes | Yes/No | Note H | | |
| 212H | Yes/Yes | Yes/No | Note H | | |
| 212I | Yes/Yes | Yes/Yes | Note H | | |
| 212J | Yes/Yes | Yes/Yes | Note H | | |
| 213A | Yes/Yes | Yes/No | Recording: | Note F | |
| 213B | Yes/Yes | Yes/Yes | | | |
| 213C | Yes/Yes | Yes/Yes | | | |
| 214A | Yes/No | Yes/No | Note J, Recording: | Note F | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|------------------------|-------------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 211A | No | 0 to 3000 psig | 0 to 2500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 211B | Yes | 0 to 3000 psig | 0 to 3000 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 211C | No | 0 to 3000 psig | 0 to 1500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 212A | No | EL 38' 3" to EL 46' 0" | EL 38' 8" to EL 51' 2" | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 212B | No | EL 38' 3" to EL 46' 0" | EL 39' 2" to EL 51' 8" | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 212C | Yes | EL 38' 3" to EL 46' 0" | EL 38' 3" to 48' 3" | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 212D | Yes | EL 38' 3" to EL 46' 0" | EL 38' 3" to 48' 3" | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 212E | No | EL 19' 5" to EL 53' | EL 46' to EL 52' | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 212F | No | EL 19' 5" to EL 53' | EL 46' to EL 52' | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 212G | No | EL 19' 5" to EL 53' | EL 34' 11" to EL 51' 2" | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 212H | No | EL 19' 5" to EL 53" | EL 38' 2" to EL 47' 11" | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 212I | No | EL 19' 5" to EL 53' | EL 34' to EL 48' | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 212J | No | EL 19' 5" to EL 53' | EL 34' to EL 48' | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 213A | Yes | 0 to 47 psig | -5 to 75 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 213B | Yes | 0 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 213C | Yes | 0 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 214A | No | Closed--Not Closed | | Yes/Yes | Yes/Yes | Yes/No | Yes/No | Yes/No | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 211A | B1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 1 | P402 |
| 211B | B1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P403 |
| 211C | B1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P413 |
| 212A | B2 | Containment: Level, Containment Sump Water | L940 |
| 212B | B2 | Containment: Level, Containment Sump Water | L941 |
| 212C | B2 | Containment: Level, Containment Sump Water Channel I | L1255 |
| 212D | B2 | Containment: Level, Containment Sump Water Channel II | L1256 |
| 212E | B1 | Containment: Level, Wide Range Channel I | L1253 |
| 212F | B1 | Containment: Level, Wide Range Channel II | L1254 |
| 212G | B1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level | L938 |
| 212H | B1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level | L939 |
| 212I | B1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level-Channel I | L1251 |
| 212J | B1 | Containment: Level, Wide Range Redundant Channel: Recirculation Sump Level-Channel II | L1252 |
| 213A | B1 | Containment: Pressure | P949A |
| 213B | B1 | Containment: Pressure, Channel I | P1421 |
| 213C | B1 | Containment: Pressure, Channel II | P1422 |
| 214A | B1 | Containment: Isolation Valve Position | N/A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|-----------------|---------------------|---------------------|--|
| 204C | No/- | No/- | | |
| 204D | No/- | No/- | | |
| 205A | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 205B | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 205C | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 205D | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 206A | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 206B | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 206C | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 206D | Yes/Yes | Yes/Yes | E. Q.: | Note B. Redundancy: Note C. Range: Note P |
| 207A | Yes/Yes | Yes/No | E. Q.: | Note B, Range: Note D, Redundancy: Note E, Recording: Note F |
| 207B | Yes/Yes | Yes/Yes | E. Q.: | Note B, Redundancy: Note E |
| 207C | Yes/Yes | Yes/No | Redundancy: | Note E, E.Q. - Seismic: Note H, Recording: Note F |
| 208A | No/- | No/- | 4 per quadrant min, | IP3 has more than 4 per quadrant. Range: Note U |
| 209A | Yes/Yes | No/- | Note G | |
| 210A | No/- | No/- | Note H | |
| 210B | No/- | No/- | Note H | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|----------------------------|-------------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 204C | Yes | 50 to 400°F | 0 to 700°F | No/- | No/- | No/- | No/- | No/- | No/- |
| 204D | Yes | 50 to 400°F | 0 to 700°F | No/- | No/- | No/- | No/- | No/- | No/- |
| 205A | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 205B | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 205C | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 205D | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 206A | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 206B | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 206C | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 206D | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 207A | No | 0 to 3000 psig | 0 to 2500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 207B | Yes | 0 to 3000 psig | 0 to 3000 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 207C | No | 0 to 3000 psig | 0 to 1500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 208A | Yes | 200 to 1650°F | 100 to 2500°F | No/- | No/- | No/- | No/- | No/- | No/- |
| 209A | Yes | Bottom Core to top vessel | Bottom to top of vessel | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 210A | No | Saturation -200°F to +35°F | 1500 spi to 0 psi | Yes/No | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 210B | No | Saturation -200°F to +35°F | 1500 psi to 0 psi | Yes/No | No/- | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 204C | B3 | Primary Coolant: Temperature, Cold Leg, Loop No. 3 | T433B |
| 204D | B3 | Primary Coolant: Temperature, Cold Leg, Loop No. 4 | T443B |
| 205A | B1 | Primary Coolant: Temperature, Hot Leg, Loop No. 1 | T413A |
| 205B | B1 | Primary Coolant: Temperature, Hot Leg, Loop No. 2 | T423A |
| 205C | B1 | Primary Coolant: Temperature, Hot Leg, Loop No. 3 | T433A |
| 205D | B1 | Primary Coolant: Temperature, Hot Leg, Loop No. 4 | T443A |
| 206A | B1 | Primary Coolant: Temperature, Cold Leg, Loop No. 1 | T413B |
| 206B | B1 | Primary Coolant: Temperature, Cold Leg, Loop No. 2 | T423B |
| 206C | B1 | Primary Coolant: Temperature, Cold Leg, Loop No. 3 | T433B |
| 206D | B1 | Primary Coolant: Temperature, Cold Leg, Loop No. 4 | T443B |
| 207A | B1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 1 | P402 |
| 207B | B1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P403 |
| 207C | B1 | Primary Coolant: Pressure, Reactor Coolant System | P413 |
| 208A | B3 | Primary Coolant: Temperature, Core Exit | N/A |
| 209A | B1 | Primary Coolant: Level, Reactor | Later |
| 210A | B2 | Primary Coolant: Degrees of Subcooling | 3F447 |
| 210B | B2 | Primary Coolant: Degrees of Subcooling | Later |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND R/M</u> | <u>DATA R/M</u> | <u>REC R/M</u> | <u>COMMENTS</u> |
|--------------|---------------------|--------------------|---------------------|--------------------|--|
| 110D | Yes/Yes | Yes/No | | | Recording: Note F, Redundancy: Note K |
| 111A | Yes/Yes | Yes/Yes | | | Note R |
| 111B | Yes/Yes | Yes/Yes | | | Note R |
| 112A | Yes/Yes | Yes/Yes | | | Redundancy: Note S, Seismic - Range: Note H |
| 112B | Yes/Yes | Yes/Yes | | | Redundancy: Note S, Note I |
| 113A | Yes/No | Yes/No | | | Note H |
| 114A | Yes/Yes | Yes/No | | | Recording: Note F, Redundancy: Note H |
| 114B | Yes/Yes | Yes/No | | | Recording: Note F, Redundancy: Note H |
| 115A | Yes/No | Yes/Yes | | | Note H |
| 115B | Yes/Yes | Yes/Yes | | | Note H |
| 201A | Yes/Yes | Yes/Yes | | | E. Q.: Note A. Redundancy: Note T |
| 201B | Yes/Yes | Yes/Yes | | | E. Q.: Note A. Redundancy: Note T |
| 202A | No/- | No/- | | | Accuracy of rod position is $\pm 5\%$ (7.2") |
| 203A | No/- | No/- | | | Grab sample technique |
| 204A | No/- | No/- | | | |
| 204B | No/- | No/- | | | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 110D | A1 | Auxiliary Feedwater Flow to Steam Generator 34 | F1203R |
| 111A | A1 | Containment Area High Range Radiation | R25 |
| 111B | A1 | Containment Area High Range Radiation | R26 |
| 112A | A1 | Secondary System Radiation: Air Ejector System Exhaust | R15 |
| 112B | A1 | Secondary System Radiation: Main Steam | R62 |
| 113A | A1 | Primary Coolant: Core Exit Temperature | N/A |
| 114A | A1 | Condensate Storage Tank Level | L1128 |
| 114B | A1 | Condensate Storage Tank Level | L1128A |
| 115A | A1 | RCS Subcooling | 3F447 |
| 115B | A1 | RCS Subcooling | Later |
| 201A | B1 | Radiation: Neutron Flux, Excore, Intermediate Range, Channel I | N35 |
| 201B | B1 | Radiation: Neutron Flux, Excore, Intermediate Range, Channel II | N36 |
| 202A | B3 | Control Rods: Position | N/A |
| 203A | B3 | Sampling: Primary Coolant Soluble Boron Concentration | N/A |
| 204A | B3 | Primary Coolant: Temperature, Cold Leg, Loop No. 1 | T413B |
| 204B | B3 | Primary Coolant: Temperature, Cold Leg, Loop No. 2 | T423B |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND R/M</u> | <u>DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------|--------------------|---------------------|------------|---------------------------------------|
| 107B | Yes/Yes | | Yes/No | | Recording: Note F |
| 107C | Yes/Yes | | Yes/No | | Recording: Note F |
| 107D | Yes/Yes | | Yes/No | | Recording: Note F |
| 107E | Yes/Yes | | Yes/No | | Recording: Note F |
| 107F | Yes/Yes | | Yes/No | | Recording: Note F |
| 107G | Yes/Yes | | Yes/No | | Recording: Note F |
| 107H | Yes/Yes | | Yes/No | | Recording: Note F |
| 107I | Yes/Yes | | Yes/No | | Recording: Note F |
| 107J | Yes/Yes | | Yes/No | | Recording: Note F |
| 107K | Yes/Yes | | Yes/No | | Recording: Note F |
| 107L | Yes/Yes | | Yes/No | | Recording: Note F |
| 108A | Yes/Yes | | Yes/No | | Recording: Note F, Redundancy: Note H |
| 109A | Yes/Yes | | Yes/Yes | | Note H |
| 109B | Yes/Yes | | Yes/Yes | | Note H |
| 110A | Yes/Yes | | Yes/No | | Recording: Note F, Redundancy: Note K |
| 110B | Yes/Yes | | Yes/No | | Recording: Note F, Redundancy: Note K |
| 110C | Yes/Yes | | Yes/No | | Recording: Note F, Redundancy: Note K |

INDEX NUMBER FROM RG1.97 TABLE 2 (ATTACHED) WITH SINGLE-LETTER SUFFIX. INDEX NUMBER IS REPEATED ON THE SAME LINE OF EACH PAGE

RG1.97 TYPE (A THRU E) AND RG1.97 CATEGORY (1, 2 OR 3)

INDEX TYPE
CAT

| INDEX | TYPE CAT | VARIABLE |
|-------|----------|---|
| 215C | B1 | Containment: Pressure |
| 215D | B1 | Containment: Pressure |
| 215E | B1 | Containment: Pressure |
| 215F | B1 | Containment: Pressure |
| 215G | B1 | Containment: Pressure Channel I |
| 215H | B1 | Containment: Pressure Channel II |
| 301A | C1 | Primary Coolant: Temperature, Core Exit |
| 302A | C1 | Radiation: Radioactivity Concentration in Circulating Primary Coolant |
| 303A | C3 | Radiation: Gamma Spectrum of Primary Coolant |
| 304A | C1 | Primary Coolant: Pressure, Recator Coolant System, Loop 1 |
| 304B | C1 | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 |
| 305A | C1 | Containment: Pressure |
| 305B | C1 | Containment: Pressure |
| 305C | C1 | Containment: Pressure |
| 305D | C1 | Containment: Pressure |
| 305E | C1 | Containment: Pressure |
| 305F | C1 | Containment: Pressure |

REG GUIDE 1.97
STATUS OF COMPLIANCE

VARIABLE GROUP FOLLOWED BY A COLON THEN DESCRIPTION OF THE VARIABLE IN QUESTION

INSTRUMENT LOOP IS ACTUALLY THREE COLUMNS IN ONE TO ALLOW SORTING BY THE NUMERICAL CORE. THE COMPLETE INSTRUMENT LOOP NUMBER IS IN COMMON USE TO DESIGNATE A UNIQUE INSTRUMENT LOOP

DATE OF PRINTING

SHEET NO OF SET
SHEETS IN SET
June 8, 1983
Sheet 1 of 4

INST LOOP

P948C

P949A

P949B

P949C

P1421

P1422

N/A

None

N/A

P402

P403

P948A

P948B

P948C

P949A

P949B

P949C

NUMBER OF CHARACTERS ALLOWED IN EACH COLUMN

4 2 100

ALPHA-NUMERIC NUMERIC ALPHA-NUMERIC
5 4 2
(11 TOTAL)

SEE RG 1.97 PAGES 4 AND 5 AND APPENDIX E:

IS RANGE OK FOR THIS INSTRUMENT?
(YES, NO) OCCASIONALLY
A NO ANSWER WILL BE GIVEN AS A FLAG TO INDICATE A PROBLEM. THE PROBLEM WILL BE EXPLAINED ELSEWHERE.

ENVIRONMENTAL QUALIFICATION
SEISMIC QUALIFICATION
REUNDANCY
STANDBY POWER
AVAILABLE PRIOR TO AN ACCIDENT
QUALITY ASSURANCE
June 8, 1983
Sheet 2 of 4

REG GUIDE 1.97
STATUS OF COMPLIANCE

| RNG INDEX OK | RANGE REQUIRED | RANGE ACTUAL | E.Q. R/M | SEISMIC R/M | RDNCY R/M | STANDBY R/M | AVLBLE R/M | Q.A. R/M |
|--------------|----------------------------|----------------------|----------|-------------|-----------|-------------|------------|----------|
| 215C No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 215D No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 215E No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 215F No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 215G Yes | -5 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 215H Yes | -5 to 47 psig | -5 to 200 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 301A Yes | 200 to 1650°F | 100 to 2500°F | Yes/No | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes |
| 302A No | 0.5 to 100 times tech spec | -- | Yes/- | Yes/- | Yes/- | Yes/- | Yes/- | Yes/- |
| 303A Yes | 10uCi/gm to 10Ci/gm | 10 uCi/gm to 10Ci/gm | No/- | No/- | No/- | No/- | No/- | No/- |
| 304A No | 0 to 3000 psig | 0 to 2500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 304B Yes | 0 to 3000 psig | 0 to 3000 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 305A No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 305B No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 305C No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 305D No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 305E No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 305F No | -5 to 47 psig | -5 to 75 psig | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |

BY RG 1.97

AT IP3 BY THIS INSTRUMENT

(4) (3) (28)

(27)

(7) (7) (7) (7) (7) (7)

R/M MEANS REQUIRED?/MET? FOR THIS INSTRUMENT. A NO ANSWER IS ENTERED UNDER MET TO FLAG A PROBLEM. THE PROBLEM WILL BE EXPLAINED ELSEWHERE.

CONTINUOUS INDICATION
- DATA RECORDING

INFORMATION WHICH QUALIFIES
INFORMATION GIVEN BEFORE.
NOTES ARE REFERRED TO IF
MORE SPACE IS NEEDED

REG GUIDE 1.97
STATUS OF COMPLIANCE

June 8, 1983
Sheet 3 of 4

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND R/M</u> | <u>DATA REC R/M</u> | <u>COMMENTS</u> |
|--------------|-----------------|----------------|---------------------|---|
| 215C | Yes/Yes | Yes/Yes | Yes/Yes | QA in effect at time. Rec on demand via plant computer. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 215D | Yes/Yes | Yes/No | Yes/No | QA in effect at time. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 215E | Yes/Yes | Yes/No | Yes/No | QA in effect at time. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 215F | Yes/Yes | Yes/No | Yes/No | QA in effect at time. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 215G | Yes/Yes | Yes/Yes | Yes/Yes | Future: to be installed by MOD 80-3-051 ESS, RES-80-3-013 ESS-T. Redundancy: Note 24 |
| 215H | Yes/Yes | Yes/Yes | Yes/Yes | Future: to be installed by MOD 80-3-051 ESS, RES 80-3-013 ESS-T. Redundancy: Note 24 |
| 301A | Yes/No | Yes/No | Yes/No | QA in effect at time. Manual data recording, see Note 8. See Note 8 for range details |
| 302A | Yes/- | Yes/- | Yes/- | Do not have capability |
| 303A | No/- | No/- | No/- | Possilbe problem with sampling capability: Note 25 |
| 304A | Yes/Yes | Yes/No | Yes/No | Redundant Channel: Index 304B. For redundancy problem and diverse chan see Note 13. QA at time |
| 304B | Yes/Yes | Yes/Yes | Yes/Yes | Redundant Channel: Index 304A. For redundancy problem and diverse chan see Note 13. QA at time |
| 305A | Yes/Yes | Yes/Yes | Yes/Yes | QA in effect at time. Rec on demand via plant computer. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 305B | Yes/Yes | Yes/Yes | Yes/Yes | QA in effect at time. Rec on demand via plant computer. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 305C | Yes/Yes | Yes/Yes | Yes/Yes | QA in effect at time. Rec on demand via plant computer. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 305D | Yes/Yes | Yes/No | Yes/No | QA in effect at time. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 305E | Yes/Yes | Yes/No | Yes/No | QA in effect at time. Siesmic: WCAP 7817. Redundancy: Note 16 |
| 305F | Yes/Yes | Yes/No | Yes/No | QA in effect at time. Siesmic: WCAP 7817. Redundancy: Note 16 |

4

7

7

98

RG 1.97 REPORT

ABBREVIATIONS

| | |
|--------|---------------------------------|
| ADMIN | Administration |
| ATM | Atmospheric |
| AVLBLE | Available |
| BLDG | Building |
| CCR | Central Control Room |
| CFM | Cubic Feet per Minute |
| DIFF | Differential |
| CHAN | Channel |
| CH | Channel |
| CONMT | Containment |
| CPRF | Containment Pressure Relief Fan |
| CONV | Converter |
| CONT | Continuous |
| CTL | Control |
| CTRL | Controller |
| EL | Elevation |
| ENV | Environment |
| EOF | Emergency Operation Facility |
| EQ | Environmental Qualification |
| HTR | Heater |
| FL | Floor |
| GEN | Generator |

| | |
|---------|--|
| HSE | House |
| IGN | Igniter |
| IND | Indication |
| JB | Junction Box |
| MULT | Multiplier |
| NRC | Nuclear Regulatory Commission |
| MON | Monitor |
| PENT | Penetration |
| PRES | Pressure |
| QA | Quality Assurance |
| QSPDS | Qualified Safety Parameter Display System |
| RDNCY | Redundancy |
| RCFC | Reactor Containment Fan Cooler |
| RECIRC | Recirculation |
| REC | Recorder |
| REF | Reference |
| RECP | Recirculation Pump |
| REQ | Requirement |
| REQD | Required |
| RG | USNRC Regulatory Guide |
| R/M | Required?/Met? |
| RM | Room |
| RNG | Range |
| RVLIS | Reactor Vessel Level Indication System |
| STANDBY | Standby Power Source |

STM

Steam

STO

Storage

uCi/cc

Microcuries per Cubic
Centimeter (Micro is 10^{-6})

TRANSDUCR

Transducer

SUP

Supply

VLV

Valve

SHT

Sheet

TEMP

Temperature

SI

Safety Injection

TABLE 2
PWR VARIABLES

TYPE A Variables: those variables to be monitored that provide the primary information required to permit the control room operator to take specific manually controlled actions for which no automatic control is provided and that are required for safety systems to accomplish their safety functions for design basis accident events. Primary information is information that is essential for the direct accomplishment of the specified safety functions; it does not include those variables that are associated with contingency actions that may also be identified in written procedures.

A variable included as Type A does not preclude it from being included as Type B, C, D, or E or vice versa.

| Index No | Variable | Range | Category (see Regulatory Position 1.3) | Purpose |
|---|---|--|--|--|
| 100 Series | Plant specific | Plant specific | 1 | Information required for operator action |
| TYPE B Variables: those variables that provide information to indicate whether plant safety functions are being accomplished. Plant safety functions are (1) reactivity control, (2) core cooling, (3) maintaining reactor coolant system integrity, and (4) maintaining containment integrity (including radioactive effluent control). Variables are listed with designated ranges and category for design and qualification requirements. Key variables are indicated by design and qualification Category 1. | | | | |
| Reactivity Control | | | | |
| 01 | Neutron Flux | 10 ⁻⁶ % to 100% full power | 1 | Function detection; accomplishment of mitigation |
| 202 | Control Rod Position | Full in or not full in | 3 | Verification |
| 203 | RCS Soluble Boron Concentration | 0 to 6000 ppm | 3 | Verification |
| 204 | RCS Cold Leg Water Temperature ¹ | 50°F to 400°F | 3 | Verification |
| Core Cooling | | | | |
| 205 | RCS Hot Leg Water Temperature | 50°F to 750°F | 1 | Function detection; accomplishment of mitigation; verification; long-term surveillance |
| 206 | RCS Cold Leg Water Temperature ¹ | 50°F to 750°F | 1 | Function detection; accomplishment of mitigation; verification; long-term surveillance |
| 207 | RCS Pressure ¹ | 0 to 3000 psig (4000 psig for CE plants) | 1 ² | Function detection; accomplishment of mitigation; verification; long-term surveillance |

¹Where a variable is listed for more than one purpose, the instrumentation requirements may be integrated and only one measurement provided.

²The maximum value may be revised upward to satisfy ATWS requirements.

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|---|---|---|---|--|
| TYPE B (Continued) | | | | |
| Core Cooling (Continued) | | | | |
| 208 | Core Exit Temperature ¹ | 200°F to 2300°F (for operating plants - 200°F to 1650°F) | 3 ³ | Verification |
| 209 | Coolant Level in Reactor | Bottom of core to top of vessel | 1 (Direct-indicating or recording device not needed) | Verification; accomplishment of mitigation |
| 210 | Degrees of Subcooling | 200°F subcooling to 35°F superheat | 2 (With confirmatory operator procedures) | Verification and analysis of plant conditions |
| Maintaining Reactor Coolant System Integrity | | | | |
| 211 ¹ | RCS Pressure ¹ | 0 to 3000 psig (4000 psig for CE plants) | 1 ² | Function detection; accomplishment of mitigation |
| 212 | Containment Sump Water Level ¹ | Narrow range (sump), Wide range (bottom of containment to 500,000-gallon level equivalent) | 2 1 | Function detection; accomplishment of mitigation; verification |
| 213 | Containment Pressure ¹ | 0 to design pressure ⁴ (psig) | 1 | Function detection; accomplishment of mitigation; verification |
| Maintaining Containment Integrity | | | | |
| 214 | Containment Isolation Valve Position (excluding check valves) | Closed-not closed | 1 | Accomplishment of isolation |
| 215 | Containment Pressure ¹ | 10 psia to design pressure ⁴ | 1 | Function detection; accomplishment of mitigation; verification |

³A minimum of four measurements per quadrant is required for operation. Sufficient number should be installed to account for attrition. (Replacement instrumentation should meet the 2300°F range provision.)

⁴Design pressure is that value corresponding to ASME code values that are obtained at or below code-allowable values for material design stress.

TABLE 2 (Continued)

TYPE C Variables: those variables that provide information to indicate the potential for being breached or the actual breach of the barriers to fission product releases. The barriers are (1) fuel cladding, (2) primary coolant pressure boundary, and (3) containment.

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|--|--|--|---|---|
| Fuel Cladding | | | | |
| 301 | Core Exit Temperature ¹ | 200°F to 2300°F (for operating plants - 200°F to 1650°F) | 1 ³ | Detection of potential for breach; accomplishment of mitigation; long-term surveillance |
| 302 | Radioactivity Concentration or Radiation Level in Circulating Primary Coolant | 1/2 Tech Spec limit to 100 times Tech Spec limit, R/hr | 1 | Detection of breach |
| 303 | Analysis of Primary Coolant (Gamma Spectrum) | 10 μ Ci/gm to 10 Ci/gm or TID-14844 source term in coolant volume | 3 ⁵ | Detail analysis; accomplishment of mitigation; verification; long-term surveillance |
| Reactor Coolant Pressure Boundary | | | | |
| 304 | RCS Pressure ¹ | 0 to 3000 psig (4000 psig for CE plants) | 1 ² | Detection of potential for or actual breach; accomplishment of mitigation; long-term surveillance |
| 305 | Containment Pressure ¹ | 10 psia to design pressure ⁴ psig (5 psia for subatmospheric containments) | 1 | Detection of breach; accomplishment of mitigation; verification; long-term surveillance |
| 306 | Containment Sump Water Level ¹ | Narrow range (sump), Wide range (bottom of containment to 600,000-gal level equivalent) | 2 1 | Detection of breach; accomplishment of mitigation; verification; long-term surveillance |
| 307 | Containment Area Radiation ¹ | 1 R/hr to 10 ⁴ R/hr | 3 ^{6,7} | Detection of breach; verification |
| 308 | Effluent Radioactivity - Noble Gas Effluent from Condenser Air Removal System Exhaust ¹ | 10 ⁻⁶ μ Ci/cc to 10 ⁻² μ Ci/cc | 3 ⁸ | Detection of breach; verification |

⁵ Sampling or monitoring of radioactive liquids and gases should be performed in a manner that ensures procurement of representative samples. For gases, the criteria of ANSI N13.1 should be applied. For liquids, provisions should be made for sampling from well-mixed turbulent zones, and sampling lines should be designed to minimize plateout or deposition. For safe and convenient sampling, the provisions should include:

- a. Shielding to maintain radiation doses ALARA.
- b. Sample containers with container-sampling port connector compatibility.
- c. Capability of sampling under primary system pressure and negative pressures.
- d. Handling and transport capability, and
- e. Prearrangement for analysis and interpretation.

⁶ Minimum of two monitors at widely separated locations.

⁷ Detectors should respond to gamma radiation photons within any energy range from 60 keV to 3 MeV with an energy response accuracy of ± 20 percent at any specific photon energy from 0.1 MeV to 3 MeV. Overall system accuracy should be within a factor of 2 over the entire range.

⁸ Monitors should be capable of detecting and measuring radioactive gaseous effluent concentrations with compositions ranging from fresh equilibrium noble gas fission product mixtures to 10-day-old mixtures, with overall system accuracies within a factor of 2. Effluent concentrations may be expressed in terms of Xe-133 equivalents or in terms of any noble gas nuclide(s). It is not expected that a single monitoring device will have sufficient range to encompass the entire range provided in this regulatory guide and that multiple components or systems will be needed. Existing equipment may be used to monitor any portion of the stated range within the equipment design rating.

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|--------------------|--|---|---|---|
| TYPE C (Continued) | | | | |
| Containment | | | | |
| 309 | RCS Pressure ¹ | 0 to 3000 psig (4000 psig for CE plants) | 1 ² | Detection of potential for breach; accomplishment of mitigation |
| 310 | Containment Hydrogen Concentration | 0 to 10% (capable of operating from 10 psia to maximum design pressure ⁴) 0 to 30% for ice-condenser-type containment | 1 | Detection of potential for breach; accomplishment of mitigation; long-term surveillance |
| 311 | Containment Pressure ¹ | 10 psia pressure to 3 times design pressure ⁴ for concrete; 4 times design pressure for steel (5 psia for subatmospheric containments) | 1 | Detection of potential for or actual breach; accomplishment of mitigation |
| 312 | Containment Effluent Radioactivity - Noble Gases from Identified Release Points ¹ | 10 ⁻⁶ μ Ci/cc to 10 ⁻² μ Ci/cc | 2 ^{8,9} | Detection of breach; accomplishment of mitigation; verification |
| 13 312 | Radiation Exposure Rate (inside buildings or areas, e.g., auxiliary building, reactor shield building annulus, fuel handling building, which are in direct contact with primary containment where penetrations and hatches are located) ¹ | 10 ⁻¹ R/hr to 10 ⁴ R/hr | 2 ⁷ | Indication of breach |
| 314 | Effluent Radioactivity ¹ - Noble Gases (from buildings as indicated above) | 10 ⁻⁶ μ Ci/cc to 10 ³ μ Ci/cc | 2 ⁸ | Indication of breach |

TYPE D Variables: those variables that provide information to indicate the operation of individual safety systems and other systems important to safety. These variables are to help the operator make appropriate decisions in using the individual systems important to safety in mitigating the consequences of an accident.

Residual Heat Removal (RHR)
or Decay Heat Removal System

| | | | | |
|-----|---------------------------------------|-------------------------------------|---|---------------------------------------|
| 401 | RHR System Flow | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| 402 | RHR Heat Exchanger Outlet Temperature | 32°F to 350°F | 2 | To monitor operation and for analysis |

⁹Provisions should be made to monitor all identified pathways for release of gaseous radioactive materials to the environs in conformance with General Design Criterion 64. Monitoring of individual effluent streams is only required where such streams are released directly into the environment. If two or more streams are combined prior to release from a common discharge point, monitoring of the combined stream is considered to meet the intent of this regulatory guide provided such monitoring has a range adequate to measure worst-case releases.

¹⁰Design flow is the maximum flow anticipated in normal operation.

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|---|---|--|---|--|
| TYPE D (Continued) | | | | |
| Safety Injection Systems | | | | |
| 403 | Accumulator Tank Level and Pressure | 10% to 90% volume 0 to 750 psig | 2 | To monitor operation |
| 404 | Accumulator Isolation Valve Position | Closed or Open | 2 | Operation status |
| 405 | Boric Acid Charging Flow | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| 406 | Flow in HPI System | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| 407 | Flow in LPI System | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| 408 | Refueling Water Storage Tank Level | Top to bottom | 2 | To monitor operation |
| Primary Coolant System | | | | |
| 409 | Reactor Coolant Pump Status | Motor current | 3 | To monitor operation |
| 410 | Primary System Safety Relief Valve Positions (including PORV and code valves) or Flow Through or Pressure in Relief Valve Lines | Closed-not closed | 2 | Operation status; to monitor for loss of coolant |
| 411 | Pressurizer Level | Bottom to top | 1 | To ensure proper operation of pressurizer |
| 412 | Pressurizer Heater Status | Electric current | 2 | To determine operating status |
| 413 | Quench Tank Level | Top to bottom | 3 | To monitor operation |
| 414 | Quench Tank Temperature | 50°F to 750°F | 3 | To monitor operation |
| 415 | Quench Tank Pressure | 0 to design pressure ⁴ | 3 | To monitor operation |
| Secondary System (Steam Generator) | | | | |
| 416 | Steam Generator Level | From tube sheet to separators | 1 | To monitor operation |
| 417 | Steam Generator Pressure | From atmospheric pressure to 20% above the lowest safety valve setting | 2 | To monitor operation |
| 418 | Safety/Relief Valve Positions or Main Steam Flow | Closed-not closed | 2 | To monitor operation |
| 419 | Main Feedwater Flow | 0 to 110% design flow ¹⁰ | 3 | To monitor operation |

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|--|---|--|---|--|
| TYPE D (Continued) | | | | |
| Auxiliary Feedwater or Emergency Feedwater System | | | | |
| 420 | Auxiliary or Emergency Feedwater Flow | 0 to 110% design flow ¹⁰ | 2 (1 for B&W plants) | To monitor operation |
| 421 | Condensate Storage Tank Water Level | Plant specific | 1 | To ensure water supply for auxiliary feedwater (Can be Category 3 if not primary source of AFW. Then whatever is primary source of AFW should be listed and should be Category 1.) |
| Containment Cooling Systems | | | | |
| 422 | Containment Spray Flow | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| 423 | Heat Removal by the Containment Fan Heat Removal System | Plant specific | 2 | To monitor operation |
| 424 | Containment Atmosphere Temperature | 40°F to 400°F | 2 | To indicate accomplishment of cooling |
| 425 | Containment Sump Water Temperature | 50°F to 250°F | 2 | To monitor operation |
| Chemical and Volume Control System | | | | |
| 426 | Makeup Flow - In | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| 427 | Letdown Flow - Out | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| 428 | Volume Control Tank Level | Top to bottom | 2 | To monitor operation |
| Cooling Water System | | | | |
| 429 | Component Cooling Water Temperature to ESF System | 32°F to 200°F | 2 | To monitor operation |
| 430 | Component Cooling Water Flow to ESF System | 0 to 110% design flow ¹⁰ | 2 | To monitor operation |
| Radwaste Systems | | | | |
| 431 | High-Level Radioactive Liquid Tank Level | Top to bottom | 3 | To indicate storage volume |
| 432 | Radioactive Gas Holdup Tank Pressure | 0 to 150% design pressure ⁴ | 3 | To indicate storage capacity |

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|--|--|--|---|---|
| TYPE D (Continued) | | | | |
| Ventilation Systems | | | | |
| 433 | Emergency Ventilation Damper Position | Open-closed status | 2 | To indicate damper status |
| Power Supplies | | | | |
| 434 | Status of Standby Power and Other Energy Sources Important to Safety (hydraulic, pneumatic) | Voltages, currents, pressures | 2 ¹¹ | To indicate system status |
| TYPE E Variables: those variables to be monitored as required for use in determining the magnitude of the release of radioactive materials and continually assessing such releases. | | | | |
| Containment Radiation | | | | |
| 501 | Containment Area Radiation - High Range ¹ | 1 R/hr to 10 ⁷ R/hr | 1 ^{6,7} | Detection of significant releases; release assessment; long-term surveillance; emergency plan actuation |
| Area Radiation | | | | |
| 502 | Radiation Exposure Rate ¹ (inside buildings or areas where access is required to service equipment important to safety) | 10 ⁻¹ R/hr to 10 ⁴ R/hr | 2 ⁷ | Detection of significant releases; release assessment; long-term surveillance |
| Airborne Radioactive Materials Released from Plant | | | | |
| Noble Gases and Vent Flow Rate | | | | |
| 503 | • Containment or Purge Effluent ¹ | 10 ⁻⁶ μ Ci/cc to 10 ⁵ μ Ci/cc 0 to 110% vent design flow ¹⁰ (Not needed if effluent discharges through common plant vent) | 2 ⁸ | Detection of significant releases; release assessment |
| 504 | • Reactor Shield Building Annulus ¹ (if in design) | 10 ⁻⁶ μ Ci/cc to 10 ⁴ μ Ci/cc 0 to 110% vent design flow ¹⁰ (Not needed if effluent discharges through common plant vent) | 2 ⁸ | Detection of significant releases; release assessment |
| 505 | • Auxiliary Building ¹ (including any building containing primary system gases, e.g., waste gas decay tank) | 10 ⁻⁶ μ Ci/cc to 10 ³ μ Ci/cc 0 to 110% vent design flow ¹⁰ (Not needed if effluent discharges through common plant vent) | 2 ⁸ | Detection of significant releases; release assessment; long-term surveillance |

¹¹ Status indication of all Standby Power a.c. buses, d.c. buses, inverter output buses, and pneumatic supplies.

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|---|---|--|---|---|
| Type E (Continued) | | | | |
| Airborne Radioactive Materials Released from Plant (Continued) | | | | |
| Noble Gases and Vent Flow Rate (Continued) | | | | |
| 506 | • Condenser Air Removal System Exhaust ¹ | 10 ⁻⁶ μ Ci/cc to 10 ⁵ μ Ci/cc 0 to 110% vent design flow ¹⁰ (Not needed if effluent discharges through common plant vent) | 2 ⁸ | Detection of significant releases; release assessment |
| 507 | • Common Plant Vent or Multi-purpose Vent Discharging Any of Above Releases (if containment purge is included) | 10 ⁻⁶ μ Ci/cc to 10 ³ μ Ci/cc 0 to 110% vent design flow ¹⁰ 10 ⁻⁶ μ Ci/cc to 10 ⁴ μ Ci/cc | 2 ⁸ | Detection of significant releases; release assessment; long-term surveillance |
| 508 | • Vent From Steam Generator Safety Relief Valves or Atmospheric Dump Valves | 10 ⁻¹ μ Ci/cc to 10 ³ μ Ci/cc (Duration of releases in seconds and mass of steam per unit time) | 2 ¹² | Detection of significant releases; release assessment |
| 509 | • All Other Identified Release Points | 10 ⁻⁶ μ Ci/cc to 10 ² μ Ci/cc 0 to 110% vent design flow ¹⁰ (Not needed if effluent discharges through other monitored plant vents) | 2 ⁸ | Detection of significant releases; release assessment; long-term surveillance |
| Particulates and Halogens | | | | |
| 510 | • All Identified Plant Release Points (except steam generator safety relief valves or atmospheric steam dump valves and condenser air removal system exhaust). Sampling with Onsite Analysis Capability | 10 ⁻³ μ Ci/cc to 10 ² μ Ci/cc 0 to 110% vent design flow ¹⁰ | 3 ¹³ | Detection of significant releases; release assessment; long-term surveillance |

¹²Effluent monitors for PWR steam safety valve discharges and atmospheric steam dump valve discharges should be capable of approximately linear response to gamma radiation photons with energies from approximately 0.5 MeV to 3 MeV. Overall system accuracy should be within a factor of 2. Calibration sources should fall within the range of approximately 0.5 MeV to 1.5 MeV (e.g., Cs-137, Mn-54, Na-22, and Co-60). Effluent concentrations should be expressed in terms of any gamma-emitting noble gas nuclide within the specified energy range. Calculational methods should be provided for estimating concurrent releases of low-energy noble gases that cannot be detected or measured by the methods or techniques employed for monitoring.

¹³To provide information regarding release of radioactive halogens and particulates. Continuous collection of representative samples followed by onsite laboratory measurements of samples for radiohalogens and particulates. The design envelope for shielding, handling, and analytical purposes should assume 30 minutes of integrated sampling time at sampler design flow, an average concentration of 10² μ Ci/cc of radioiodines in gaseous or vapor form, an average concentration of 10² μ Ci/cc of particulate radioiodines and particulates other than radioiodines, and an average gamma photon energy of 0.5 MeV per disintegration.

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|--------------------------------------|---|--|---|--|
| TYPE E (Continued) | | | | |
| Enviorns Radiation and Radioactivity | | | | |
| 511 | Radiation Exposure Meters (continuous indication at fixed locations) | Range, location, and qualification criteria to be developed to satisfy NUREG-0654, Section II.H.5b and 6b requirements for emergency radiological monitors | | Verify significant releases and local magnitudes |
| 512 | Airborne Radiohalogens and Particulates (portable sampling with onsite analysis capability) | 10^{-9} $\mu\text{Ci/cc}$ to 10^{-3} $\mu\text{Ci/cc}$ | 3 ¹⁴ | Release assessment; analysis |
| 513 | Plant and Enviorns Radiation (portable instrumentation) | 10^{-3} R/hr to 10^4 R/hr, photons 10^{-3} rads/hr to 10^4 rads/hr, beta radiations and low-energy photons | 3 ¹⁵ 3 ¹⁵ | Release assessment; analysis |
| 514 | Plant and Enviorns Radioactivity (portable instrumentation) | Multichannel gamma-ray spectrometer | 3 | Release assessment; analysis |
| Meteorology ¹⁶ | | | | |
| 515 | Wind Direction | 0 to 360° ($\pm 5^\circ$ accuracy with a deflection of 15°). Starting speed 0.45 mps (1.0 mph). Damping ratio between 0.4 and 0.6, distance constant ≤ 2 meters | 3 | Release assessment |
| 516 | Wind Speed | 0 to 30 mps (67 mph) ± 0.22 mps (0.5 mph) accuracy for wind speeds less than 11 mps (25 mph) with a starting threshold of less than 0.45 mps (1.0 mph) | 3 | Release assessment |
| 517 | Estimation of Atmospheric Stability | Based on vertical temperature difference from primary system, -5°C to 10°C (-9°F to 18°F) and $\pm 0.15^\circ\text{C}$ accuracy per 50-meter intervals ($\pm 0.3^\circ\text{F}$ accuracy per 164-foot intervals) or analogous range for alternative stability estimates | 3 | Release assessment |

¹⁴ For estimating release rates of radioactive materials released during an accident.

¹⁵ To monitor radiation and airborne radioactivity concentrations in many areas throughout the facility and the site enviorns where it is impractical to install stationary monitors capable of covering both normal and accident levels.

¹⁶ Guidance on meteorological measurements is being developed in a Proposed Revision 1 to Regulatory Guide 1.23, "Meteorological Programs in Support of Nuclear Power Plants."

TABLE 2 (Continued)

| <u>Index No.</u> | <u>Variable</u> | <u>Range</u> | <u>Category (see Regulatory Position 1.3)</u> | <u>Purpose</u> |
|--|--|--|---|--|
| TYPE E (Continued) | | | | |
| Accident Sampling ¹⁷ Capability (Analysis Capability On Site) | | | | |
| 518 | Primary Coolant and Sump | Grab Sample | 3 ^{5,18} | Release assessment; verification; analysis |
| | <ul style="list-style-type: none"> • Gross Activity • Gamma Spectrum • Boron Content • Chloride Content • Dissolved Hydrogen or Total Gas¹⁹ • Dissolved Oxygen¹⁹ • pH | <ul style="list-style-type: none"> 10 μCi/ml to 10 Ci/ml (Isotopic Analysis) 0 to 6000 ppm 0 to 20 ppm 0 to 2000 cc(STP)/kg 0 to 20 ppm 1 to 13 | | |
| 519 | Containment Air | Grab Sample | 3 ⁵ | Release assessment; verification; analysis |
| | <ul style="list-style-type: none"> • Hydrogen Content • Oxygen Content • Gamma Spectrum | <ul style="list-style-type: none"> 0 to 10% 0 to 30% for ice condensers 0 to 30% (Isotopic analysis) | | |

¹⁷ The time for taking and analyzing samples should be 3 hours or less from the time the decision is made to sample, except for chloride which should be within 24 hours.

¹⁸ An installed capability should be provided for obtaining containment sump, ECCS pump room sumps, and other similar auxiliary building sump liquid samples.

¹⁹ Applies only to primary coolant, not to sump.

Enclosure B to IPN 84-20

New York Power Authority
Indian Point 3 Nuclear Power Plant
Docket No. 50-286

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 101A | Al | Primary Coolant: Pressure Reactor Coolant System, Loop 1 | P402 |
| 101B | Al | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P403 |
| 101C | Al | Primary Coolant: Pressure, Reactor Coolant System, Loop 4 | P413 |
| 102A | Al | Primary Coolant: Temperature, Hot Leg Loop No. 1 | T413A |
| 102B | Al | Primary Coolant: Temperature, Hot Leg Loop No. 2 | T423A |
| 102C | Al | Primary Coolant: Temperature, Hot Leg Loop No. 3 | T433A |
| 102D | Al | Primary Coolant: Temperature, Hot Leg Loop No. 4 | T443A |
| 103A | Al | Primary Coolant: Temperature, Cold Leg Loop No. 1 | T413B |
| 103B | Al | Primary Coolant: Temperature, Cold Leg Loop No. 2 | T423B |
| 103C | Al | Primary Coolant: Temperature, Cold Leg Loop No. 3 | T433B |
| 103D | Al | Primary Coolant: Temperature, Cold Leg Loop No. 4 | T443B |
| 104A | Al | Steam Generator 31 Wide Range Level | L417D |
| 104B | Al | Steam Generator 31 Narrow Range Level | L 417A |
| 104C | Al | Steam Generator 31 Narrow Range Level | L417B |
| 104D | Al | Steam Generator 31 Narrow Range Level | L417C |
| 104E | Al | Steam Generator 32 Wide Range Level | L427D |
| 104F | Al | Steam Generator 32 Narrow Range Level | L427A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|----------------------------|----------------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 101A | No | 0 to 3000 psig | 0 to 2500 psig | Yes/No | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes |
| 101B | Yes | 0 to 3000 psig | 0 to 3000 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 101C | No | 0 to 3000 psig | 0 to 1500 psig | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 102A | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 102B | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 102C | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 102D | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 103A | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 103B | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 103C | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 103D | No | 50 to 750°F | 0 to 700°F | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 104A | Yes | From Tube Sht to Separator | From Tube Sht to Separator | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 104B | Yes | From Tube Top to Separator | From Tube Top to Separator | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 104C | Yes | From Tube Top to Separator | From Tube Top to Separator | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 104D | Yes | From Tube Top to Separator | From Tube Top to Separator | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 104E | Yes | From Tube Sht to Separator | From Tube Sht to Separator | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 104F | Yes | From Tube Top to Separator | From Tube Top to Separator | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC COMMENTS</u> |
|--------------|---------------------|-------------------------|--|
| 101A | Yes/Yes | Yes/No | E.Q.: Note B, Range: Note D, Redundancy: Note E, Recording: Note F |
| 101B | Yes/Yes | Yes/Yes | E.Q.: Note B, Redundancy: Note E |
| 101C | Yes/Yes | Yes/No | E.Q. - Seismic: Note H, Redundancy: Note E, Recording: Note F |
| 102A | Yes/Yes | Yes/Yes | Range: Note P, E.Q.: Note B, Redundancy: Note C |
| 102B | Yes/Yes | Yes/Yes | Range: Note P, E.Q.: Note B, Redundancy: Note C |
| 102C | Yes/Yes | Yes/Yes | Range: Note P, E.Q.: Note B, Redundancy: Note C |
| 102D | Yes/Yes | Yes/Yes | Range: Note P, E.Q.: Note B, Redundancy: Note C |
| 103A | Yes/Yes | Yes/Yes | Range: Note P, E.Q.: Note B, Redundancy: Note C |
| 103B | Yes/Yes | Yes/Yes | Range: Note P, E.Q.: Note B, Redundancy: Note C |
| 103C | Yes/Yes | Yes/Yes | Range: Note P; E.Q.: Note B, Redundancy: Note C |
| 103D | Yes/Yes | Yes/Yes | Range: Note P, E.Q.: Note B, Redundancy: Note C |
| 104A | Yes/Yes | Yes/Yes | E.Q.: Note B, Redundancy: Note Q |
| 104B | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104C | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104D | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104E | Yes/Yes | Yes/Yes | E.Q.: Note B, Redundancy: Note Q |
| 104F | Yes/Yes | Yes/Yes | E.Q.: Note B |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|--|------------------|
| 104G | A1 | Steam Generator 32 Narrow Range Level | L427B |
| 104H | A1 | Steam Generator 32 Narrows Range Level | L427C |
| 104I | A1 | Steam Generator 33 Wide Range Level | L437D |
| 104J | A1 | Steam Generator 33 Narrow Range Level | L437A |
| 104K | A1 | Steam Generator 33 Narrow Range Level | L437B |
| 104L | A1 | Steam Generator 33 Narrow Range Level | L437C |
| 104M | A1 | Steam Generator 34 Wide Range Level | L447D |
| 104N | A1 | Steam Generator 34 Narrow Range Level | L447A |
| 104O | A1 | Steam Generator 34 Narrow Range Level | L447B |
| 104P | A1 | Steam Generator 34 Narrow Range Level | L447C |
| 105A | A1 | Pressurizer Level, Channel I | L459 |
| 105B | A1 | Pressurizer Level, Channel II | L460 |
| 105C | A1 | Pressurizer Level, Channel III | L461 |
| 106A | A1 | Containment Pressure, Channel | P949A |
| 106B | A1 | Containment Pressure, Channel | P1421 |
| 106C | A1 | Containment Pressure, Channel | P1422 |
| 107A | A1 | Steam Generator 31 Pressure Channel I | P419A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC COMMENTS</u> |
|--------------|-----------------|---------------------|----------------------------------|
| 104G | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104H | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104I | Yes/Yes | Yes/Yes | E.Q.: Note B, Redundancy: Note Q |
| 104J | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104K | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104L | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104M | Yes/Yes | Yes/Yes | E.Q.: Note B, Redundancy: Note Q |
| 104N | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104O | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 104P | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 105A | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 105B | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 105C | Yes/Yes | Yes/Yes | E.Q.: Note B |
| 106A | Yes/Yes | Yes/No | Recording: Note F |
| 106B | Yes/Yes | Yes/Yes | |
| 106C | Yes/Yes | Yes/Yes | |
| 107A | Yes/Yes | Yes/No | Recording: Note F |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 107B | A1 | Steam Generator 31 Pressure Channel II | P419B |
| 107C | A1 | Steam Generator 31 Pressure Channel IV | P419C |
| 107D | A1 | Steam Generator 32 Pressure, Channel I | P429A |
| 107E | A1 | Steam Generator 32 Pressure, Channel II | P429B |
| 107F | A1 | Steam Generator 32 Pressure, Channel IV | P429C |
| 107G | A1 | Steam Generator 33 Pressure, Channel I | P439A |
| 107H | A1 | Steam Generator 33 Pressure, Channel II | P439B |
| 107I | A1 | Steam Generator 33 Pressure, Channel IV | P439C |
| 107J | A1 | Steam Generator 34 Pressure Channel I | P449A |
| 107K | A1 | Steam Generator 34 Pressure Channel II | P449B |
| 107L | A1 | Steam Generator 34 Pressure Channel IV | P449C |
| 108A | A1 | Refueling Water Storage Tank Level | L920 |
| 109A | A1 | Containment Water Level | L1253 |
| 109B | A1 | Containment Water Level | L1254 |
| 110A | A1 | Auxiliary Feedwater Flow to Steam Generator 31 | F1200R |
| 110B | A1 | Auxiliary Feedwater Flow to Steam, Generator 32 | F1201R |
| 110C | A1 | Auxiliary Feedwater Flow to Steam Generator 33 | F1202R |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|-----------------------|---------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 107B | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107C | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107D | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107E | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107F | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107G | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107H | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107I | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107J | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107K | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 107L | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 108A | Yes | 0 to 40' | 0 to 40' | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 109A | | 0 to 600,000 gals | | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 109B | | 0 to 600,000 gals | | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | yes/Yes | Yes/Yes |
| 110A | Yes | 0 to 440 gpm | 0 to 450 gpm | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 110B | Yes | 0 to 440 gpm | 0 to 450 gpm | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 110C | Yes | 0 to 440 gpm | 0 to 450 gpm | Yes/Yes | Yes/Yes | Yes/No | yes/Yes | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> <u>R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|---------------------------|------------|-----------------|
| 403C | No/- | No/- | | | Note Z |
| 403D | No/- | No/- | | | Note Z |
| 403E | No/- | No/- | | | Note Z |
| 403F | No/- | No/- | | | Note Z |
| 403G | No/- | No/- | | | Note Z |
| 403H | No/- | No/- | | | Note Z |
| 404A | No/- | No/- | | | Note AA |
| 404B | No/- | No/- | | | Note AA |
| 404C | No/- | No/- | | | Note AA |
| 404D | No/- | No/- | | | Note AA |
| 405A | No/- | No/- | | | Note H |
| 406A | No/- | No/- | | | Note B |
| 406B | No/- | No/- | | | Note B |
| 406C | No/- | No/- | | | Note B |
| 406D | No/- | No/- | | | Note B |
| 406E | No/- | No/- | | | Note B |
| 406F | No/- | No/- | | | Note B |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

INST LOOP

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | |
|--------------|---------------------------|---|------|
| 406G | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 4 | |
| 406H | D2 | Safety Injection: Flow, High Head, Cold Leg Loop 4 | F982 |
| 407A | D2 | Safety Injection: Flow, Low Head | F927 |
| 407B | D2 | Safety Injection: Flow, Low Head | F638 |
| 408A | D2 | Safety Injection: Refueling Water Storage Tank Level | F640 |
| 409A | D3 | Primary Coolant: Reactor Coolant Pump 31 Status | L920 |
| 409B | D3 | Primary Coolant: Reactor Coolant Pump 32 Status | N/A |
| 409C | D3 | Primary Coolant: Reactor Coolant Pump 33 Status | N/A |
| 409D | D3 | Primary Coolant: Reactor Coolant Pump 34 Status | N/A |
| 410A | D2 | Primary Coolant: Safety Relief Valve Position, Power Operated Relief Valve 455C | N/A |
| 410B | D2 | Primary Coolant: Safety Relief Valve Position, Power Operated Relief Valve 456 | N/A |
| 410C | D2 | Primary Coolant: Safety Relief Valve Position, ASME Code Safety Valve 464 | N/A |
| 410D | D2 | Primary Coolant: Safety Relief Valve Position, ASME Code Safety Valve 466 | N/A |
| 410E | D2 | Primary Coolant: Safety Relief Valve Position, ASME Code Safety Valve 468 | N/A |
| 411A | D1 | Primary Coolant: Level, Pressurizer, Channel I | L459 |
| 411B | D1 | Primary Coolant: Level, Pressurizer, Channel II | L460 |
| 411C | D1 | Primary Coolant: Level, Pressurizer, Channel III | L461 |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|-----------------------|----------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 406G | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 406H | Yes | 0 to 220 gpm | 0 to 300 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 407A | Yes | 0 to 3300 GPM | 0 to 3500 GPM | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 407B | Yes | 0 to 330 GP, | 0 to 2500 GPM | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 408A | Yes | 0 to 40' | 0 to 40' | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 409A | Yes | Motor Current | 0 to 800 amps | No/- | No/- | No/- | No/- | No/- | No/- |
| 409B | Yes | Motor Current | 0 to 800 amps | No/- | No/- | No/- | No/- | No/- | No/- |
| 409C | Yes | Motor Current | 0 to 800 amps | No/- | No/- | No/- | No/- | No/- | No/- |
| 409D | Yes | Motor Current | 0 to 800 amps | No/- | No/- | No/- | No/- | No/- | No/- |
| 410A | Yes | Closed or Not Closed | Closed or Not Closed | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 410B | Yes | Closed or Not Closed | Closed or Not Closed | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 410C | Yes | Closed or Not Closed | Closed or Not Closed | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 410D | Yes | Closed or Not Closed | Closed or Not Closed | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 410E | Yes | Closed or Not Closed | Closed or Not Closed | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 411A | Yes | Bottom to top | Bottom to top | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 411B | Yes | Bottom to top | Bottom to top | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 411C | Yes | Bottom to top | Bottom to top | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|-----------------|---------------------|------------|-----------------------------|
| 406G | No/- | No/- | | Note B |
| 406H | No/- | No/- | | Note B |
| 407A | No/- | No/- | | Note B |
| 407B | No/- | No/- | | Note B |
| 408A | No/- | No/- | | |
| 409A | No/- | No/- | | |
| 409B | No/- | No/- | | |
| 409C | No/- | No/- | | |
| 409D | No/- | No/- | | |
| 410A | No/- | No/- | | Acoustical monitor at valve |
| 410B | No/- | No/- | | Acoustical monitor at valve |
| 410C | No/- | No/- | | Acoustical monitor at valve |
| 410D | No/- | No/- | | Acoustical monitor at valve |
| 410E | No/- | No/- | | Acoustical monitor at valve |
| 411A | Yes/Yes | Yes/Yes | | Note B |
| 411B | Yes/Yes | Yes/Yes | | Note B |
| 411C | Yes/Yes | Yes/Yes | | Note B |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

INST LOOP

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | |
|--------------|---------------------------|---|-------|
| 412A | D2 | Primary Coolant: Pressurizer Heater Status - Control Group | |
| 412B | D2 | Primary Coolant: Pressurizer Heater Status - Back-up Group 31 | N/A |
| 412C | D2 | Primary Coolant: Pressurizer Heater Status - Back-up Group 32 | N/A |
| 412D | D2 | Primary Coolant: Pressurizer Heater Status - Back-up Group 33 | N/A |
| 413A | D3 | Primary Coolant: Pressurizer Relief Tank 31 Level | N/A |
| 414A | D3 | Primary Coolant: Pressurizer Relief Tank 31 Temperature | L470 |
| 415A | D3 | Primary Coolant: Pressurizer Relief Tank 31 Pressure | T471 |
| 416A | D1 | Secondary Cooling: Level, Steam Generator 31 Non-Channelized | P472 |
| 416B | D1 | Secondary Cooling: Level, Steam Generator 32 Non-Channelized | L417D |
| 416C | D1 | Secondary Cooling: Level, Steam Generator 33 Non-Channelized | L427D |
| 416D | D1 | Secondary Cooling: Level, Steam Generator 34 Non-Channelized | L437D |
| 417A | D2 | Secondary Cooling: Pressure, Steam Generator 31, Channel I | L447D |
| 417B | D2 | Secondary Cooling: Pressure, Steam Generator 32, Channel I | P419A |
| 417C | D2 | Secondary Cooling: Pressure, Steam Generator 33, Channel I | P429A |
| 417D | D2 | Secondary Cooling: Pressure, Steam Generator 34, Channel I | P439A |
| 418A | D2 | Secondary Cooling: Flow, Main Steam From Steam Generator 31 | P449A |
| 418B | D2 | Secondary Cooling: Flow, Main Steam From Steam Generator 32 | F419A |
| | | | F429A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|------------------------------|----------------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 412A | No | Heater Current | Heater Group On-Off | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 412B | No | Heater Current | Heater Group On-Off | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 412C | No | Heater Current | Heater Group On-Off | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 412D | No | Heater Current | Heater Group On-Off | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 413A | Yes | Bottom to Top | Bottom to Top | No/- | No/- | No/- | No/- | No/- | No/- |
| 414A | No | 50 to 750°F | 50 to 300°F | No/- | No/- | No/- | No/- | No/- | No/- |
| 415A | Yes | 0 to 100 psig | 0 to 100 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 416A | Yes | From tube sheet to separator | From tube sht to separator | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 416B | Yes | From tube sheet to separator | From tube sht to separator | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 416C | Yes | From tube sheet to separator | From tube sht to separator | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 416D | Yes | From tube sheet to separator | From tube sht to separator | Yes/No | Yes/No | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 417A | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 417B | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 417C | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 417D | Yes | 0 to 1278 psig | 0 to 1400 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 418A | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 418B | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> <u>R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|---------------------------|------------|----------------------------------|
| 412A | No/- | No/- | | | Range: Note BB |
| 412B | No/- | No/- | | | Range: Note BB |
| 412C | No/- | No/- | | | Range: Note BB |
| 412D | No/- | No/- | | | Range: Note BB |
| 413A | No/- | No/- | | | |
| 414A | No/- | No/- | | | Range: Note CC |
| 415A | No/- | No/- | | | |
| 416A | Yes/Yes | Yes/Yes | | | Redundancy: Note Q, E.Q.: Note B |
| 416B | Yes/Yes | Yes/Yes | | | Redundancy: Note Q, E.Q.: Note B |
| 416C | Yes/Yes | Yes/Yes | | | Redundancy: Note Q, E.Q.: Note B |
| 416D | Yes/Yes | Yes/Yes | | | Redundancy: Note Q, E.Q.: Note B |
| 417A | No/- | No/- | | | |
| 417B | No/- | No/- | | | |
| 417C | No/- | No/- | | | |
| 417D | No/- | No/- | | | |
| 418A | No/- | No/- | | | |
| 418B | No/- | No/- | | | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 418C | D2 | Secondary Cooling: Flow, Main Steam From Steam Generator 33 | F439A |
| 418D | D2 | Secondary Cooling: Flow, Main Steam From Steam Generator 34 | F449A |
| 419A | D3 | Secondary Cooling: Flow, Main Feedwater to Steam Generator 31 | F418A |
| 419B | D3 | Secondary Cooling: Flow, Main Feedwater to Steam Generator 32 | F428A |
| 419C | D3 | Secondary Cooling: Flow, Main Feedwater to Steam Generator 33 | F438A |
| 419D | D3 | Secondary Cooling: Flow, Main Feedwater to Steam Generator 34 | F448A |
| 420A | D2 | Secondary Cooling: Flow, Auxiliary Feedwater to Steam Generator 31 | F1200R |
| 420B | D2 | Secondary Cooling: Flow, Auxiliary Feedwater to Steam Generator 32 | F1201R |
| 420C | D2 | Secondary Cooling: Flow, Auxiliary Feedwater to Steam Generator 33 | F1202R |
| 420D | D2 | Secondary Cooling: Flow, Auxiliary Feedwater to Steam Generator 34 | F1203R |
| 421A | D1 | Secondary Cooling: Condensate Storage Tank Water Level | L1128 |
| 421B | D1 | Secondary Cooling: Condensate Storage Tank Water Level | L1128A |
| 422A | D2 | Containment: Spray Flow From Residual Heat Removal Heat Exchanger 31 | F945B |
| 422B | D2 | Containment: Spray Flow From Residual Heat Removal Heat Exchanger 32 | F945A |
| 423A | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Flow to RCFC 31 | F1121 |
| 423B | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Flow to RCFC 32 | F1122 |
| 423C | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Flow to RCFC 33 | F1123 |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG</u> <u>OK</u> | <u>RANGE</u> <u>REQUIRED</u> | <u>RANGE</u> <u>ACTUAL</u> | <u>E.Q.</u> <u>R/M</u> | <u>SEISMIC</u> <u>R/M</u> | <u>RDNCY</u> <u>R/M</u> | <u>STANDBY</u> <u>R/M</u> | <u>AVLBLE</u> <u>R/M</u> | <u>Q.A.</u> <u>R/M</u> |
|--------------|-------------------------|---------------------------------|-------------------------------|---------------------------|------------------------------|----------------------------|------------------------------|-----------------------------|---------------------------|
| 418C | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 418D | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 419A | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | No/- | No/- | No/- | No/- | No/- | No/- |
| 419B | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | No/- | No/- | No/- | No/- | No/- | No/- |
| 419C | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | No/- | No/- | No/- | No/- | No/- | No/- |
| 419D | Yes | 0 to 3.6 x 10E6 LBS per hour | 0 to 4 x 10E6 LBS per hour | No/- | No/- | No/- | No/- | No/- | No/- |
| 420A | Yes | 0 to 440 gpm | 0 to 450 gpm | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 420B | Yes | 0 to 440 gpm | 0 to 450 gpm | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 420C | Yes | 0 to 440 gpm | 0 to 450 gpm | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 420D | Yes | 0 to 440 gpm | 0 to 450 gpm | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 421A | Yes | 0 to 40' | 0 to 40' | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 421B | Yes | 0 to 40' | 0 to 40' | Yes/Yes | Yes/Yes | Yes/No | Yes/Yes | Yes/Yes | Yes/Yes |
| 422A | Yes | 0 to 2500 gpm | 0 to 2500 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 422B | Yes | 0 to 2500 gpm | 0 to 2500 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 423A | No | 0 to 1650 gpm | 0 to 2500 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 423B | No | 0 to 1650 gpm | 0 to 2500 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 423C | No | 0 to 1650 gpm | 0 to 2500 gpm | Yes/No | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|-----------------|---------------------|------------|---------------------------------------|
| 418C | No/- | No/- | | |
| 418D | No/- | No/- | | |
| 419A | No/- | No/- | | |
| 419B | No/- | No/- | | |
| 419C | No/- | No/- | | |
| 419D | No/- | No/- | | |
| 420A | No/- | No/- | | |
| 420B | No/- | No/- | | |
| 420C | No/- | No/- | | |
| 420D | No/- | No/- | | |
| 421A | Yes/Yes | Yes/No | | Redundancy: Note H, Recording: Note F |
| 421B | Yes/Yes | Yes/No | | Redundancy: Note H, Recording: Note F |
| 422A | No/- | No/- | | Note B |
| 422B | No/- | No/- | | Note B |
| 423A | No/- | No/- | | Note N |
| 423B | No/- | No/- | | Note N |
| 423C | No/- | No/- | | Note N |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|--|------------------|
| 423D | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Flow to RCFC 34 | F1124 |
| 423E | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Flow to RCFC 35 | F1125 |
| 423F | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Diff Temp, RCFC 31 | None |
| 423G | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Diff Temp, RCFC 32 | None |
| 423H | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Diff Temp, RCFC 33 | None |
| 423J | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Diff Temp, RCFC 34 | None |
| 423K | D2 | Containment: Heat Removal by Reactor Containment Fan Cooler System--Service Water Diff Temp, RCFC 35 | None |
| 424A | D2 | Containment: Temperature, Atmosphere | T1203 |
| 425A | D2 | Containment: Temperature, Sump Water | None |
| 426A | D2 | Chemical and Volume Control: Make-up Flow In | F128 |
| 427A | D2 | Chemical and Volume Control: Letdown Flow Out | F134 |
| 428A | D2 | Chemical and Volume Control: Volume Control Tank 31 Level | L112 |
| 429A | D2 | Component Cooling: Temperature, Component Cooling Heat Exchanger 31 Output | T602A |
| 429B | D2 | Component Cooling: Temperature, Component Cooling Heat Exchanger 32 Output | T602B |
| 430A | D2 | Component Cooling: Flow, Component Cooling Heat Exchanger 31 Output | F601A |
| 430B | D2 | Component Cooling: Flow, Component Cooling Heat Exchanger 32 Output | F601B |
| 431A | D3 | Radwaste: Level, High-Level Radioactive Waste Hold-up Tank 31 | L1001 |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT IND DATA REC</u> <u>R/M</u> | <u>R/M</u> | <u>COMMENTS</u> |
|--------------|--|------------|---|
| 423D | No/- | No/- | Note N |
| 423E | No/- | No/- | Note N |
| 423F | No/- | No/- | Note N |
| 423G | No/- | No/- | Note N |
| 423H | No/- | No/- | Note N |
| 423J | No/- | No/- | Note N |
| 423K | No/- | No/- | Note N |
| 424A | No/- | No/- | Note H |
| 425A | No/- | No/- | No instrument Note H |
| 426A | No/- | No/- | Note H |
| 427A | No/- | No/- | Note H |
| 428A | No/- | No/- | Note H |
| 429A | No/- | No/- | Note H |
| 429B | No/- | No/- | Note H |
| 430A | No/- | No/- | Note H |
| 430B | No/- | No/- | Note H |
| 431A | No/- | No/- | CVCS tanks not considered hi-level radwaste tanks |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>CAT</u> | <u>TYPE</u> <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|------------|---|------------------|
| 431B | D3 | Radwaste: Level, High-level Radioactive Waste Hold-up Tank 32 (3HBT01A) | 3HBL1001 |
| 431C | D3 | Radwaste: Level, High-level Radioactive Waste Hold-up Tank 33 (3HBT01B) | 3HBL1002 |
| 432A | D3 | Radwaste: Pressure, Large Radioactive Gas Decay Tank 31 | P1036 |
| 432B | D3 | Radwaste: Pressure, Large Radioactive Gas Decay Tank 32 | P1037 |
| 432C | D3 | Radwaste: Pressure, Large Radioactive Gas Decay Tank 33 | P1038 |
| 432D | D3 | Radwaste: Pressure, Large Radioactive Gas Decay Tank 34 | P1039 |
| 432E | D3 | Radwaste: Pressure, Small Radioactive Gas Decay Tank 31 | P1052 |
| 432F | D3 | Radwaste: Pressure, Small Radioactive Gas Decay Tank 32 | P1053 |
| 432G | D3 | Radwaste: Pressure, Small Radioactive Gas Decay Tank 33 | P1054 |
| 432H | D3 | Radwaste: Pressure, Small Radioactive Gas Decay Tank 34 | P1055 |
| 432J | D3 | Radwaste: Pressure, Small Radioactive Gas Decay Tank 35 | P1056 |
| 432K | D3 | Radwaste: Pressure, Small Radioactive Gas Decay Tank 36 | P1057 |
| 433A | D2 | Ventilation: Reactor Containment Fan Cooler 31 Damper A & B | N/A |
| 433B | D2 | Ventilation: Reactor Containment Fan Cooler 31 Damper C | N/A |
| 433C | D2 | Ventilation: Reactor Containment Fan Cooler 31 Damper D & Blow-in Door | N/A |
| 433D | D2 | Ventilation: Reactor Containment Fan Cooler 32 Damper A & B | N/A |
| 433E | D2 | Ventilation: Reactor Containment Fan Cooler 32 Damper C | N/A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|-----------------------|---------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 431B | Yes | 0 to 12' 11" | 0 to 11' | No/- | No/- | No/- | No/- | No/- | No/- |
| 431C | Yes | 0 to 12' 11" | 0 to 11' | No/- | No/- | No/- | No/- | No/- | No/- |
| 432A | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432B | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432C | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432D | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432E | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432F | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432G | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432H | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432J | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 432K | No | 0 to 165 psig | 0 to 150 psig | No/- | No/- | No/- | No/- | No/- | No/- |
| 433A | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433B | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433C | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433D | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433E | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|-----------------|---------------------|------------|--|
| 431B | No/- | No/- | | CVCS tanks not considered hi-level radwaste tanks. 0 to 11' level represents more than 90% of volume |
| 431C | No/- | No/- | | CVCS tanks not considered hi-level radwaste tanks. 0 to 11' level represents more than 90% of volume |
| 432A | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432B | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432C | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432D | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432E | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432F | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432G | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432H | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432J | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 432K | No/- | No/- | | Pressure relief valve set at 150 psig. Alarm at 110 psig Note 0 |
| 433A | No/- | No/- | | Note H |
| 433B | No/- | No/- | | Note H |
| 433C | No/- | No/- | | Note H |
| 433D | No/- | No/- | | Note H |
| 433E | No/- | No/- | | Note H |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|--|------------------|
| 433F | D2 | Ventilation: Reactor Containment Fan Cooler 32 Damper D & Blow-in Door | N/A |
| 433G | D2 | Ventilation: Reactor Containment Fan Cooler 33 Damper A & B | N/A |
| 433H | D2 | Ventilation: Reactor Containment Fan Cooler 33 Damper C | N/A |
| 433J | D2 | Ventilation: Reactor Containment Fan Cooler 33 Damper D & Blow-in Door | N/A |
| 433K | D2 | Ventilation: Reactor Containment Fan Cooler 34 Damper A & B | N/A |
| 433L | D2 | Ventilation: Reactor Containment Fan Cooler 34 Damper C | N/A |
| 433M | D2 | Ventilation: Reactor Containment Fan Cooler 34 Damper D & Blow-in Door | N/A |
| 433N | D2 | Ventilation: Reactor Containment Fan Cooler 35 Damper A & B | N/A |
| 433P | D2 | Ventilation: Reactor Containment Fan Cooler 35 Damper C | N/A |
| 433R | D2 | Ventilation: Reactor Containment Fan Cooler 35 Damper D & Blow-in Door | N/A |
| 433S | D2 | Ventilation: Fuel Storage Building Forced Air Unit 31 Emergency Damper | N/A |
| 433T | D2 | Ventilation: Fuel Storage Building Forced Air Unit 32 Emergency Damper | N/A |
| 433U | D2 | Ventilation: Fuel Storage Building Normal Airflow Top Damper | N/A |
| 433V | D2 | Ventilation: Fuel Storage Building Normal Airflow Bottom Damper | N/A |
| 433W | D2 | Ventilation: Fuel Storage Building Emergency Airflow Filter Intake Damper | N/A |
| 433X | D2 | Ventilation: Fuel Storage Building Emergency Airflow Filter Exhaust Damper | N/A |
| 433Y | D2 | Ventilation: Primary Auxiliary Building Exhaust Charcoal Damper--Face | N/A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|-----------------------|---------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 433F | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433G | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433H | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433J | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433K | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433L | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433M | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433N | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433P | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433R | No | Open or Closed | Note EE | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 433S | No | Open or Closed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 433T | No | Open or Closed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 433U | No | Open or Closed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 433V | No | Open or Closed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 433W | No | Open or Closed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 433X | No | Open or Closed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 433Y | No | Open or Clsoed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------|-------------------------|------------|-----------------|
| 433F | No/- | No/- | Note H | |
| 433G | No/- | No/- | Note H | |
| 433H | No/- | No/- | Note H | |
| 433J | No/- | No/- | Note H | |
| 433K | No/- | No/- | Note H | |
| 433L | No/- | No/- | Note H | |
| 433M | No/- | No/- | Note H | |
| 433N | No/- | No/- | Note H | |
| 433P | No/- | No/- | Note H | |
| 433R | No/- | No/- | Note H | |
| 433S | No/- | No/- | Note H | |
| 433T | No/- | No/- | Note H | |
| 433U | No/- | No/- | Note H | |
| 433V | No/- | No/- | Note H | |
| 433W | No/- | No/- | Note H | |
| 433X | No/- | No/- | Note H | |
| 433Y | No/- | No/- | Note H | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 433Z | D2 | Ventilation: Primary Auxiliary Building Exhaust Charcoal Damper--Bypass | N/A |
| 434A | D2 | Emergency Power: AC Bus 31 Current | N/A |
| 434B | D2 | Emergency Power: AC Bus 32 Current | N/A |
| 434C | D2 | Emergency Power: AC Bus 33 Current | N/A |
| 434D | D2 | Emergency Power: AC Bus 34 Current | N/A |
| 434E | D2 | Emergency Power: AC Bus 31 Voltage | N/A |
| 434F | D2 | Emergency Power: AC Bus 32 Voltage | N/A |
| 434G | D2 | Emergency Power: AC Bus 33 Voltage | N/A |
| 434H | D2 | Emergency Power: AC Bus 34 Voltage | N/A |
| 434I | D2 | Emergency Power: DC Bus 31 Current | N/A |
| 434J | D2 | Emergency Power: DC Bus 32 Current | N/A |
| 434K | D2 | Emergency Power: DC Bus 33 Current | N/A |
| 434L | D2 | Emergency Power: DC Bus 34 Current | N/A |
| 434M | D2 | Emergency Power: DC Bus 31 Voltage | N/A |
| 434N | D2 | Emergency Power: DC Bus 32 Voltage | N/A |
| 434O | D2 | Emergency Power: DC Bus 33 Voltage | N/A |
| 434P | D2 | Emergency Power: DC Bus 34 Voltage | N/A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|-------------------|---------------------------|-------------------------|---------------------|------------------------|----------------------|------------------------|-----------------------|---------------------|
| 433Z | No | Open or Closed | Note EE | Yes/Yes | Yes/No | No/- | No/- | Yes/Yes | Yes/Yes |
| 434A | Yes | None Specified | 0 to 100 amps | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434B | Yes | None Specified | 0 to 100 amps | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434C | Yes | None Specified | 0 to 100 amps | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434D | Yes | None Specified | 0 to 100 amps | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434E | Yes | None Specified | 0 to 150 Volts | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434F | Yes | None Specified | 0 to 150 Volts | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434G | Yes | None Specified | 0 to 150 Volts | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434H | Yes | None Specified | 0 to 150 Volts | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434I | No | None Specified | 0 to 400 amps | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 434J | No | None Specified | 0 to 300 amps | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 434K | No | None Specified | 0 to 250 amps | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 434L | No | None Specified | 0 to 200 amps | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 434M | Yes | None Specified | 0 to 150 volts | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 434N | Yes | None Specified | 0 tp 150 Volts | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 434O | Yes | None Specified | 0 to 150 Volts | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 434P | Yes | None Specified | 0 to 150 Volts | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND R/M</u> | <u>DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------|--------------------|---------------------|------------|---|
| 433Z | No/- | No/- | No/- | | Note H |
| 434A | No/- | No/- | No/- | | |
| 434B | No/- | No/- | No/- | | |
| 434C | No/- | No/- | No/- | | |
| 434D | No/- | No/- | No/- | | |
| 434E | No/- | No/- | No/- | | |
| 434F | No/- | No/- | No/- | | |
| 434G | No/- | No/- | No/- | | |
| 434H | No/- | No/- | No/- | | |
| 434I | No/- | No/- | No/- | | Charger output current only, no indication of bus current. Note H |
| 434J | No/- | No/- | No/- | | Charger output current only, no indication of bus current. Note H |
| 434K | No/- | No/- | No/- | | Charger output current only, no indication of bus current. Note H |
| 434L | No/- | No/- | No/- | | Charger output current only, no indication of bus current. Note H |
| 434M | No/- | No/- | No/- | | |
| 434N | No/- | No/- | No/- | | |
| 434O | No/- | No/- | No/- | | |
| 434P | No/- | No/- | No/- | | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|---|------------------|
| 434Q | D2 | Emergency Power: Diesel 31 Current | N/A |
| 434R | D2 | Emergency Power: Diesel 32 Current | N/A |
| 434S | D2 | Emergency Power: Diesel 33 Current | N/A |
| 434T | D2 | Emergency Power: Diesel 31 Voltage | N/A |
| 434U | D2 | Emergency Power: Diesel 32 Voltage | N/A |
| 434V | D2 | Emergency Power: Diesel 33 Voltage | N/A |
| 434W | D2 | Emergency Air Supply: Instrument Air Receiver Tank Pressure | P1207 |
| 434X | D2 | Emergency Air Supply: Diesel 31 Starting Air Receiver Tank Pressure | N/A |
| 434Y | D2 | Emergency Air Supply: Diesel 32 Starting Air Receiver Tank Pressure | N/A |
| 434Z | D2 | Emergency Air Supply: Diesel 33 Starting Air Receiver Tank Pressure | N/A |
| 501A | E1 | Radiation: Area, Containment, High Range | R25 |
| 501B | E1 | Radiation: Area, Containment, High Range | R26 |
| 502A | E2 | Radiation: Area, Central Control Room | R1 |
| 502B | E2 | Radiation: Area, Charging Pump Room (80' E1 PAB) | R4 |
| 502C | E2 | Radiation: Area, Fuel Storage Building | R5 |
| 502D | E2 | Radiation: Area, Sampling Room (North Wall) | R6 |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 2 of 3

| <u>INDEX</u> | <u>RNG OK</u> | <u>RANGE REQUIRED</u> | <u>RANGE ACTUAL</u> | <u>E.Q. R/M</u> | <u>SEISMIC R/M</u> | <u>RDNCY R/M</u> | <u>STANDBY R/M</u> | <u>AVLBLE R/M</u> | <u>Q.A. R/M</u> |
|--------------|---------------|-------------------------|-----------------------|-----------------|--------------------|------------------|--------------------|-------------------|-----------------|
| 434Q | Yes | None Specified | 500 to 3000 amps | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434R | Yes | None Specified | 500 to 3000 amps | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Tes | Yes/Yes |
| 434S | Yes | None Specified | 500 to 3000 amps | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434T | Yes | None Specified | 100 to 600 Volts | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434U | Yes | None Specified | 100 to 600 Volts | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434V | Yes | None Specified | 100 to 600 Volts | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434W | Yes | None Specified | 0 to 200 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434X | Yes | None Specified | 0 to 160 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434Y | Yes | None Specified | 0 to 160 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 434Z | Yes | None Specified | 0 to 160 psig | Yes/Yes | Yes/Yes | No/- | No/- | Yes/Yes | Yes/Yes |
| 501A | Yes | 1R/hr to 10E7 R/hr | 1R/hr to 10E8 R/hr | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 501B | Yes | 1R/hr to 10E7 R/hr | 1R/hr to 10E8 R/hr | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes | Yes/Yes |
| 502A | No | 10E-1 R/hr to 10E4 R/hr | 10E-4 R/Hr to 10 R/hr | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 502B | No | 10E-1 R/hr to 10E4 R/hr | 10E-4 R/hr to 10 R/hr | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 502C | No | 10E-1 R/hr to 10E4 R/hr | 10E-4 R/hr to 10 R/hr | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |
| 502D | No | 10E-1 R/hr to 10E4 R/hr | 10E-4 R/hr to 10 R/hr | Yes/Yes | No/- | No/- | No/- | Yes/Yes | Yes/Yes |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT R/M</u> | <u>IND DATA R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|-----------------|---------------------|------------|-----------------|
| 434Q | No/- | No/- | | |
| 434R | No/- | No/- | | |
| 434S | No/- | No/- | | |
| 434T | No/- | No/- | | |
| 434U | No/- | No/- | | |
| 434V | No/- | No/- | | |
| 434W | No/- | No/- | | |
| 434X | No/- | No/- | | |
| 434Y | No/- | No/- | | |
| 434Z | No/- | No/- | | |
| 501A | Yes/Yes | Yes/Yes | | |
| 501B | Yes/Yes | Yes/Yes | | |
| 502A | No/- | Yes/Yes | Note L | |
| 502B | No/- | Yes/Yes | Note L | |
| 502C | No/- | Yes/Yes | Note L | |
| 502D | No/- | Yes/Yes | Note L | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

INST LOOP

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | |
|--------------|---------------------------|---|------|
| 502E | E2 | Radiation: Area, In-Core instrument room (at seal table) | R7 |
| 502F | E2 | Radiation: Area, Drumming Station | R8 |
| 502G | E2 | Radiation: Area, Aux Boiler Feed Pump Bldg (west wall opposite main steam penetrations 31 and 32) | R10 |
| 502H | E2 | Radiation: Area, 55' PAB, Waste condensate tank cell wall, next to waste disposal panel | None |
| 502J | E2 | Radiation: Area, 73' PAB, entrance way to volume control tank. | None |
| 502K | E2 | Radiation: Area, 73' PAB hall, next to NPO office. | None |
| 502L | E2 | Radiation: Area, 41' PAB, south wall area of refueling water purification pumps. | None |
| 502M | E2 | Radiation: Area, 41' PAB hall on column next to containment spray pump. | None |
| 502N | E2 | Radiation: Area, 34' PAB hall near entry to safety injection pumps | None |
| 502P | E2 | Radiation: Area, 41' PAB pipe tunnel in area of chemistry post accident sampling station. | None |
| 502Q | E2 | Radiation: Area, 15' PAB, on north wall adjacent to RHR valve gallery. | None |
| 502R | E2 | Radiation: Area, 15' PAB hall, on wall at entry to filter cell. | None |
| 502S | E2 | Radiation: Area, 54' pipe penn within the doorway on the wall. | None |
| 502T | E2 | Radiation: Area, 67' EL, above pipe penn in area of hydrogen recombiner panels. | None |
| 502U | E2 | Radiation: Area, 92' fan building, in area of 4 channel iodine monitors | None |
| 502V | E2 | Radiation: Area, 72' Fan Building, Outside Plenum in area of differential pressure instruments | None |
| 503A | E2 | Radiation: Effluent, Noble Gas from Containment | --- |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> <u>R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|--|------------|-----------------|
| 502E | No/- | Yes/Yes | Note | L | |
| 502F | No/- | Yes/Yes | Note | L | |
| 502G | No/- | Yes/Yes | Note | L | |
| 502H | No/- | Yes/ | Note | L | |
| 502J | No/- | Yes/ | Note | L | |
| 502K | No/- | Yes/ | Note | L | |
| 502L | No/- | Yes/ | Note | L | |
| 502M | No/- | Yes/ | Note | L | |
| 502N | No/- | Yes/ | Note | L | |
| 502P | No/- | Yes/ | Note | L | |
| 502Q | No/- | Yes/ | Note | L | |
| 502R | No/- | Yes/ | Note | L | |
| 502S | No/- | Yes/ | Note | L | |
| 502T | No/- | Yes/ | Note | L | |
| 502U | No/- | Yes/ | Note | L | |
| 502V | No/- | Yes/ | Note | L | |
| 503A | -- | -- | Not needed since effluent discharges through common plant vent | | |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

INST LOOP

| <u>INDEX</u> | <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|------------|--|------------------|
| 504A | E2 | Radiation: Effluent, Noble Gas from Reactor Shield Building Annulus | -- |
| 505A | E2 | Radiation: Effluent, Noble Gas from Auxiliary Bldg or others containing Primary System Gases | -- |
| 506A | E2 | Radiation: Effluent, Noble Gas from condenser air removal system exhaust | R15 |
| 506B | E2 | Radiation: Effluent, Noble Gas from condenser air removal system exhaust - flow rate | None |
| 507A | E2 | Radiation: Effluent, Noble Gas from Common Plant Vent | R27 |
| 507B | E2 | Radiation: Effluent, Common Plant Vent Flow Rate | R27 |
| 508A | E2 | Radiation: Effluent, Noble Gas from Stm Gen Safety Relief Vlvs or Atm Dump Vlvs | R62 |
| 509A | E2 | Radiation: Effluent, Noble Gas from 4th Floor Admin Bldg Exhaust Vent | R101G |
| 509B | E2 | Radiation: Effluent, 4th Floor Admin Building Exhaust Vent Flow Rate | None |
| 509C | E2 | Radiation: Effluent, Noble Gas from Radioactive Machine Shop Exhaust Vent | R59 |
| 509D | E2 | Radiation: Effluent, Radioactive Machine Shop Exhaust Vent Flow Rate | None |
| 510A | E3 | Radiation: Effluent, Particulates from Common Plant Vent | R13 |
| 510B | E3 | Radiation: Effluent, Halogens from Common Plant Vent | R28 |
| 510C | E3 | Radiation: Effluent, Common Plant Vent Flow Rate | SV3 |
| 510D | E3 | Radiation: Effluent, Particulates from 4th Floor Admin Bldg Exhaust Vent | R45 |
| 510E | E3 | Radiation: Effluent, Halogens from 4th Floor Admin Bldg Exhaust Vent | R47 |
| 510F | E3 | Radiation: Effluent, 4th Floor Admin Building Exhaust Vent Flow Rate | None |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> <u>R/M</u> | <u>REC</u> <u>R/M</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|---------------------------|--------------------------|--|
| 504A | -- | -- | | | Not needed since IP3 has no reactor shield building annulus ⁰ |
| 505A | -- | -- | | | Not needed since these areas discharge through common plant vent |
| 506A | Yes/Yes | Yes/Yes | | | Note M |
| 506B | Yes/- | Yes/- | | | At 1.4x10E-3 uCi/cc exhaust is diverted to containment. Note M |
| 507A | No/- | Yes/Yes | | | |
| 507B | No/- | Yes/Yes | | | |
| 508A | No/- | Yes/Yes | | | Note I |
| 509A | No/- | Yes/Yes | | | Note M |
| 509B | No/- | Yes/- | | | Note M |
| 509C | No/- | Yes/- | | | Note M |
| 509D | No/- | Yes/- | | | Note M |
| 510A | No/- | Yes/Yes | | | Note M |
| 510B | No/- | Yes/Yes | | | Note M |
| 510C | No/- | Yes/Yes | | | |
| 510D | No/- | Yes/Yes | | | Note M |
| 510E | No/- | Yes/Yes | | | Note M |
| 510F | No/- | Yes/- | | | Note M |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|--|------------------|
| 510G | E3 | Radiation: Effluent, Particulates from Radioactive Machine Shop Exhaust Vent | R52 |
| 510H | E3 | Radiation: Effluent, Halogens from Radioactive Machine Shop Exhaust Vent | R58 |
| 510J | E3 | Radiation: Effluent, Radioactive Machine Shop Exhaust Vent Flow Rate | None |
| 510K | E3 | Radiation: Effluent, Particulates from Common Plant Vent | R13 |
| 510L | E3 | Radiation: Effluent, Halogens from Common Plant Vent | R28 |
| 510M | E3 | Radiation: Effluent, Common Plant Vent Flow Rate | N/A |
| 511A | E3 | Radiation: Environs, Exposure Rate | R27 |
| 512A | E3 | Radiation: Environs, Airborne Radiohalogens and Particulates | N/A |
| 513A | E3 | Radiation: Environs, Photons | N/A |
| 513B | E3 | Radiation: Environs, Beta and Low Energy Photons | N/A |
| 514A | E3 | Radiation: Environs, Radioactivity, Multichannel Gamma-ray spectrometer | N/A |
| 515A | E3 | Meteorological: Wind Direction | N/A |
| 516A | E3 | Meteorological: Wind Speed | N/A |
| 517A | E3 | Meteorological: Atmospheric Stability | N/A |
| 518A | E3 | Sampling: Primary Coolant and Containment Sump Water Sample Analysis - Gross Activity | N/A |
| 518B | E3 | Sampling: Primary Coolant and Containment Sump Water Sample Analysis -- Gamma Spectrum | N/A |
| 518C | E3 | Sampling: Primary Coolant and Containment Sump Water Sample Analysis -- Boron Content | N/A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT IND DATA REC</u> <u>R/M</u> | <u>R/M</u> | <u>COMMENTS</u> |
|--------------|--|------------|--|
| 510G | No/- | Yes/Yes | Note M |
| 510H | No/- | Yes/- | Note M |
| 510J | No/- | Yes/- | Note M |
| 510K | No/- | Yes/Yes | |
| 510L | No/- | Yes/Yes | |
| 510M | No/- | Yes/Yes | |
| 511A | No/- | Yes/Yes | 16 Units at 1-2 miles from plant in 22.5° sectors. Recorders. Short-term battery. EOF indication |
| 512A | No/- | No/- | Portable Sampler with onsite analysis capability |
| 513A | No/- | No/- | Portable Instrument, Note H |
| 513B | No/- | No/- | Portable instrument. Range above 5.0E1 rads/hr is covered by TLD's (1.0E-2 to 1.0E3 rads/hr), Note H |
| 514A | No/- | No/- | Portable Instrument. |
| 515A | No/- | Yes/Yes | |
| 516A | No/- | Yes/Yes | |
| 517A | No/- | Yes/Yes | |
| 518A | No/- | No/- | Note W |
| 518B | No/- | No/- | Note W |
| 518C | No/- | No/- | Note W |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 1 of 3

| <u>INDEX</u> | <u>TYPE</u> <u>CAT</u> | <u>VARIABLE</u> | <u>INST LOOP</u> |
|--------------|---------------------------|--|------------------|
| 518D | E3 | Sampling: Primary Coolant and Containment Sump Water Sample Analysis -- Chloride Content | N/A |
| 518E | E3 | Sampling: Primary Coolant and Containment Sump Water Sample Analysis -- Dissolved Hydrogen | N/A |
| 518F | E3 | Sampling: Primary Coolant and Containment Sump Water Sample Analysis -- Dissolved Oxygen | N/A |
| 518G | E3 | Sampling: Primary Coolant and Containment Sump Water Sample Analysis -- pH | N/A |
| 519A | E3 | Sampling: Containment Air Sample Analysis--Hydrogen Content | N/A |
| 519B | E3 | Sampling: Containment Air Sample Analysis--Oxygen Content | N/A |
| 519C | E3 | Sampling: Containment Air Sample Analysis--Gamma Spectrum | N/A |

REG GUIDE 1.97
STATUS OF COMPLIANCE

Sheet 3 of 3

| <u>INDEX</u> | <u>CONT</u> <u>R/M</u> | <u>IND</u> <u>R/M</u> | <u>DATA</u> <u>R/M</u> | <u>REC</u> | <u>COMMENTS</u> |
|--------------|---------------------------|--------------------------|---------------------------|------------|-----------------|
| 518D | No/- | No/- | No/- | Note W | |
| 518E | No/- | No/- | No/- | Note W | |
| 518F | No/- | No/- | No/- | Note W | |
| 518G | No/- | No/- | No/- | Note W | |
| 519A | No/- | No/- | No/- | Note W | |
| 519B | No/- | No/- | No/- | Note W | |
| 519C | No/- | No/- | No/- | Note W | |

Enclosure C to IPN 84-20

New York Power Authority
Indian Point 3 Nuclear Power Plant
Docket No. 50-286

NOTE A: Multiple Index Items

Compliance with the environmental qualification requirements has not been demonstrated. The Authority will either perform test/analyses to demonstrate qualification in accordance with the guidance provided in the Regulatory Guide or replace the components with qualified units. The schedule for this effort is provided in Enclosure D.

NOTE B: Multiple Index Items

The environmental and seismic qualification deficiencies will be resolved as part of the Environmental Qualification Program (10CFR50.49) during the cycle 4/5 refueling outage (mid-1985).

NOTE C: Index Items 205A-105D & 206A-206D - Redundancy

Redundancy for the Hot Leg Reactor Coolant Temperature is provided by the use of the core exit thermocouples once fully qualified (Diverse Variable). Redundancy for the Cold Leg Reactor Coolant Temperature is provided by the streamline pressure instrument Pt 419 A,B&C; PT 429 A,B-C; PT 439, A,B-C and PT 449 A,B-C (diverse variable).

NOTE D: Index Items 207 A&B - Range

Reactor Coolant Pressure indication (instrument loop P402) will be upgraded to 0-3000 psig as required by Regulatory Guide 1.97. This will be accomplished during the cycle 4/5 refueling outage (mid-1985).

NOTE E: Index Items 207 A&B - Redundancy

The redundancy requirements of the Regulatory Guide for these items will be met by the upgrade of Index Item 207C.

NOTE F: Index Item 207A - Recording

The recording requirements of the Regulatory Guide will be provided as part of the new computer (QSPDS and CFMS) system being installed as required by NUREG 0696. This system will be installed and functional by end of the cycle 4/5 refueling outage (mid-1985).

NOTE G: Index Item 209A

A qualified Reactor Vessel Level Indication System (RVLIS) will be installed during the cycle 5/6 refueling outage scheduled for 1986. Engineering and design is presently in progress and meets the requirements of NUREG 0737.

NOTE H: Multiple Index Items

Compliance with the Regulatory Guide 1.97 requirements will be accomplished either by additional analysis/assessment or plant modifications. The schedule for this effort, detailed by Index Item, is provided in Enclosure D.

NOTE I: Multiple Index Items

Work to ensure compliance with the Regulatory Guide 1.97 requirements is presently under way as part of the TMI Action Plan effort. The work will be completed during the cycle 4/5 refueling outage (mid-1985).

NOTE J:

The automatic containment isolation valves at the facility meet all of the requirements of the Regulatory Guide on position indication. Non-automatic containment isolation valves are maintained in the closed position and may be opened, if necessary, for plant operation and for only as long as necessary to perform the intended function, as required by IP3NPP's Technical Specification. These valves are additionally administratively controlled in the following manner:

1. Shift supervisor approval for opening a non-automatic containment isolation valve is required,
2. An operator must be dedicated to the operation of these valves as long as they are in the open position,
3. Operator must have communications established with the Central Control Room, and
4. Operators first response to any emergency condition while the valve is open is to insure that the valve is returned to the closed position.

Redundancy for this variable is provided by the Redundant Containment Isolation Valve Position Indication System (Two is True).

NOTE K: Auxiliary Feedwater Flow to Steam Generator 31, 32,
33 & 34

The redundant indication of this variable will be installed to the requirements of the guide in accordance with the schedule in Enclosure D. The diverse indication for this variable will be supplied by the Steam Generator level, i.e., wide range and narrow range while in its range.

Based on the above, it is the Authority's opinion that the requirements of the Guide are met.

NOTE L:

Area Radiation Monitors - Portable survey meters are the primary source of data on the radiation exposure rates inside buildings. These portable instruments are used to 1) verify the indication on the existing installed radiation monitors, and 2) determine exposure rates where there are no installed radiation monitors.

It is the Authority's opinion that the portable survey meters meet the intent of the Guide, but the Authority will review the guide requirements and install upgraded equipment for existing equipment and new equipment where necessary. See Enclosure D for the schedule.

NOTE M:

Radiation: Effluent - The monitoring requirements of the Guide on the effluent radioactivity from buildings and area where penetrations and hatches exist, and airborne radioactive materials released from the plant will be further evaluated where the Authority does not comply with the Guide. The Authority will comply with the requirements of the Guide either by additional analyses/assessment or plant modifications. The schedule for this effort is detailed by Index Item in enclosure D.

NOTE N:

Containment: Heat Removal by Reactor Containment Fan Cooler System is a variable that can be monitored by other variables that are already installed at the facility. The variables that can be monitored to provide this information during post-accident conditions are Containment Pressure and Temperature.

NOTE O: Radwaste: Pressure Large and Small Radioactive Gas Decay Tanks

The range that is required by the Guide, 0 to 165 PSIG, exceeds the tank design pressure and the tank safety valve setting, i.e., 150 PSIG. As additional status of tank pressure an alarm is actuated when tank pressure reaches 110 psig. It is therefore concluded that the actual range of tank pressure is acceptable and meets the intent of the Guide.

NOTE P: Primary Coolant: Temperature, Hot and Cold Leg
Range: Primary Coolant: Temperature, Hot and Cold
Leg - Range

The range required by the Guide is 50^o to 750^oF. The actual range of the existing installed equipment and those to be installed as part of 10 CFR 50.49, Environmental Qualification Program is 0^o to 700^oF. It is the Authority's opinion that the range of existing equipment meets the intent of the Guide. This is based on the fact that indication above the range of the installed equipment is not likely to cause operators to defeat or fail to accomplish a requested safety function.

NOTE Q: Steam Generator Wide Range Level -

Redundancy is provided by the diverse variables of the auxiliary feedwater flow to the steam generators and narrow ranges steam generator level while in the range of these transmitters. At this time one channel of auxiliary feedwater flow exists per steam generator, a second set will be installed per steam generator in accordance with the schedule in Enclosure P.

NOTE R: Containment Area High Range Radiation

The Containment Area High Range Radiation Monitors, R25 and R26 meets the requirements of NUREG 0737 and therefore meets the requirements of the Guide.

NOTE S:

Secondary System Radiation: Steam generator tube ruptures requires identification of the event and the faulted loop. This can be accomplished using combinations of these items, and steam generator narrow range level and steam generator liquid radiation obtained via steam generator blowdown and by Grab samples.

It is the Authority's opinion that the redundancy requirements of the Guide are met.

NOTE T: Radiation: Neutron Flux, Redundancy

In the event of a failure of one neutron flux monitoring channels (Index 201 A&B), the resulting ambiguous information will be resolved by boron concentration measurements used in conjunction with RCS temperature. Failure of this item is not likely to cause operators to defeat or fail to accomplish a required safety function.

NOTE U:

Primary Coolant: Temperature, Core Exit:

IP3 has 54 out of 65 incore thermocouples in service. The thermocouples are Chromel/Alumel and respond to temperature in a predictable manner up to 2500°F. The precision indicator on instrument rack D-4 has a range of 100 to 700°F and indicates only one thermocouple at a time. Plant computer input upper range limit for these TC's has recently been raised to 1000°F.

Instrument technicians can read the millivolt signal directly from the TC cable in the Control Room using a digital voltmeter. Range using this technique is from 0°F to 2500°F.

Therefore, the range for this index number is listed as 100°F to 2500°F even though there is no direct indicating instrument for the entire range.

NOTE W:

It is the Authority's opinion that the intent of the Guide has been met for these items. Provided below are justifications for deviations from the range and accuracy requirements for the variables.

Dissolved Hydrogen

The stated purpose for measuring dissolved hydrogen in the reactor coolant is to monitor the extent of zircalloy corrosion and monitor the susceptibility of the reactor coolant system to stress corrosion cracking.

The current system cannot measure dissolved hydrogen greater than 200 cc/kg primarily due to the design of the sample delivery system. The sample delivery system as designed by the NSSS vendor reduces the pressure to less than one hundred fifty pounds. This prevents the collection of a pressurized dissolved hydrogen sample. Additionally, the sample analysis system utilizes a gas expansion system which is not of sufficient volume to accurately analyze a dissolved hydrogen sample greater than 200 cc/kg. These systems were designed to

comply with NUREG 0578 and subsequent clarifications when accuracy and ranges for these parameters were not yet established. Conversations with the NRC at that time indicated that ability to analyze dissolved hydrogen at or slightly above the normal operating range would be satisfactory due to the large amount of hydrogen free safety injection water which would be introduced into the reactor. This system was operable in the first quarter 1980.

The Westinghouse Core Damage Assessment owners Group did not provide guidance for use of the reactor coolant dissolved hydrogen to determine the extent of corrosion, assuming most design basis accidents will result in a substantial release of hydrogen, to the vapor containment building. In accordance with Westinghouse Owners Groups recommended methods, a procedure relating vapor containment hydrogen concentration to cladding corrosion has been established. Therefore, an upper range of 200 cc/kg does not affect the ability of the Power Authority to evaluate the corrosion to the zircalloy cladding.

A dissolved hydrogen range of 0-200 cc/kg provides adequate information to determine the effect of reactor coolant dissolved hydrogen on oxygen control. The quantity of the dissolved hydrogen necessary to recombine with oxygen at saturation levels (3×10^{-4} moles O_2 /liter at STP) is 6×10^{-4} moles H_2 /liter. This is greater than ten times the concentration necessary to react with saturated oxygen.

The Authority considers the current system installed at Indian Point III adequate to meet the intent of Reg. Guide 1.97.

Oxygen Analysis

The Authority intends to verify via grab sample that oxygen is ≤ 0.1 ppm by measuring residual hydrogen in the case when residual dissolved hydrogen is found to be ≤ 10 cc/kg, and chlorides are greater than 0.15 ppm.

Oxygen will be monitored using the existing in-line oxygen analyzer (non-environmentally qualified). This special case is expected only to occur after the reactor has been shutdown for several days which would result in follow-up analyses being conducted in significantly lower radiation fields.

Chloride, Boron and pH Accuracy

Chloride, boron and pH analyses are being reassessed for the required accuracies.

NOTE X:

Containment Pressure: Range - This item does not comply with the Guide on its upper range. However, the range is high enough to confirm an abnormal condition. Ambiguous indication by either P 1421 or P1422 in the range above 75 psig is not likely to cause operators to defeat or fail to accomplish a required safety function. Therefore, an additional redundant or diverse channel for the range above 75 psig is not required.

NOTE Z:

Safety Injection: Accumulator Tank Level and Pressure:

Since the accumulators will discharge immediately when RCS pressure drops below accumulation pressure, these variables are unnecessary following an accident. Since power to the isolation valves is locked out at the circuit breaker, the operator would not be able to utilize these variables for manual actions, except for events in which the RCS pressure is decreasing very slowly. For such events, the present indicators are expected to function properly.

NOTE AA:

A "Yes" is entered in the "Range OK" column even though the actual range does not encompass the required range. This apparent discrepancy is acceptable because the intent of RG 1.97 is met: The operator knows whether the accumulator isolation valves are fully open.

The white lights used to satisfy Index 404A, B, C and D are on when the valves are fully open and off when not fully open. These lights are always operable.

The valves are opened and the power and control circuits are deenergized when the RCS pressure is above 1000 psi. When these circuits are energized, each valve has red and green indicator lights which tell the operator whether the valve is full open, full closed or at some intermediate position.

NOTE BB:

Primary Coolant: Pressurizer Heater Status - Range:

Breaker position is utilized to indicate heater operational status and backup is provided by pressurizer temperature and pressure.

NOTE CC:

Primary Coolant: Pressurizer Relief Tank Temperature - Range:

The tank temperature indication in the control room is 50 to 300°F. The tank design pressure is 100 psig. Prior to attaining this pressure, the tank rupture disc will provide a relief path to the containment atmosphere. This is twice the calculated pressure resulting from the maximum safety valve

discharge. Therefore, the maximum temperature in the tank is the corresponding saturation temperature, 327°F. The existing range is sufficient to provide the operator with the information to access the event and will not cause the operator to defeat or fail to accomplish a required safety function.

NOTE EE:

Ventilation: Damper Position - Actual Range:

RCFC Dampers

Damper status lights in control room do not cover the full range of damper position. Since the status lights change state at one point in the damper travel they actually function as bistable indicators. The following table gives positions at which damper position switch contacts change state:

| <u>Damper</u> | <u>Position at which position switch changes states</u> |
|---------------|---|
| A | Near Full Closed |
| B | Near Full Closed |
| C | Pre-set Midpoint Position |
| D | Near Full Closed |
| Blow-in Door | Near Full Open |

Only three sets of red and green indicator lights are operated from the five damper position switches listed above.

Therefore, status of some individual dampers are lost. The meaning of lights for each of the three sets is given below:

Indicator Lights

Indicator Light Set for Damper(s):

| <u>Red</u> | <u>Green</u> | <u>A&B</u> | <u>C</u> | <u>D & Blow-in-door</u> |
|------------|--------------|---|-----------------------------|--|
| On | On | Does Not Occur | Does Not Occur | Does Not Occur |
| On | Off | Both A <u>and</u> B at least partially open | C more open than setpoint | D at least partially open and BID fully open |
| Off | Off | Either A <u>or</u> B fully closed but both | Does Not Occur | D fully closed <u>or</u> BID partially closed but not both |
| Off | On | Both A <u>and</u> B fully closed | C more closed than setpoint | D fully closed <u>and</u> BID partially closed |

An operator can at best discern RCFC damper position with respect to only one point. Therefore, the range of indication required by RG 1.97 is not met.

Other Dampers

Only one indicator light represents damper position. Thus an operator can discern damper position with respect to only one point. Therefore, the range of indication required by RG 1.97 is not met.

NOTE FF:

Radiation: Effluent, Common Plant Vent Flow Rate:

Flow from common plant vent is not directly readable from recorders installed by MOD 80-03-054 RMS. MOD 80-03-054 RMS

has installed a recorder for uCi/cc and a recorder for Ci/Sec released. The intent of RG 1.97 is to assess the release and this intent is met.

If flow rate itself is desired then it can be calculated by picking points off of both recorders for the same points in time and using the following formula:

$$\frac{X_{TI} \text{ mCi/sec}}{Y_{TI} \text{ mCi/cc}} = Z_{TI} \text{ cc/sec}$$

- X = Radioactivity release rate
- Y = Radioactivity concentration
- Z = Vent Flow Rate

TI = A single point in time

0108a/1070c

Enclosure D to IPN 84-20

New York Power Authority
Indian Point 3 Nuclear Power Plant
Docket No. 50-286

Following is the action plan to resolve all open areas for which justification is not provided in the notes of Enclosure C or not covered by either the Environmental Qualification Program (10CFR50.49) or the TMI Action Plan (NUREG-0737). Areas of non-compliance resolved by the Environmental Qualification Program are covered by NOTE B. Areas of non-compliance resolved by the TMI Action Plan are covered by NOTES G AND I.

1. Index Number 101A B&C (also listed under Index 207 A&B, 211A&B, 304 A&B and 309 A&B) - Pressure-Reactor Coolant System

- Open Item: Redundancy (third channel verification)
- Action Plan: Extend range of existing RCS pressure channel (PT413) to provide RCS pressure verification.
- Schedule: Modification will be implemented by cycle 5/6 refueling outage (mid-1986).

Note: Verification means presently exist for 1700 to 2500 psig through the qualified pressurizer pressure instrumentation.

2. Index Number 104A-P, (Also listed under Index 416) - Steam Generator Level and 110 A-D - Auxiliary Feedwater Flow.
 - Open Item: Redundancy (third channel verification)
 - Action Plan: Establish positive means of steam generator level verification.
 - Schedule: Cycle 5/6 refueling outage

3. Index Number 108A (Also listed under index 408) Refueling Water Storage Tank (RWST) Level
 - Open Item: Redundancy
 - Action Plan: Establish diverse method of providing RWST level indication.
 - Schedule: Complete analytical effort by September 1985. Plant modification, if any are required, to be completed during cycle 5/6 refueling outage.

4. Index Number 109A (Also listed under index 306)-Containment Water Level
 - Open Item: Redundancy
 - Action Plan: Establish diverse method of providing containment water level.

- Schedule: Complete analytical effort by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

Note: RWST level can be used to provide diverse indication on containment water level.

5. Index Number 112A, B (Also listed under index 308 and 508)-Secondary System Radiation.

- Open Item: Redundancy and seismic qualification
- Action Plan: Conduct additional assessment/analyses and/or perform plant modifications as required.
- Schedule: Complete analysis by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

6. Index Number 113A (Also listed under index 208A)-Core Exit Temperature

- Open Items: Multiple
- Action Plan: Perform analyses/assessments and/or plant modifications.
- Schedule: Complete analysis by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

7. Index Number 115A, B (Also listed under index 210)-RCS Subcooling.
 - Open Items: Multiple
 - Action Plan: Perform analyses/assessment and/or implement plant modifications.
 - Schedule: Assessment phase to be completed by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

8. Index Number 201A, B - Neutron Flux
 - Open Item: Qualification
 - Action Plan: Qualify or replace with qualified units.
 - Schedule: Complete plant modifications during cycle 5/6 refueling outage.

9. Index Number 207A, B & C - Refer index number 101A, B & C.

10. Index Number 210A, B - Refer to index number 115A, B.

11. Index Number 211A, B & C - Refer to index number 101A, B & C.

12. Index Number 301A - Primary Coolant Temperature, Core Exit.
 - Open Item: Environmental/Seismic Qualification, indication and recording.
 - Action Plan: Qualify or replace.

- Schedule: Complete analysis and/or plant modifications during cycle 5/6 refueling outage.

Note: The thermocouple temperatures are currently indicated by a multipoint precision indicator located on a rack in the central control room. Only one thermocouple at a time can be connected to the indicator which has a display range of 100-700°F.

13. Index Number 302A - Radioactivity Concentration

- Open Items: Multiple
- Action Plan: Resolve deficiencies by analyses and/or plant modifications.
- Schedule: Complete analysis by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

14. Index Item 303A - Gamma Spectrum - Refer to Index Item 518B

15. Index Number 304A, B & C - Refer to index number 101A, B & C.

16. Index Number 306A-E - Refer to index number 109

17. Index Number 308A - Refer to index number 112

18. Index Number 309A, B & C - Refer to index number 101A, B & C

19. Index Number 312A - Radiation Monitoring

- Open Item: Environmental Qualification and Range.
- Action Plan: Perform additional analyses/assessment and/or plant modifications.
- Schedule: Complete analysis by September 1985. Plant modification, if any, to be completed during cycle 5/6 refueling outage.

20. Index Number 313A-J - Radiation Monitoring

- Open Item: Lack of monitors in certain areas.
- Action Plan: Upgrade existing equipment and/or install new equipment as required.
- Schedule: Implement plant modifications during cycle 5/6 refueling outage.

21. Index Number 402A & B - RHR Heat Exchanger Outlet Temperature.

- Open Item: Environmental and Seismic Qualification
- Action Plan: Qualify or replace with qualified units.
- Schedule: Cycle 5/6 refueling outage.

22. Index Number 405A - Boric Acid Flow.

- Open Item: Environmental and Seismic Qualification
- Action Plan: Perform analyses/assessment and/or implement plant modifications.
- Schedule: Assessment phase to be completed by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

23. Index Number 421A - CST Water Level

- Open Items: Multiple
- Action Plan: Perform analyses/assessment and/or implement plant modifications.
- Schedule: Assessment phase to be completed by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

24. Index Number 425A - Containment Sump Water Temperature

- Open Item: No instrument
- Action Plan: Perform analyses/assessment and/or implement plant modifications.
- Schedule: Assessment phase to be completed by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

25. Index Number 426A - Chemical and Volume Control Make-up Flow

- ° Open Item: Environmental and Seismic Qualification.
- ° Action Plan: Perform analyses/assessment and/or implement plant modifications.
- ° Schedule: Assessment phase to be completed by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

26. Index Number 427A - Chemical and Volume Control Letdown Flow

- ° Open Item: Range and Seismic Qualification.
- ° Action Plan: Perform analyses/assessment and/or implement plant modifications.
- ° Schedule: Assessment phase to be completed by September 1985. Plant modifications, if any are required, will be completed during cycle 5/6 refueling outage.

27. Index Number 428A - VCT Level

- ° Open Item: Range and Seismic Qualification
- ° Action Plan: Perform analyses or replace.
- ° Schedule: Complete analyses by September 1985. Modifications, if any are required, will be completed during cycle 5/6 refueling outage.

28. Index Number 429A & B - Component Cooling Heat Exchanger Temperature

- Open Item: Range and Seismic Qualification
- Action Plan: Perform analyses or replace.
- Schedule: Complete analyses by September 1985. Modifications, if any are required, will be completed during cycle 5/6 refueling outage.

29. Index Number 430A & B - Component Cooling Heat Exchanger Flow

- Open Item: Range and Seismic Qualification
- Action Plan: Perform analyses or replace.
- Schedule: Complete analyses by September 1985. Modifications, if any are required, will be completed during cycle 5/6 refueling outage.

30. Index Number 433A-Z - Damper Position

- Open Items: Range and Seismic Qualification
- Action Plan: Perform analyses or replace.
- Schedule: Complete analyses by September 1985. Modifications, if any are required, will be completed during cycle 5/6 refueling outage.

31. Index Number 434I-L - Emergency DC BUS Current

- Open Items: No indication of bus current. Charger output current is provided.
- Action Plan: Perform analyses or replace.
- Schedule: Complete analyses by September 1985. Modifications, if any are required, will be completed during cycle 5/6 refueling outage.

32. Index Number 501C and 502A-V - Area and Effluent Radiation Monitors

- Open Items: Ranges and lack of radiation monitors in specific locations.
- Action Plan: Conduct on plant specific evaluation of area and effluent monitoring requirements and implement modifications as required.
- Schedule: Complete plant specific evaluation by September 1985. Perform plant modifications during cycle 5/6 refueling outage.

33. Index Numbers 506A & B, 509A-D, 510A-S - Effluent Radiation Monitoring

- Open Items: Ranges and lack of radiation monitors in specific locations.

- Action Plan: Conduct plant specific evaluation of area and effluent monitoring requirements and implement modifications as required.
- Schedule: Complete plant specific evaluation by September 1985. Perform plant modifications during cycle 5/6 refueling outage.

34. Index Numbers 513A& B Radiation: Environs, Photons and Beta and Low Energy Photons

- Open Items: Range.
- Action Plan: Perform analyses/assessment and/or plant modifications.
- Schedule: Complete analysis by September 1985 and perform plant modifications, if required, by cycle 5/6 refueling outage.

35. Index Numbers 518A-G and 519 A-C: Sampling Primary Coolant and Containment

- Open Items Chloride, boron and pH accuracy requirements of NUREG-0737.
- Action Plan Perform analyses/assessment and/or plant modifications.
- Schedule: Complete analysis by September 1985 and perform plant modifications, if required, by cycle 5/6 refueling outage.