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NRC 80-69
July 31, 1980

1006
Revision 3
07/31/80

# THREE MILE ISLAND NUCLEAR STATION
## UNIT I ADMINISTRATIVE PROCEDURE 1006
## OPERATOR REQUALIFICATION PROGRAM

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| 25.0 | | | 50.0 | | | 75.0 | | |

Unit 1 Staff Recommends Approval

Approval NA Date —

Cognizant Dept. Head

Unit 2 Staff Recommends Approval

Approval NA Date —

Cognizant Dept. Head

Unit 1 PORC Recommends Approval

M A Nelson Date 7/24/80

Chairman of PORC

Unit 2 PORC Recommends Approval

NA Date —

Chairman of PORC

Unit 1 Superintendent Approval

RJ Toole Date 7-26-80

Unit 2 Superintendent Approval

NA Date —

MGQA Approval

D. E. Baldwin Date 7/31/80

NRC Approval

NA Date —

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THREE MILE ISLAND NUCLEAR STATION

UNIT I ADMINISTRATIVE PROCEDURE 1006

METROPOLITAN EDISON THREE MILE ISLAND UNIT ONE

OPERATOR REQUALIFICATION PROGRAM

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THREE MILE ISLAND NUCLEAR STATION

UNIT I ADMINISTRATIVE PROCEDURE 1006

METROPOLITAN EDISON THREE MILE ISLAND UNIT ONE

OPERATOR REQUALIFICATION PROGRAM

## 1.0 GENERAL

### 1.1 Purpose

The Metropolitan Edison Requalification Program, as set forth in this document, applies to Unit One of the Three Mile Island Nuclear Generating Station. All licensed personnel will participate in the requalification program. The basis of the requalification program is to maintain operator competence and proficiency for continued safe operation. The guidelines for the requalification program are found in 10CFR55 Appendix A. In addition, the implementation of this program conforms to 10CFR50.

### 1.2 Scope

The following sections of the requalification program cover:

I. Program Schedule

II. Pre-planned Lectures

III On-the-job-training

IV. Annual Evaluation Examination

V. Records

VI. Accelerated Requalification Program

VII. Four Month Absence Program

VIII. Newly Licensed Operators

IX. Requalification Program Administration

1.3 Program Schedule

The requalification program described herein will be implemented upon final approval of this document. March 1, and subsequent anniversaries of this date, will be considered to be the starting date of each annual[1] cycle of requalification program operation. The Metropolitan Edison Three Mile Island Unit One Requalification Program consists of three interrelated segments, two of which run concurrently. These segments are:

1) Requalification Lectures Series - The requalification lecture series consists of classroom instruction designed to maintain operator competence and proficiency and is scheduled for a minimum of 60 hours per year. Each license holder will complete the requalification lecture series requirements on an annual cycle.

2) On-the-job-training - On-the-job-training is designed to insure that all licensed personnel operate reactor controls and participate in major plant evolutions. Records of all on shift performance are maintained and periodically reviewed by supervisory personnel. The on-the-job-training is conducted throughout the two year term of the individual's license, including specific annual requirements. All required on-the-job-training will be completed prior to license renewal.

1 Annual, as referred to in the operator requalification program, is twelve months, not to exceed fifteen months, in order to accomodate plant operations. A statement of Requalification program participation, signed by the Director of Three Mile Island Unit One, will be submitted with each license renewal application.

3) Annual Evaluation Examination - The annual evaluation examinations simulate the written and oral examinations administered by the Nuclear Regulatory Commission (NRC). Performance on these annual evaluation examinations determines the extent of the mandatory up-grading program during the following twelve month requalification period.

The requalification program is designed with fixed performance standards and specified remedial actions. The program results and records are fully auditable.

2.0 REQUIREMENTS

2.1 Requalification Lectures Series

During each year, licensed personnel shall attend the Requalification Lecture Series as either students or instructors.

The following topics shall be covered as a minimum during the Requalification Lecture Series each year:

(a) Principles of Reactor Operations (including Principles of Heat Transfer and Fluid Mechanics).

(b) Features of Facility Design and Unit Modifications.

(c) General Operating Characteristics.

(d) Instrumentation and Control.

(e) Safety and Emergency Systems including Unit/Station Protection Systems.

(f) Normal, Abnormal, and Emergency Operating Procedures Review.

(g) Radiation Control and Safety

(h) Technical Specifications and Safety Analysis.

(i) Major Operational Evolutions (such as refueling).

(j) Applicable portions of Title 10, Chapter 1, Code of Federal Regulations.

(k) Mitigation of accidents involving a degraded core.

(l) Industrial Experience Reviews.

For Senior Operators the Requalification Lecture Series will also include:

(m) Reactor Theory and Theory of Fluids and Thermodynamics.

(n) Radioactive Material Handling, Disposal, and Hazards.

(o) Specific Operating Characteristics.

(p) Fuel Handling and Core Parameters.

(q) Administrative Procedures, Conditions, and Limitations

Lectures shall be held on a continuing basis with a weekly schedule of lectures designed to be repeated for each shift when that shift is designated for its training week. The program and schedule will be determined by unit operations or projected operations and must take into account planned and unplanned outages and available simulator time. Records of the topics covered in each session will be maintained by the Training Department. Attendance of all licensed personnel will be recorded. Absences will be made up by reviewing lecture materiels and/or discussions with on-shift supervisory personnel or the technical staff. Periodic evaluation quizzes covering the content of the requalification lecture series will be administered. The quizzes may be administered in either the closed book or open book format, as class room, or on-shift quizzes. If an unsatisfactory grade (less than 80%) is received, makeup sessions with assigned instructors will be

conducted. The makeup session will conclude when an oral or written evaluation is satisfactorily completed. The content of the quiz will be different for RO and SRO license holders and will reflect the topic areas and degrees of responsibility needed by the license holder. These personnel whose annual written examination scores indicate that a mandatory upgrading of their knowledge level is required, as delineated in section 2.3, attend the applicable requalification lecture(s) and must certify their knowledge by satisfactorily completing a written examination with a grade of at least 80%. If a grade below 80% is achieved on this certification examination by a licensed holder, a deficiency is assigned and the license holder will be assigned an accelerated requalification program as per section 2.5. These examinations will be specifically directed toward RO or SRO knowledge requirements and may be administered in either closed book or open book format, in the classroom or on-shift.

2.2 On-the-job-training

During the two-year term of his license, each licensed operator shall participate in on-the-job-training which has the following goals:

(a) Each licensed reactor operator and senior operator shall perform or participate in a combination of reactivity control manipulations, as defined in this section of the requalification program, based on the availability of plant equipment and system.

(b) Each licensed reactor operator or senior operator shall participate as appropriate, in applicable surveillance testing, system checkout and equipment operation based on license level and relevance to the area of license responsibility.

Normal shift rotation and watch station rotation within the shift organization assures diversity of experience in the on-the-job training program.

(c) Each licensed reactor operator or senior operator shall review procedure changes, unit modifications, technical specification changes, reportable occurrences and incidents either on-the-job or during sessions of the Requalification Lecture Series.

The following control manipulations and plant evolutions are acceptable for meeting the reactivity control manipulations required by Appendix A, Paragraph 3.a of 10CFR Part 55. The starred (*) items shall be performed on an annual basis; all other items shall be performed on a two-year cycle. Those control manipulations which are not performed at the plant may be performed on a simulator. Each licensed operator will normally spend one training week per year at a simulator. Control manipulations during abnormal or emergency operations will be performed on the simulator or walked through with, and evaluated by, a member of the training staff at a minimum. Personnel with senior licenses are credited with these activities if they direct or evaluate control manipulations as they are performed.

*(1) Plant or reactor startups to include such a range that reactivity feedback from nuclear heat addition is noticeable and heatup rate is established.

(2) Plant shutdown.

*(3) Manual control of steam generators and/or feedwater during startup and shutdown.

(4) Boration and/or dilution during power operation.

*(5) Any significant (> 10%) power changes in manual rod control.

(6) Any reactor power change of 10% or greater where load change is performed with load limit control on manual.

*(7) Loss of coolant including:

1. Significant PWR steam generator leaks.
2. Inside and outside primary containment.
3. Large and small, including leak-rate determination.
4. Saturated Reactor Coolant response

(8) Loss of instrument air (if simulated plant specific).

(9) Loss of electrical power (and/or degraded power sources).

*(10) Loss of core coolant flow/natural circulation.

(11) Loss of condenser vacuum

(12) Loss of service water if required for safety.

(13) Loss of shutdown cooling.

(14) Loss of component cooling system or cooling to an individual component.

(15) Loss of normal feedwater or normal feedwater system failure.

*(16) Loss of all feedwater (normal and emergency).

(17) Loss of protective system channel.

(18) Mispositioned control rod or rods (or rod drops).

(19) Inability to drive control rods.

(20) Conditions requiring use of emergency boration or standby liquid control system.

(21) Fuel cladding failure or high activity in reactor coolant or off gas.

(22) Turbine or generator trip.

(23) Malfunction of automatic control system(s) which affect reactivity.

(24) Malfunction of reactor coolant pressure/volume control system.

(25) Reactor trip.

(26) Main steam line break (inside or outside containment).

(27) Nuclear instrumentation failure(s).

Licensed personnel, whose job assignments are not directly related to unit operations will actively participate in control room operation a minimum of one shift per quarter. During this period these licensed personnel must assume (under instruction) and perform the duties of the on shift licensed operator as indicated by completing Attachment 1 and forwarding to the Training Department.

2.3 Annual Evaluation Examination

Evaluations will be conducted on an annual basis as follows:

(a) An annual written evaluation examination will be given to all licensed operators and senior operators prior to the completion of each annual cycle.

(b) An annual oral evaluation will be administered to all licensed operators and senior operators prior to completion of each annual cycle.

The annual written evaluation examination will be administered to all licensed personnel as set forth in the following guidelines:

1. The examination will simulate the examinatic normally administered by the Nuclear Regulatory Commission.
2. Reactor Operators will take Sections A through G of the examination while the Senior Reactor Operators will take Section H through L and answer selected questions in Sections A through G.
3. The examination, examination answers and a grading key will be prepared in advance.
4. The examination results of each individual will be used tc identify specific areas in which retraining is necessary to upgrade that individual's knowledge.
5. The examination will be administered and graded by a member of the station technical staff, station management staff, training department personnel, consultant, or the NRC.
6. The persons responsible for the preparation of the examinations and answers will be given credit for passing the examination.

The annual oral evaluation examination, using a checklist, will be administered to all licensed personnel. The oral examination will cover topics from the following areas:

(a) Action in event of abnormal conditions.

(b) Action in event of emergency conditions.

(c) Response to unit transients.

(d) Instrumentation signal interpretation.

(e) Procedure modification.

(f) Unit modifications.

(g) Technical specifications.

(h) Emergency plans.

The following standards apply to the annual evaluation examinations:

1. If a license holder scores less than 80% on any section of the annual written examination, the license holder, while attending the applicable requalification lecture, will be administered a quiz on that section. A grade of 80% will be required as a passing score.

2. An unsatisfactory evaluation on the annual oral examination will require that discussions of deficiencies take place between the license holder and either the Manager - Training Unit I, Supervisor -Operator Training, or other suitable qualified person designated by the Director - Training and Operational Safety Support. A second oral evaluation examination will be administered. If performance is again unsatisfactory, the license holder will be relieved of responsibilities and placed into an accelerated requalification program.

3. If an individual receives a grade of less than 80% overall or less than 70% on any single section on the annual examination it will be mandatory that (1) he be relieved of his licensed duties and (2) enter an accelerated requalification program. Upon (1) successfully passing a second written and oral examination and (2) certification of satisfactory rating by the Director of Three Mile Island Unit I, the individual will be returned to his licensed duties.

2.4 Records

Records of licensed personnel performance on all written evaluation examinations and quizzes shall be available for NRC examination for the two annual requalification cycles prior to license renewal application.

These records shall include:

1. Examination and quiz questions.
2. Answer sheets and grade keys.
3. Examination papers and work sheets.

Records of participation in the Requalification Lecture Program will be available for NRC review for the two annual requalification cycles prior to license renewal application.

These records shall include:

1. Attendance Records.
2. Requalification Lecture Content.
3. Quizzes and exams.
4. Absences and Makeup Sessions.

Records of annual oral evaluation examinations shall be made available for NRC review for the two annual requalification cycles prior to license renewal application.

2.5 Accelerated Requalification Program

An operator who does not clear deficiencies assigned due to performance below standards on either the annual written or oral evaluations will be relieved of responsibilities and enter a full time accelerated requalification program.

The program duration and content will be dictated by the nature of the deficiency. Program duration will be determined by individual performance. When the license holder is (1) able to satisfactorily pass an equivalent written or oral examination and (2) certification of his satisfactory rating is completed by the Director of Three Mile Island Unit One, he shall resume his on shift responsibilities. During the period of accelerated requalification, attendance at the Requalification Lecture Series is required.

2.6 Four Month Absence Program

If a licensed person has not actively carried out the functions of his license for a period in excess of four months he shall:

(a) Review all material presented or scheduled to have been presented in the Requalification Lecture Series for the period of inactivity.

(b) Be given an oral examination on the applicable Section of the Requalification Lecture Series and current unit status.

If performance on the oral evaluation is unsatisfactory, the individual will be placed in an Accelerated Requalification Program in accordance with Section 2.5.

Upon receipt of a satisfactory rating the licensed person shall be recommended for certification by the Manager - Training Unit I, Supervisor - Operator Training or other suitably qualified person designated by the Director - Training and Operational Safety Support, and approved by the Director of Three Mile Island Unit One.

2.7 Newly Licensed Operators

Newly licensed operators, upon receipt of their license, shall enter the program and participate in the annual program cycle. New operators receiving their NRC license less than six months prior to

the annual evaluation examination will be required to attend the Requalification Lecture Programs but will be excused from taking the current annual evaluation examination. However, they will be responsible for taking all other annual evaluation examinations.

3.0 RESPONSIBILITIES - REQUALIFICATION PROGRAM ADMINISTRATION

3.1 The Supervisor - Operator Training and his staff are responsible for:

1. Assigning instructors for the Requalification lecture series.
2. Determining mandatory upgrading assignments for individual operators.
3. Assigning deficiencies, determining appropriate action to clear deficiencies and clearing deficiencies upon satisfactory completion of assigned action.
4. Arranging accelerated requalification programs as may be necessary.
5. Defining oral evaluation procedures.

3.2 The Supervisor - Administrative Support Section and his staff are responsible for:

1. Maintaining all records.
2. Scheduling necessary simulator time.

3.3 The Supervisor of Operations, Supervisor - Operator Training, or other suitable qualified person designated by the Manager of Training is responsible for:

1. Evaluation of on-the-job performance of all license holders.
2. Meeting with license holders who receive unsatisfactory annual evaluation examination grades.

3. Certifying operator qualification when returning from a four month absence from operation.
4. Constructing annual written evaluation examination, answers and grade key in lieu of performance by the NRC.
5. Grading of the annual written examination in lieu of performance by the NRC.

ATTACHMENT I

OFF SHIFT LICENSED OPERATOR

WATCH STANDING DOCUMENTATION

I certify that _____ has satisfactorily
Off Shift Licensed Operator

assumed and performed the SS/SF/CRO duties under instruction for the
(circle one)

11-7/7-3/3-11 shift on _____.
(circle one) Date

_____
Shift Supervisor

Enclosure #2
NRC80-69
July 31, 1980

# UNIT 2 OPERATOR REQUALIFICATION PROGRAM STATUS

All licensed operator requalification training currently being conducted in Unit 2 under the guidelines of the existing Operator Requalification Instruction is being geared to cold shutdown plant operations.

The existing instruction is undergoing complete revision to increase the scope and focus on training for cleanup and recovery systems and operations of Unit 2

Continuing negotiations with the Pennsylvania State University are aimed at establishing training sessions (which include both classroom work and operation of their research reactor) that could serve in lieu of simulator operation, as part of the Requalification Program for Unit 2 operators. It is felt that the program proposed by Metropolitan Edison Company and currently being scoped by Penn State will more adequately meet the needs of the operators with regards to subject areas such as subcritical multiplication, core voiding, differing fuel geometries, nuclear instrumentation and failure modes, and effects of long term corrosion and high radiation on instrumentation and components, than would the standard simulator programs currently being conducted to meet the control manipulation and plant evolutions required by the Nuclear Regulatory Commission for on-the-job training. Penn State's Proposal for this type of program is expected in early August.

Enclosure # 3
NRC80-69
July 31, 1980

TRAINING DEPARTMENT ADMINISTRATIVE MEMORANDUM #5 - CHANGE #2

METROPOLITAN EDISON COMPANY Subsidiary of General Public Utilities Corporation

Subject CATEGORY IV CRO TRAINING PROGRAM

Location TMI Nuclear Station
Middletown, Pa.
Date October 8, 1976

To J.G. HERBEIN
J.J. COLITZ
G.P. MILLER
DEPT. HEADS

Enclosures: (1) Category IV CRO Study Assignment Sheet
(2) Practical Evolutions Sheet
(3) 90 Day CRO Probationary Period

1. When an Auxiliary Operator is advanced to Category IV CRO, he will immediately be placed into a Control Room Operator training program. This training program will consist of: (1) specific study assignments, (2) oral checkouts in which the individual actually performs or simulates performing certain evolutions, (3) written tests, (4) oral examinations and (5) classroom sessions, as set forth in the following:

2. Upon being advanced to Category IV CRO, the individual will fall immediately into the Shift organization as it exists at the time. Two (2) hours, as a minimum, of each day on shift will be specifically devoted to training. The individual will be provided with a desk or other suitable place to study in the Control Room area. The two (2) hour period will occur at a definite time of each day on shift insofar as practical.

3. At the beginning of each shift cycle, 5 or (6 shift), the individual will be provided with an assignment sheet (see Enclosure 1) which will detail study assignments for the two (2) hour periods for the first 11 (14 working days of his shift cycle. On the 12th (15th) working day, the individual will take a written test covering these assignments. On the 13th (16th) working day, the individual will receive assignments as above to cover the 13th (16th) through 23rd (28th) working days of a shift cycle. On the 24th (29th) working day, the individual will again take a written test. On the 25th (30th) working day of a shift cycle, the individual will take an oral examination covering the assigned areas of study during the shift cycle specifically, and comprehensive of the material covered to that date.

4. The written tests will be corrected and returned. Errors and weak areas will be covered with the individual, and reassigned.
Weak areas on written and oral examinations will be covered with the individual and his bargaining unit representative, if requested. Complete failure of a written exam or oral exam will be discussed with the individual and a bargaining unit representative prior to a retest on the material. Failure of the retest will require a subsequent discussion with the individual and a bargaining unit representative.

5. Additionally the Category IV CRO will be required to complete a Practical Evolutions Sheet (see Enclosure 2). This sheet will be completed either during the individuals' daily training period, or during other times while on shift as

INTER-OFFICE MEMORANDUM

situations dictate. Most of the items on Enclosure 2 involve performing evolutions, simulating performing evolutions, and understanding and being able to explain while simulating or performing. The individuals' Shift Supervisor, Shift Foreman, an SRO Licensed individual, or (in specifically designated cases) the licensed Training Coordinator may sign the practical evolution sheet.

6. Assignments detailed in paragraph 3 above, on which written and oral tests will be given, will come largely from items in Enclosure 2 with some assignments specifically intended to obtain signatures on Enclosure 2.

7. Checkouts for items on Enclosure 2 which must be simulated will be conducted in front of the Control Room Consoles and Panels, with the individual being required to point to specific items and controls. The checkout must be satisfactory prior to a signature for the evolution. The evolutions are assigned a point value to track the progress of an individual through the nine (9) month program. The required rate of progress is approximately 6 points every 4 working days.

8. To aid him in preparation for the simulator startup certification and licensing examination, the Category IV CRO shall come off shift to attend lectures on specific topics, listed below, as arranged by the Supervisor of Training and the Supervisor of Operations.

| | TOPIC | APPROXIMATE DURATION (HRS) |
|---|---|---|
| a. | Reactor Theory | 40 |
| b. | Heat Transfer, Fluid Flow and Thermodynamics | 32 |
| c. | Integrated Control System | 16 |
| d. | Recognizing and Mitigating the Consequences of Severe Core Damage | 26 |
| e. | Emergency Procedures - Emphasis on Transient Analysis and Safety Analysis | 32 |
| f. | Health Physics Review | 8 |
| g. | Nuclear Instrumentation | 4 |
| h. | Non-Nuclear Instrumentation | 4 |
| i. | Control Rod Drive System | 9 |
| j. | Technical Specifications | 8 |
| k. | Reactor Coolant Pumps | 4 |
| l. | Reactor Protection System | 3 |
| m. | Interlocks | 2 |
| n. | Simulator Training (including startup certification) | 120 |

9. The first 90 days of the Category IV CRO Training Program is designated as a Probationary Period. The individual will be evaluated using Enclosure 3. At the end of this 90 day period, the Shift Supervisor, Supervisor of Operations and the Supervisor of Training will recommend whether or not the individual should continue in the program.

10. Prior to the completion of the 9 months time period for the program, the Category IV CRO will be given a comprehensive written examination approved by the Supervisor of Operations and the Supervisor of Training.

    The results will be available for review by the Category IV CRO and a Union designated R. O. Licensed individual. Additionally, within the Training Program time period the Category IV CRO will be given a comprehensive oral examination by an SRO licensed individual designated by the Supervisor of Operations. The Category IV CRO will have the option of having a Union designated, R.O. Licensed individual present during the oral examination. Any examination failed, written or oral, will be reviewed with the Category IV CRO and a bargaining unit representative. If the Category IV CRO has successfully completed the above outlined training program, within 9 months, including the comprehensive written and oral examination, the individual may be advanced to Category II CRO. If the Category IV CRO has not successfully completed the training program, within 9 months, and successfully passes the written and oral examinations, the individual may or may not be advanced to Category II CRO. If the Category IV CRO has not successfully completed the program, within 9 months, and fails either the written and/or the oral examination, the individual will be returned to the position held prior to being advanced to Category IV CRO. If the individual successfully completes the training program, within 9 months, and fails either the written or oral examination, a re-exam will be considered based upon an evaluation by the Supervisor of Operations and the Supervisor of Training.

S. L. Newton
Group Supervisor
Nuclear Tech. Training

R. W. Zechman
Supervisor of Training

R. A. Knief
Manager - Training

SLN/RWZ/RAK/mss

ENCLOSURE 1

CATEGORY IV CRO STUDY ASSIGNMENT SHEET

NAME: _____ START DATE: _____

COMPLETION DATE: _____

ASSIGNMENTS _____ CYCLE HALF _____

TOTAL POINTS TO DATE FROM ENCLOSURE 2 _____

WRITTEN TEST DATE _____ RESULTS _____

ORAL TEST DATE _____ RESULTS _____

ANSWERS MISSED, HANDED IN CORRECTED _____

_____ DATE: _____

SIGNATURE OF LICENSED TRAINING COORD.

ENCLOSURE I

CATEGORY IV ASSIGNMENT SHEET

1. The enclosed study assignment sheets indicate those items which are to be completed during each two week period (½ cycle).

2. On the reverse side of each assignment sheet, there is a list of reference material which may be needed to complete some of these assignments.

3. For information on specific equipment (pumps, valves, motors, etc.) the technical manual (vendor manual) will be needed. The technical manuals are kept in the TMI Technical Library. Contact the TMI Office Supervisor for information on the use of the library.

ENCLOSURE 2

PRACTICAL EVOLUTION SHEET

The evolution sheet is an outline of specific items which are required to become a proficient Control Room Operator. The evolutions as to actions required for satisfactory completion are coded P, S, D or (X).

P - Perform: The evolution has to be carried out by the individual to the satisfaction of the Shift Supervisor, Shift Foreman or the Licensed Training Coordinator as denoted by an asterick.

S - Simulate: The evolution has to be demonstrated, without actually performing it, by the individual to the satisfaction of the Shift Supervisor, Shift Foreman, or Licensed Training Coordinator as denoted by an asterick.

D - Discuss: The individual must show orally that the evolution is understood to the satisfaction of the Shift Supervisor, Shift Foreman, or the Licensed Training Coordinator as denoted by an asterick.

(X) - Performed or Simulates: at Simulator
The evolutions are additionally assigned a point value. The Category IV CRO must receive approximately 6 points every 4 working days to satisfactorily complete the program in the nine month period.

The evolutions are preceded by capital letters A,B,C,D,E,F or G to indicate which category of an NRC exam they fall. Additionally, the capital letter N is used to denote which procedures are sent to the NRC.

Two Plant Startups, to the point of adding heat are required prior to application for a license, as well as two shutdowns, (to Hot shutdown).

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| | ADMINISTRATIVE PROCEDURES | | | |
| N | Document Control (1001) | D | | 1 pt |
| F | Tagging (1002) | P or S & D | | 2 pts |
| N | Radiation Protection Manual (1003) | S & D | | 2 pts |
| F/N | Radiation Emergency Plan (1004) (2 volumes) | D | | 2 pts* |
| F | Station Organization and Chain of Command (1009) | D | | 1 pt * |
| F | Technical Specification Surveillance Program (1010) | D | | 1 pt |
| F | Shift Relief and Log Entires (1012) | D | | 1 pt |
| F | Bypass and Safety Functions and Jumper Control(1013) | D | | 1 pt |
| F | Call of Standby Personnel to Plant (1014) | D | | 1 pt* |
| F | Operator at the Controls (1028) | D | | 1 pt |
| F | Control of Access to Primary System Openings (1030) | D | | 1 pt |
| | EMERGENCY AND ABNORMAL PROCEDURES | | | |
| F/N | Load Rejection (1203-1)(2203-2.1) | P or S & D | | 2 pts |
| F | High Cation Cond. in Condensate (1203-5) | D | | 1 pt |
| F | Hand Calc. for Quad. Power Tilt & Core Power Imbalance (1203-7) (2103-1.11) | P or S & D | | 2 pts |
| | Industrial Waste Treatment (1104-50A) | | | |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| | Plant Response to Penetration of Protected Area (1202-13) | D | | 1 pt |
| F/N | Unanticipated Criticality (1203-10) (2202-1.2) | S & D | | 2 pts |
| F/N | Loss of Reactor Coolant Makeup (1203-15) (2203-1.5.) | S & D | | 2 pts |
| F/N | R.C. Pump and Motor Emergencies (1203-16) (2203-1.4) | S & D | | 2 pts |
| F/N | River Water Failure (1203-19)(1202-38) (2203-1.7) | S & D | | 2 pts* |
| F/N | NSCC System Failure (1203-20 (2203-1.6) | S & D | | 2 pts* |
| F/N | SSCC System Failure (1203-21) (2203-2.4) | S & D | | 2 pts* |
| F/N | Steam Supply System Rupture (1203-24) (2203-2.3) | S & D | | 2 pts* |
| F/N | Post Accident H2 (Purge 1203-28)(Control 2203-2.6) | D | | 1 pt |
| | Class 1E Electrical (2107-1.2) | | | |
| F | Control Room HVAC (1203-34) (2203-2.5) | D | | 1 pt |
| F | Vibration and Loose parts (1203-40)(2203-1.8) | D | | 1 pt |
| | Substation (500 kv) (2107-1.3) | | | |
| F/N | Blackout (1202-2/2A) (2202-2.1/2.5) | S & D | | 3 pts |
| F/N | Turbine Trip (1202-3) (2203-2.2) | P or S & D | | 2 pts |
| F/N | Reactor Trip (1202-4) (2202-1.1) | P or S & D | | 2 pts |
| F/N | OTSG Tube Rupture (1202-5)(2202-2.6) | D | | 1 pt |
| F/N | Loss of RC/RC Press. (1202-6) (2202-1.3) | P or S & D | | 2 pts |
| F/N | Loss of RC Flow/RCP Trip (1202-14) (2202-1.4) | P or S & D | | 2 pts |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| F/N | CRD Equipment Failures (1202-8) (2203-1.2) | P or S & D | | 3 pts |
| F/N | CRD Malfunction Action (2203-1.3) | P or S & D | | 2 pts |
| F/N | Loss of Boron (2203-1.1) | P or S & D | | 2 pts |
| F/N | Hi Activity in Reactor Coolant (1202-11)(2202-1.6) | S & D | | 2 pts* |
| F/N | Excessive Radiation Levels (1202-12) (2202-1.7) | S & D | | 2 pts* |
| F/N | Loss of Intermediate Cooling (1202-17) (2202-1.9) | S & D | | 2 pts* |
| F/N | Loss of Feed to OTSG (1202-26A/B) (2202-2.2) | S & D | | 3 pts |
| F/N | Pressurizer Failure (1202-29) (2202-1.5) | S & D | | 2 pts |
| F/N | Loss of Decay Heat Removal (1202-35) (2202-1.8) | S & D | | 2 pts* |
| F/N | Loss of Instrument Air (1202-36) (2202-2.3) | S & D | | 2 pts |
| F/N | Cooldown Outside Control Room (1202-37) (2202-1.10) | S & D | | 3 pts* |
| F/N | Fi (1202-31) (2202-3.1) | S & D | | 3 pts* |
| F/N | Flood (1202-32) (2202-3.2) | D | | 1 pt* |
| F/N | Earthquake (1202-30) (2202-3.3) | D | | 1 pt* |
| F | Alarm Responses | S & D | | 5 pts |
| | OPERATING PROCEDURES | | | |
| N | Plant Limits and Precautions (1101-1)(2101-1.1) | D | | 2 pts |
| N | Plant Setpoints (1101-2) (2101-2.1) | D | | 2 pts |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| C/F/N | Plant Heatup to 525°F (1102-1) (2102-1.1) | P,S (X) | _____ | 2 pts |
| C/F/N | Plant Startup (1st) (1102-2) (2102-1.3) | P, (X) | _____ | 2 pts |
| C/F/N | Plant Startup (2nd) (1102-2) (2102-1.3) | P, (X) | _____ | 2 pts |
| C/F/N | Power Operation (1102-[illegible]) (2102-2.1) | P | _____ | 2 pts |
| C/F/N | Plant Shutdown (1st) (1102-10) (2102-3.1) | P, (X) | _____ | 2 pts |
| C/F/N | Plant Shutdown (2nd) (1102-10) (2102-3.1) | P, (X) | _____ | 2 pts |
| C/F/N | Plant Cooldown (1102-11) (2102-3.2) | P,S | _____ | 2 pts |
| C/F/N | Pressurizer Operation (1103-5) (2103-1.3) | P | _____ | 1 pt |
| C/F/N | Reactor Coolant Pump Operation (1103-6)(2103-1.4) | P,S & D | _____ | 1 pt |
| C/F/N | Approach To Criticality (1103-8) (2102-1.2) | P (X) | _____ | 2 pts |
| C/N | Heat Balance Calculation (Computer)(1103-16)(2103-1.10) | P | _____ | 2 pts* |
| C/N | Heat Balance Calculation (Hand) (1103-16)(2103-1.10) | P | _____ | 2 pts* |
| C/N | Reactivity Balance (ECP) (1103-15) (2103-1.9) | P | _____ | 1 pt * |
| C/N | Reactivity Balance (Pwr Change)(1103-15)(2103-1.9) | P | _____ | 1 pt * |
| C/N | Reactivity Balance (Boron Change)(1103-15)(2103-1.9) | P | _____ | 1 pt * |
| C/N | Reactivity Balance (SDM) (1103-15) (2103-1.9) | P | _____ | 1 pt * |
| E/N | Core Flood System (1104-1) (2104-1.1) | P or S or D | _____ | 1 pt * |
| E/N | Makeup and Purification (1104-2) (2104-1.2) | P & D | _____ | 2 pts |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| E/N | Decay Heat Removal (1104-4) (2104-1.3) | P & D | | 2 pts |
| B/F/N | Decay Heat Closed (1104-13) (2104-3.3) | P & D | | 2 pts* |
| B/F/N | Decay Heat River (1104-32) | P & D | | 2 pts* |
| E/N | Reactor Building Spray (1104-5) (2104-1.4) | P & D | | 2 pts |
| B/F/N | Spent Fuel Cooling (1104-6) (2104-1.5) | P & D | | 2 pts* |
| B/F/N | Intermediate Cooling (1104-8) (2104-1.6) | P & D | | 2 pts* |
| B/F/N | Circulating Water (1104-9) (2104-3.6) | P & D | | 2 pts |
| B/F/N | Nuclear Services Closed (1104-11) (2104-3.2) | S & D | | 2 pts* |
| B/F/N | Nuclear Services River (1104-30) (2104-3.1) | P & D | | 2 pts* |
| B/F/N | Secondary Services Closed (1104-12) (2104-3.5) | P & D | | 2 pts* |
| B/F/N | Secondary Services River (1104-31) (2104-3.4) | P & D | | 2 pts* |
| B/F/N | Instrument Air (1104-25) (2104-2.3) | P & D | | 2 pts |
| B/F/N | Station Service Air (1104-42) (2104-2.10) | P & D | | 2 pts |
| B/F/N | Reactor Bldg. Emerg. Cooling River Water (1104-38) | P & D | | 2 pts* |
| B | Reactor Bldg Ventilation (1104-14A-F) (2104-5.1) | S & D | | 2 pts* |
| B/F/N | Nuclear Plant Sampling (1104-43) (2104-1.11) | D | | 1 pt |
| B/F/N | Secondary Plant Sampling (1104-44) (2104-2.8) | D | | 1 pt |
| C/N | Bleed and Feed Process (1104-29E) | P or S & D | | 2 pts |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| E/N | Fire Protection (1104-45) (2104-6.1) | S & D | | 3 pts |
| B/F/G/N | Radwaste (1104-27,28,29 A/B/C/D/E/I/P/S) (Unit I) | D | | 6 pts* |
| B/F/G/N | Radwaste (2104-4.1/2/3/4/5/6) (Unit II) | D | | 6 pts* |
| D/N | Nuclear Instrumentation (1105-1) (2105-1.1) | S & D | | 2 pts* |
| D/N | Non-Nuclear Instrumentation (1105-6 (2105-1.6) | S & D | | 2 pts* |
| D/N | RPS (1105-2) (2105-1.2) | S & D | | 2 pts |
| E/N | Safeguards Actuation (1105-3) (2105-1.3) | S & D | | 2 pts |
| D/N | Incore Monitoring (1105-5) (2105-1.5) | S & D | | 2 pts |
| G/N | Radiation Monitoring (1105-8) (2105-1.8) | S & D | | 2 pts* |
| D/N | ICS (1105-4) (2105-1.4) | P & D | | 3 pts |
| D/N | Control Rod Drive (1105-9) (2105-1.9) | P & D | | 3 pts |
| D/N | Computer (1105-10) (2105-1.10) | D | | 1 pt |
| B/F/N | Turbine Generator (1106-1) (2106-3.1) | P & D | | 3 pts |
| B/F | Hydrogen Seal Oil (1106-8) (2106-3.3) | D | | 1 pt* |
| B/F | Turbine Lube Oil (1106-9) (2106-3.2) | D | | 1 pt* |
| B/F | Stator Cooling (1106-7) | D | | 1 pt* |
| B/F | EHC (1106-17) (2106-3.4) | D | | 1 pt |
| | BOP Electrical (2107-1.1) | D | | 1 pt |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| B/F | Isolated Phase Bus Duct Cooling (1106-11)(2106-3.6) | D | | 1 pt* |
| B/F | Condensate (1106-2) (2106-2.1) | P & D | | 3 pts |
| B/F | Cond. Polishing (Powdex) (1106-13) (2106-2.2) | D | | 1 pt |
| B/F | Condenser Air Removal (1106-15)(2106-2.3) | D | | 1 pt* |
| B/F | Feedwater (1106-3) (2106-2.4) | P & D | | 3 pts |
| B/F | OTSG Fill, Drain, Layup (1106-16)(2106-2.5) | D | | 1 pt |
| B/F | Auxiliary Steam (1106-4) (2106-1.3) | D | | 1 pt* |
| B/F | Gland Steam (1106-10) (2106-1.4) | D | | 1 pt |
| B/F | Extraction Steam, Heater Vents & Drains (1106-12) (2106-1.2) | D | | 1 pt |
| B/F | Main Steam (Reheat) (1106-14) (2106-1.1) | D | | 1 pt |
| B/F | Turbine Bypass (1106-5) (2106-1.5) | S & D | | 2 pts |
| E | Emergency Feed (1106-6) (2104-6.3) | S & D | | 2 pts |
| B | Normal Electrical System (1107-1) | D | | 1 pt* |
| B | Component Electrical (Panel) (1107-4/5) | D | | 1 pt |
| B | Emergency Electrical (1107-2) | D | | 1 pt |
| B/E | Diesel Generator (1107-3) (2104-6.2) | P or S & D | | 3 pts |
| B | Vibration Loose Parts (1105-14) (2105-1.13) | D | | 1 pt |
| | Soluable Poison Control (1103-4) (2103-1.2) | P & D | | 3 pts |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| | Unit Ventilation (Misc. Procedures) | D | | 1 pt |
| | Chlorination (Chem Treatment) | | | |
| | River Water (1104-36) (2104-3.9) | D | | 1 pt |
| | Circulating Water (1104-35) (2104-3.10) | D | | 1 pt |
| | Water Chemistry Control (2103-1.7) | D | | 1 pt |
| | Environmental Barrier System (2104-1.8) | D | | 1 pt |
| | $CO_2$ Fire System (1104-56) | D | | 1 pt |
| | R.B. Atmosphere Cleanup (1104-55) | D | | 1 pt |
| | Control Tower Vent (1104-19) (2104-5.4) | D | | 1 pt |
| | Fluid Block (1104-20) | D | | 1 pt |
| | Penetration Pressurization (1104-21) | D | | 1 pt |
| | Reactor Building Purge (1102-14) (2102-4.1) | P or S & D | | 2 pts |
| | H2 Addition and Degas (1102-12) (2103-1.5) | P or S & D | | 2 pts |
| | Decay Heat Removal by OTSG (1102-13) (2102-3.3) | S,D | | 2 pts |
| | HEALTH PHYSICS | | | |
| G/N | Radiation Dose Survey (1602) | D | | 1 pt |
| G/N | Neutron Survey (1603) | D | | 1 pt |
| G/N | Alpha Survey (1604) | D | | 1 pt |

ENCLOSURE 2

| | EVOLUTIONS | ACTION CODE | SIGNATURE | POINTS |
|---|---|---|---|---|
| G/N | Surface Contamination (1609) | D | | 1 pt |
| G/N | Est. and Posting Areas (1610) | D | | 1 pt |
| G/N | Radiation Work Permit (1613) | P & D | | 2 pts |
| G/N | Use of Respiratory Protection Devices (1616) | D | | 1 pt |
| G/N | Radiation Emergency Procedure (Emergency Plan) (1670.1)(1670.2)(1670.3) | D | | 1 pt |
| G/N | Control of Contaminated Spil's (1681) | D | | 1 pt |
| G/N | Use of Protective Clothing (1686) | D | | 1 pt |
| | Industrial Waste Treatment (1104-50A) | | | |
| | Release of Radioactive Liquid (1621)(1621.1) | | | |
| | Release of Radioactive Gas (1622)(1622.2) | | | |
| | | | | |
| | OTHER | | | |
| B/F | Technical Specification Test | P | | 10 pts* |
| A | Reactor Theory Test | P | | 10 pts* |
| G | Radiation Control Test | P | | 10 pts* |
| F | Refueling Test | P | | 10 pts* |
| | Startup Certification | P(X) | | 10 pts* |
| | | | | |

90 Day

CRO Probationary Period

Use of 90 Day Probationary Rating Sheet

To be used as a guide for the Cat. IV CRO's, Shift Supervisor and Supervisor of Operations to determine:

1.) Progress of the Individual (Cat. IV CRO) that is documented, and
2.) Identify the weak areas of the individual (Cat. IV CRO), and
3.) Assess the compatibility of the individual (Cat. IV CRO) with the job, and
4.) Supply more specific information to the Supervisor completing the 30, 60, and 90 day evaluations.

All of the areas of evaluation are job related and performance related for a Cat. IV CRO. The month blocks (first, second, third) for the areas of evaluation are completed with an evaluation mark and the initials of the shift supervisor, shiftforeman or training co-ordinator (denoted by*). The marks for evaluation are:

1.) N/A - does not apply
2.) SAT - Satisfactory - this denotes that the Cat. IV CRO is progressing normally, understands the area of evaluation, can discuss the area of evaluation, and can physically perform evaluations under supervision.
3.) UNSAT- Unsatisfactory - this denotes that the Cat. IV CRO is not progressing, does not understand area of evaluation, cannot discuss area of evaluation and has difficulty with physically performing evolutions under supervision.
4.) MARG - Marginal - this denotes that the Cat. IV CRO is progressing but slowly, is weak in understanding of area of evaluation, has some difficulty in discussing area of evaluation and has some difficulty with physically performing evolutions under supervision.

NOTE: All marks of UNSAT. and MARG. will require remarks on additional paper and attached to probationary rating sheet. This is to specifically identify the problems in the area of evaluation.

The block labeled "overall" is to be used by the Supervisor of Operations, Shift Supervisor and the Training Dept. Head of components on areas of evaluation

Cat. IV 90 Day Probationary Rating Sheet

Name: _____

| Area of Evaluation | First Month | Second Month | Third Month | OVERALL |
|---|---|---|---|---|
| I. Console Operations | | | | COMMENTS: |
| a. Manual Dexterity | | | | |
| b. Control Location | | | | |
| c. Instrument Interpretation | | | | |
| d. Alarm Response | | | | |
| e. Basic Operation ICS | | | | |
| f. Basic Operation Diamond | | | | |
| g. Basic Operation PI Panel | | | | |
| II. Leadership | | | | COMMENTS: |
| a. Directing Aux. Operators | | | | |
| b. Planning Work | | | | |
| c. Interface with SF & SS | | | | |
| d. Decision Making | | | | |
| III. Health Physics | | | | COMMENTS: |
| a. Basic HP Concepts | | | | |
| b. Basic HP Inst. Concepts | | | | |
| c. Basic RMS Knowledge | | | | |

# Cat. IV CRO 90 Day Probationary Rating Sheet

| Area of Evaluation | First Month | Second Month | Third Month | OVERALL |
|---|---|---|---|---|
| IV. Operating Awareness | | | | COMMENTS: |
| a. Standing Orders | | | | |
| b. Operations Memos | | | | |
| c. Revision Review Book | | | | |
| d. Evolutions Book (OJT) | | | | |
| e. Tech Specs. Sect. III | | | | |
| f. Tech Specs. Sect. IV | | | | |
| g. Tech Specs. "Appendix B" | | | | |
| V. Cat. IV CRO Training | | | | COMMENTS: |
| *a. 1st cycle 1st half | | | | |
| *b. 1st cycle 2nd half | | | | |
| *c. 2nd cycle 1st half | | | | |
| *d. 2nd cycle 2nd half | | | | |
| e. Cat. IV CRO Program Encl. 2 | | | | |
| VI. Surveillance | | | | COMMENTS: |
| a. Tech Spec. | | | | |
| b. Other | | | | |

| Area of Evaluation | First Month | Second Month | Third Month | OVERALL |
|---|---|---|---|---|
| VII. Computer Operation<br>a. Displays<br>b. Functions<br>c. Groups<br>d. Calculations Performed | | | | COMMENTS: |
| VIII. Integrated Plant Operation<br>a. Effects on Plant (Primary - Secondary)<br>b. Location of Equipment | | | | COMMENTS: |
| IX. Other:<br>a. Flow Prints<br>b. Elementary Electrical | | | | COMMENTS: |

90 Day Probation Recommendation Sheet

I ☐ do ☐ do not recommend individual to continue with Cat IV CRO Training

_____
Shift Supervisor

Comments:

I ☐ do ☐ do not approve recommendation of Shift Supervisor.

_____
Supervisor of Operations

Comments:

Cat. IV 90 Day Probationary Rating Sheet "Area of Evaluation" Requirement Guidelines.

I. Console Operations

a) Manual Dexterity

-Capable of Operation of various system controls:
(1. Pistol grip control for pump breakers, feeder breakers, etc.,
2. Push button controls for valves and tests,
3. Dial controls for voltage and setpoint adjustment,
4. Toggle switch for ICS control)
-Capable of changing paper on recorders.

b) Control Location

-Knows location of valve pump controls in control room (responsible for controls for systems on which he is checked out)
-Has knowledge of controls in the plant (especially those with redundant controls in control room)

c) Instrument Interpretation

-Capable of reading instruments accurately
-Capable of judging trends as normal or abnormal
*(special attention should be paid to CRO's ability to interpret source, intermediate, power range, and RMS Indications).

d) Alarm Response

-For common alarms knows the required actions
(e.g. Neutralizing tank pH Hi/Lo is a common alarm)
-Also knows required actions for such things as turb. trip, RX trip
-For uncommon alarms knows where to find required actions
(e.g. Generator ground is not a common alarm)
(i.e. How to use alarm responses)

e) Basic Operation of ICS

-Knows whether or not plant will increase or decrease output with-manual adjustment of specific Baily Controls.
-Know what tracking is and what it does.

f) Basic Operation of Diamond Panel

-Understands panel operation such that CRO is capable of,
-Imbalance correction, single rod or group movement
-Can perform startup under supervision
-Can talk through lights on diamond panel

g) Basic Operation of PI Panel

-Knows difference between the two indications available
-Knows how to reset RPI
-Knows what red, white, green and amber lights imply

II. Leadership

a) Directing Aux. Operators:
-Can command needed respect from AO's
-Can get AO's to accomplish necessary jobs
-Uses tact in dealing with AO's

b) Planning work:
Is capable of scheduling work to accomplish it in the alotted time

c) Interface with SF & SS:
-Compatibility with supervisors
-Able to receive and transmit supervisors orders

d) Decision Making:
-Makes decisions that are fair and displays confidence in sticking to the decisions
-Is able to react to adverse conditions with rationality

III. Health Physics

a) Basic HP Concepts:
-Knowledge of radiation
-Radiation areas
-Requirement for RWP's
-Use of protective clothing, effects of radiation (particulate & gas) Beta, Gamma, Alpha, Neutron)

b) Basic HP Instrument Concepts:
-Knows how the different portable detection instruments function and when to use them
-Knows function of TLD, Film Badge, Dosimeter and how they work

c) Basic RMS Knowledge:
-Knows locations of Radiation Monitors and types (liquid, area, gamma)
-Knows how RMS detectors and what respective trends indicate
-Has basic idea of trips that can be received from the RMS and how to bypass the trips.

IV. Operating Awareness

a) Standing Orders:
-Is signed off and up to date
-Understands the standing orders

b) Operations memos:
-Is signed off and up to date
-Understands the meaning of applicable operating memos

c) Revision Review Book:
-Is signed off and up to date
-Is aware of the changes and their effect on the CRO operating the plant

d) Evolution Book (OJT)
-Has evolutions such as reactively manipulations, turbine startup, etc. recorded and signed off

e. e) Tech Specs Sect. III
-Knows what areas these Tech Specs cover and effects on Plant Operation

f) Tech Specs Sect. IV
Knows the areas covered in this section

Note: The same depth of Tech. Spec. knowledge is not required at the end of 3 months as would be required at the end of the training program.

V. Cat. IV CRO Training
a) 1st Cycle 1st Half
-Completes required assigned material and completes test

b) 1st Cycle 2nd Half
-Completes required assigned material and test

c) 2nd Cycle 1st Half
-Completes required assigned material and test

d) 2nd Cycle 2nd Half
Completes required assigned material and tests

e) Cat IV CRO Program Enclosure 2
-Obtains signatures for procedures/systems on which the SF/SS/training co-ordinator feel his knowlege is acceptable.
(The signature is obtained after oral examination on procedure/system with SF/SS/TC. Rate of progress on practical evolutions should approximate that specified on the Cat. IV CRO Training Program).

VI. Surveillance
a) Tech Spec
-Awareness of the surveillance requirements and their effects on the plant
-Participates in surveillance as applicable

VII. Computer Operation
a) Displays
-Can display points and groups

b) Functions
-Knows what the various functions will give him (eg single point log, add point to group, etc.)
-Knows how to add and delete points to scan

c) Groups:
-Knows how to use groups and what they tell CRO

d) Calucations Performed
-Capable of using computer for calculations of leak rate, heat balance, Reactivity Balance, etc.