THE AMES LABORATORY REACTOR
OPERATOR TRAINING PROGRAM

MASTER

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Date Transmitted: August, 1974

PREPARED FOR THE U. S. ATOMIC ENERGY COMMISSION DIVISION OF RESEARCH
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I. INTRODUCTION

This document describes the Ames Laboratory Research Reactor's (ALRR) Reactor Operator Training Program (ROTP), and clarifies philosophies and policies concerned with: (1) interim training,

(2) initial training,

(3) qualification,

(4) retraining,

(5) requalification, and

(6) certification

of the ALRR operators. It explains how the ROTP is organized and functions, in accordance with guidelines established by the United States Atomic Energy Commission (USAEC) pursuant to Immediate Action Directive (IAD) 8401-6.

II. RATIONAL

A nuclear reactor is a highly complex mechanical-electronic system composed of numerous sub-systems, the improper operation of which may cause unsafe, nonproductive and/or costly conditions to exist. Therefore, it is mandatory to have fully trained operators who display a high degree of proficiency at all times.

The Ames Laboratory was directed by IAD 8401-6, "Retraining and Requalification of Reactor Operators and Supervisors", to conduct its ROTP in accordance with the following guidelines:

(1) there shall be training on a continuing basis;

(2) there shall be refresher training prior to examination;

(3) there shall be sufficient company time for training;

(4) there shall be re-examination at least annually in all procedures for handling abnormal plant conditions and emergencies, and biennial re-examinations on all other subjects;

(5) there shall be retraining and re-examination in any weak areas discovered.

It is the responsibility of the contractor, the Ames Laboratory, to formally administer the ROTP and to record the results of the (1) written, (2) oral, and (3) operational tests, and to have them readily auditable by the Ames Laboratory Nuclear Safety Committee (NSC) and the Chicago Operations Office AEC (CH).

III. PHILOSOPHY

The ALRR ROTP is an in-plant continuously cycling quasi-correspondence program, with the Training Coordinator functioning to bring the component parts together to form a comprehensive program. Training manuals are the basic source material.

Trainees can proceed through a program of this type at their own rate. Slow learners and fast learners are not tied to a group pace, nor do individuals suffer gaps in their knowledge because of erratic shift schedules, days off, vacations or sick leave. Training requirements of an individual can be satisfied even though group sessions cannot be justified. This type of training program:

1. costs less to administer,
2. takes less administrative time,
3. allows studies of different subjects simultaneously,
4. allows each operator to receive the sole attention of the Coordinator,

5. allows each operator to schedule his own study periods,
6. allows each operator to advance at his own pace,
7. allows each operator to have a part in improving the program.

While performing his assigned duties, a Shift Supervisor will occasionally be outside of the control room while the reactor is in operation. The ROTP therefore makes no distinction between the training of any operator category so that each operator is trained to handle any situation that may arise. Training and retraining is developed and implemented on the Shift Supervisor level.

IV. RESPONSIBILITY

The responsibility for providing an ROTP for the safe, efficient operation and maintenance of the ALRR is delegated to the Head, Reactor Operations, by the Reactor Division Chief, who in turn is responsible to the Director of the Ames Laboratory. The Head, Reactor Operations is assisted in this task by the Training Coordinator who: recommends the curriculum, compiles study materials, produces video training tapes, writes, administers and grades examinations, coordinates test writing by experts in their specific disciplines, schedules seminars by guest speakers, maintains auditable records, and acts as the agent-of-change for the program.

V. JOB DESCRIPTIONS

Class Title: Reactor Operator I

General Class Description:

Pursues and completes on-the-job training programs as required to qualify for actual nuclear reactor operation and maintenance.

During the training period, performs technical work under direct

supervision, requiring a limited degree of skill involving the operation and maintenance of a nuclear reactor. On completion of qualification program, performs similar duties.

Characteristic Duties & Responsibilities:

1. Manipulates mechanical and electrical controls to position control rods, adjusts valve settings in cooling systems, etc.
2. Reads indicating and recording devices such as multipoint temperature recorders and level safety channel recorders and records operating temperatures, neutron levels in reactor, etc.
3. Lubricates pumps and blower motors and changes filters in liquid clean-up systems.
4. Assists with the removal and insertion of beam tube plugs and other reactor-associated equipment in those areas of the reactor facility where behavior of the reactor may be influenced or where radioactive hazards may be involved.
5. Places temporary shielding at various locations in the facilities.
6. Assists with the removal of radioactive contamination in the reactor facility.

Class Specifications:

1. Completion of two years of post high school technical institute training or its equivalent or similar training acquired through experience.
2. Qualified and certified as having completed the ALRR training program for initial qualification, and
3. Remains in compliance with the Reactor Operator Retraining Program requirements.

Class Title: Reactor Operator II

General Class Description:

Performs technical work requiring a high level of skill involving the operation and maintenance of nuclear reactors. Makes decision and takes the necessary actions during all normal and abnormal operating conditions that result in the reactor being operated in a safe and efficient manner.

Characteristic Duties & Responsibilities:

1. Performs all the duties of Reactor Operator I's.
2. Moves fuel assemblies in and out of storage racks, the reactor and the storage pool.
3. Handles radioactive materials in the facility as necessary for safe operation of the reactor and disposes of radioactive wastes associated with the reactor.
4. Assists with the installation and removal of research equipment by experimenters using the facility.
5. May be assigned responsibility for satisfactory completion of a specific duty which requires the assistance of subordinate operators and/or other laboratory employees.

Class Specifications:

1. Qualified and certified as having completed the ALRR training program for initial qualification, and
2. Remains in compliance with the Reactor Operator Re-training Program requirements.
3. A minimum of two years' experience as an Operator I at the ALRR or
4. Successful completion of the U.S. Navy nuclear program, or

5. Any combination of education and experience from which comparable knowledge and ability can be acquired.

Class Title: Reactor Operator, Senior

General Class Description:

Performs highly technical work involving the operation and maintenance of nuclear reactors. Reports directly to the Reactor Operations Shift Supervisor assigned to his shift for functional and administrative guidance and direction when and if required. Provides functional direction to personnel in lower classifications, as assigned by his Reactor Operation Shift Supervisor. Is responsible for all aspects of the reactor facility during times when his superiors are absent, as the senior Reactor Operations employee on duty.

Characteristic Duties & Responsibilities:

1. Performs all the duties of Reactor Operator I's and Reactor Operator II's.
2. May organize, direct, and review the work and training effort of subordinate reactor operators, and assist them in the resolution of problems, under assignment by his Reactor Operations Shift Supervisor.
3. Assures that all reactor connected functions, the responsibility for which he is assigned, are carried out in conformance with existing procedures, operating limits and standard operating practices. Typical examples are presented below.
 - a. Satisfactory completion of required testing procedures associated with emergency and safety systems and equipment.
 - b. Conduction of practice drills for the purpose of response to possible emergency situations.

- c. Performance of sensitivity checks and calibrations of nuclear and other reactor instrumentation.
- d. Contributes to the updating effort required for information contained in the operator training/retraining program.
- e. Generates draft operating procedures, as their need becomes evident.

Class Specifications:

- 1. Qualified and certified as having completed the ALRR training program for initial qualification, and
- 2. Remains in compliance with requirements of the Reactor Operator Retraining Program, including those additional areas of responsibility assigned to Reactor Operations, Shift Supervisors.
- 3. Minimum of three years experience as an operator at the ALRR, or
- 4. Successful completion of the U.S. Navy nuclear power program and minimum of one year of experience at the ALRR, or
- 5. Any combination of education and experience from which comparable knowledge and abilities can be acquired.

Class Title: Reactor Operations Shift Supervisor

General Class Description:

Performs as the first-line authoritative party concerning safety and efficiency in reactor operation.

Reports directly to Head, Reactor Operations, for guidance and direction when and if required.

Is responsible for all aspects of the reactor facility during periods of time when other Reactor Division management employees are absent.

Provides functional and administrative supervision to reactor operators assigned to the shift for which he is responsible.

Performs highly technical work involving the operation and maintenance of nuclear reactors.

Characteristic Duties & Responsibilities:

1. Performs all the duties of Reactor Operator I's, Reactor Operator II's and Senior Reactor Operators.
2. Organizes, assigns, and reviews the work of other personnel, trains employees, and assists them in the resolution of problems, under the general guidance of the Head, Reactor Operations.
3. Assures that all reactor operations and other functions closely associated with the reactor are carried out in conformance with existing procedures, operating limits and standard operating practices.

Typical examples are presented below:

- a. In emergency situations, performs as the Acting Reactor Team Leader, functionally described in the Ames Laboratory Emergency Plan, until relieved by the permanently assigned Leader or his alternate.
- *b. Is responsible for all aspects of immediate security within the confines of the ALRR facility, including nuclear safeguards, and personnel, equipment and material.
- *c. Is responsible for all aspects of physical safety at the facility.
- *d. Is responsible for proper manipulation and monitoring of

*Has primary responsibility during those times when Laboratory employees regularly assigned these responsibilities are absent, and secondary at other times.

radioactive material, and for proper control of radiation environments.

e. Is responsible for proper observance of reactor systems, components and personnel testing and calibration requirements, specified by the United States Atomic Energy Commission and assigned by Head, Reactor Operations.

VI. ORGANIZATION

History

In April 1970, the Ames Laboratory was directed by CH to implement IAD 8401-6 and proceed with the establishment of a readily auditable, well documented, ROTP to replace the original program initiated at the inception of the ALRR.

Program Description

A two-volume training manual, which is divided into sections conforming to the basic areas of concentration set forth in the following outlines, was assembled. The Training Manual, which is the basic study material, is augmented with: (1) video tapes, (2) the ALRR Operations Manual, (3) systems prints and drawings, (4) manufacturers' tech manuals, (5) commercially published texts, (6) reports, and (7) internally administered memoranda.

With the guidance of the Training Coordinator and previously qualified peers, the trainee proceeds through the course at his own pace. As he completes each section he demonstrates his mastery of the subject by satisfactorily completing written, oral and operational examinations.

Maintenance Training

The Reactor Operators carry on a continuously functioning Preventive Maintenance Program. The Deputy Reactor Supervisor is responsible for the program and observes its proper administration by the Shift Supervisors. Documentation is kept up by the Training Coordinator who catalogues and posts the various completed tasks.

Approximately 60 tasks are carried out on a monthly, quarterly, semiannual or annual basis.

Due to the relatively uncomplicated nature of the Preventive Maintenance Program and because corrective maintenance and major repair work is performed by qualified specialists, the maintenance training program for reactor operators is accomplished on a man-to-man on-the-job basis.

All major corrective maintenance is performed by specialists within a given craft: machinists who work out of an on-site machine shop perform most of the routine corrective maintenance. However, nonroutine problems such as the installation of new components, jobs that require excessive manpower, engineering assistance or outside of the Laboratory expertise are handled by or through the Building and Engineering Services Department. Routine electronics corrective maintenance problems are handled by an electronics technician who works out of an on-site shop. He is assisted in major corrective maintenance by the campus-based Ames Laboratory Instrumentation Group.

Written Examinations

A written examination, developed for the newly-employed operator trainee, deals with emergency situations and must be satisfactorily completed before he is allowed to fill a shift position. Written

examinations are also given for each of the general subject areas. Special written tests covering the various aspects of shift management are given to shift supervisors and prospective shift supervisors.

The areas in which a trainee must be interim qualified before being appointed to a shift are:

1. Emergency Systems
 - a. Emergency Cooling System
 - b. Natural Circulation System (NCS)
 - c. External Recirculation System (ERS)
 - d. Emergency Ventilation and Irradiated Air Systems
 - e. Control and Emergency Air Systems
 - f. Alarms

The subject areas over which an operator is tested, and must qualify in, annually, are:

1. Emergency Procedures
2. First Aid
3. Fire and Safety
4. Emergency Cooling System
5. Emergency Electric Systems
6. Health Physics
7. Irradiated Air, Ventilation and Emergency Ventilation Systems.

The subject areas over which an operator is tested, and must qualify in, biennially, are:

1. General Physics
2. Reactor Physics
3. Control Rods & Control System

4. Reactor Instrumentation
5. Shielding
6. Experimental Facilities
7. Primary Cooling System
8. Secondary Cooling System
9. Helium Systems
10. Thermal Shield Cooling System
11. Plug Cooling, Hot Waste & Storage Pool Systems
12. Fuel, Refueling and Anticriticality

There are three special test areas for shift supervisors only:

1. Responses to Abnormal Conditions
2. Component Testing Procedures
3. Shift Administration

Oral Examinations

A three-phase, oral walk-through test (control room, reactor room and reactor basement) encompasses all reactor components, techniques, procedures and philosophies. It is mandatory that all operators satisfactorily pass this examination prior to their initial qualification. A review board conducts the oral examination prior to each biennial requalification.

Operational Tests

In addition to the individualized check-outs by the Shift Supervisor, six operational examinations:

1. Reactor Start-up, shutdown and power level change procedures,
2. Liquid Filter Change and clean-up procedures,
3. Liquid hot waste transfer,

4. Reactor Room Crane Operation, Fork Lift Operation & Maintenance,
5. Emergency Procedures Practice Drills, and
6. Sample Insertion and Removal,

must be satisfactorily completed prior to initial qualification and certification. Two more operational examinations:

1. Reactor Refueling Procedures, and
2. Control Rod Removal and Insertion

should be accomplished prior to initial qualification if at all possible. These examinations may be completed after qualification and certification if a reactor refueling or a control rod removal does not occur before the rest of the training program has been completed.

Status Board

A large bulletin board, Status Board, (page 30), mounted in the control room displays the current standing of each person in the program. There are 23 spaces to display the status of written tests and 11 spaces for oral tests. In addition, there are spaces to display approximately 60 preventive maintenance functions that an operator is routinely expected to perform.

VII. INITIAL TRAINING, QUALIFICATION AND CERTIFICATION

The Training Coordinator explains the ROTP and outlines a course of action to a prospective operator as soon as feasible after he reports for work. Next, with the guidance of the Training Coordinator and his Shift Supervisor, the trainee commences study on the Interim Qualification section of the program (which includes on-shift walk-through checkouts with the Shift Supervisor in charge). After satisfactorily completing a

written examination and receiving approval from the Head, Reactor Operations, he is assigned to a shift. The purpose for interim training is to familiarize new employees with the facilities' safety systems and emergency procedures.

After joining a shift the trainee begins work on one of the 19 general subject areas. Again, selection of subject order is made with Training Coordinator and Shift Supervisor guidance. After the prescribed preparations have been completed and the trainee has been checked out by him, the Shift Supervisor requests a written test.

Because there is no hierarchial order involved, study on the next subject may begin as soon as a written examination is completed, even though it has not been graded.

As the Training Coordinator corrects each test he writes his comments and grades on a cover sheet (page 26), posts the requalification due date on the status board and sets up an appointment for a critique with the trainee. Several examinations can be scrutinized at the same session, which is a convenience to shift workers.

After satisfactorily completing each of the 19 written tests, a three-phase oral walk-through examination is administered. Each of three examiners carries grading sheets upon which are printed typical questions and spaces for comments. As the examiner and the examinee proceed through the facility, questions are asked about the physical plant, process systems, operational procedures and theory. The examiner is not restricted by the printed questions and may probe freely into any subject area.

Qualification is certified on a form (page 27) which is routed to the Head, Reactor Operations, by the Training Coordinator after he has ascertained that the trainee has satisfactorily completed all course requirements with a score of 75% or better on each phase. After the Head, Reactor Operations, signs the form he sends it to the Reactor Division Chief who also signs it, filing the original, and returns a copy to the Training Coordinator for the ROTP files.

Ample time and equipment are provided for on-duty study and testing. A custom-made media console (page 31), installed in the control room, has a video tape recorder and TV monitor built into it. In addition, there is an arrangement for projecting 16 mm movies and 35 mm slides. Also integrated into this study center are cabinets for the training manuals, programmed instruction volumes, operating manuals and textbooks plus shelves for videotapes, industry-oriented brochures and writing materials. The console is arranged in such a way as to allow a trainee to utilize the audio-visual components without bothering the other personnel on duty. Earphones can be utilized for private listening.

VIII. RETRAINING, REQUALIFICATION AND RECERTIFICATION

The retraining, requalification and recertification phase of the ROTP is the same as that of the initial program (described in Part VI) with the following exceptions.

1. Each of the seven tests concerning safety, emergency systems, and emergency procedures must be repeated annually during the 12th month following its initial completion.

2. Each of the twelve tests concerning process systems, operating

procedures and theory must be repeated biennially during the 24th month following its initial completion.

3. Each of eight operational tests must be repeated prior to its two-year anniversary date. A new due date will be assigned each time the test is completed.

4. The oral examination review board (composed of four reactor division personnel, three of whom make up a quorum) replaces the oral walk-through examination which is given for initial qualification. The oral examination must be administered every two years during the 24th month following initial completion.

The qualification anniversary dates which are established during the initial certification phase will remain in effect as long as an employee is a reactor operator, unless he elects to requalify early.

IX. SHIFT SUPERVISOR WRITTEN EXAMINATIONS

The three written examinations which are designed to test an operator's managerial, administrative and clerical abilities under normal and abnormal conditions, must be completed by all Shift Supervisor candidates prior to promotion to Shift Supervisor. Re-examination will be performed every year during the 12th month after initial examination.

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2. The Ames Laboratory Training/Retraining Program. E. K. Gurganus, Ames Laboratory, August 1, 1971.
3. A Model of the Ames Laboratory's Reactor Operator Training Program Utilizing A Computer Flow Chart Format. E. K. Gurganus, Ames Laboratory, October 1, 1972.
4. ALRR Reactor Operators Job Descriptions, B. W. Link, Iowa State University, July 1, 1974.

DATE: _____

Medical Approval

This image shows a blank sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook or ledger page.

Name _____

Anniversary Date _____

Subject Areas, Annual Requalification	Date Last Qualification	Date of Requalification
1. Emergency Procedures		
2. First Aid		
3. Fire and Safety		
4. Emergency Cooling		
5. Emergency Electric Systems		
6. Health Physics		
7. Irradiated Air, Ventilation & Emergency Ventilation Systems		
Subject Areas, Biennial Requalification		
1. General Physics		
2. Reactor Physics		
3. Control Rods & Control System		
4. Reactor Instrumentation		
5. Shielding		
6. Experimental Facilities		
7. Primary Cooling System		
8. Secondary Cooling System		
9. Helium Systems		
10. Thermal Shield Cooling System		
11. Plug Cooling, Hot Waste & Storage Pool Systems		
12. Fuel, Refueling & Anti-Criticality		
Shift Supervisors' Annual Requalification		
1. Responses to Abnormal Conditions		
2. Component Testing Procedures		
3. Shift Administration		

CONTROL SYSTEM

1. What conditions inhibit Reg Rod movement in manual? In automatic? Use diagrams.

2. What conditions prevent control rod withdrawal or cause an inhibit in individual operation? In gang operation? Use diagrams.

3. What conditions cause control rod insertion? Reg Rod insertion? Use diagrams.

4. Does the inhibit relay prevent Reg Rod withdrawal?

5. How does the automatic circuit operate? _____
6. Why is the automatic low range set at 65%? _____
7. Demonstrate knowledge of the rod position lights.
 - A. What light combination indicates normal operation of a control rod being withdrawn to mid-range? _____
 - B. What rod lights would normally be on shortly after a normal reactor scram from rod mid-range? _____
 - C. What light combination might indicate a scrambled rod that stuck halfway down? _____
 - D. Under normal condition can all the lights be out? Under what conditions would they all be on? _____
8. What happens to the magnet current as you approach a fast scram point?

9. What happens to the coarse indicator on a rod when the fine position read out is selected? _____
10. Are the K204 and K205 indicator lights important? Why? What do you do if one is on and one is off?

I, II, III, SS

DATE _____

This image shows a full page of blank, lined paper. It features approximately 20 horizontal black lines spaced evenly apart, typical of notebook or legal stationery. The lines are thin and extend across the entire width of the page. There is no handwriting, printed text, or other markings on the paper.

EVALUATION SHEET
FOR
LIQUID HOT WASTE
TRANSFER

Evaluation Scale

Function performed correctly	Function performed correctly-slow response	Required shift supervisor assistance	Unaware of the function to perform	Performance Procedure
				1. Health Physics in hot waste building notified. a. Tank lined up to receive waste <u>Supervisor comment:</u>
				2. Valves properly lined up for pumping a. Two suction valves open b. Discharge valve (scavenger) open <u>Supervisor comment:</u>
				3. Eductor lined up for priming pumps a. WV-1, WV-2 & WV-18 open b. WV-3 cycled as necessary <u>Supervisor comment:</u>

Name _____

Date _____

INTERIM ORAL EXAM

Shift Supervisor

1. View Reactor alarms tape	_____
2. Operation of a Cutie Pie	_____
3. Control console check-out	_____
4. Area check	_____
5. Scott air pak	_____
6. Time cards	_____
7. Video tape machine operation	_____
8. EV-6 and EV-9 locations	_____
9. Emergency vent system	_____
10. Control air system	_____
11. Emergency cooling system	_____
12. Leak detectors	_____
13. Emergency power system	_____

(Complete this form before taking written interim exam.)

Attachment #6. Interim Examination Check-out Form

INITIAL QUALIFICATION
CHECK-OFF FORM

Operator _____

SUBJECT AREAS	DATE	SS INITIAL
Emergency Systems (Interim)		
Emergency Procedures		
First Aid		
Fire & Safety		
Emergency Cooling		
Emergency Electric Systems		
Health Physics		
Irr. Air, Vent. & Emerg. Vent Sys.		
General Physics		
Reactor Physics		
Control Rods & System		
Reactor Instrumentation		
Shielding		
Experiment Facilities		
Primary Cooling System		
Secondary Cooling System		
Helium Systems		
Thermal Shield Cooling System		
Plug, Hot Waste & Storage Pool Cooling		
Fuel, Refueling & Anti- Criticality		

Test _____

Grade _____

Date Submitted _____ Date Graded _____ Date of Critique _____

[illegible]

Date _____

Attention _____

According to my records, _____
satisfactorily completed all phases of the Ames Laboratory Research
Reactor's _____
program on _____.

Training Coordinator_____
Attention _____

Date _____

I have received notification that _____
satisfactorily completed all phases of the Ames Laboratory Research
Reactor's _____ program on _____
and should receive a _____
certificate.

Head, Reactor Operations

Comments: _____

PREVENTIVE MAINTENANCE

OPERATOR _____

DATE _____

1.	EMERGENCY ELECT. PWR. SYS. CK.						
2.	ANNUNCIATOR CHECK						
3.	EMERG. AIR SYSTEM CK.						
4.	SEC. SYS. ACT. MONITOR CK.						
5.	PREOPERATION CK.						
6.	EMERGENCY VENT SYS. CK						
7.	FISSION PRODUCTS MONITOR CK.						
8.	EMERG. COOLING SYS. CK.						
9.	REACTOR REFUELING						
10.	CONTROL ROD IN & OUT						
11.	SAMPLES IN & OUT						
12.	LGD. FILTER CHG. & CLEAN-UP						
13.	EMERGENCY PROCEDURES PRACTICE DRILLS						
14.	HOT WASTE TRANSFER						
15.	REACTOR START-UP, SHUTDOWN AND POWER LEVEL CHANGE						
16.	FORK LIFT & CRANE OPERATION						
17.	HEAT EXCHANGERS	1	2	3			
18.	MOTORS	4	5	6	7		
19.	PUMPS	8	9	10	11	12	
20.	DUPLEX STRAINER	13					
21.	GASOMETERS	14	15				
22.	AIRLOCK DOORS	16					
23.	VALVES	17	18	19	20	21	22 23
24.	RECORDERS	24	25				
25.	ACTIVITY MONITORS	26	27				
26.	LIGHTS	28	29				
27.	TEMPERATURE DEVICES	30	31	32			
28.	PRESSURE DEVICES	33	34	35	36		
29.	LEVEL DEVICES	37	38	39	40	41	42
30.	FLOW DEVICES	43	44	45	46	47	48
31.	FILTERS (AIR)	49	50				
32.	LEAK DETECTORS	51					
33.	RABBIT SYSTEM	52					
34.	CHEMICAL FEED STATION	53					
35.	TOWER	54	55				
36.	CONDUCTIVITY	56	57				

LESSON INDEX
Emergency Procedures

To prepare for the Emergency Procedures Test:

1. View video tape if available.
2. Study ALRR Emergency Plan.
3. Become familiar with the locations and use of all emergency equipment at ALRR.
4. Discuss Emergency Plan with a shift supervisor.

Prior to taking the written test, the operator should be able to:

1. Describe the organizational structure of the Ames Laboratory Emergency Team, who these people are and their specific jobs in the event of an emergency.
2. Describe the three general categories of ALRR emergency situations.
3. Describe the methods of communications available at ALRR.
4. Describe the locations of emergency equipment at ALRR.

Attachment #11. Study Guide (typical)

#12 Status Board

#13 Media Console