

NUCLEAR CRITICALITY SAFETY ORGANIZATION
QUALIFICATION PROGRAM

K. J. Carroll

R. G. Taylor

C. A. Worley

Nuclear Criticality Safety Organization

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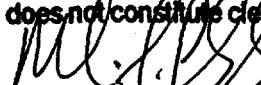
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M.J. Plaster
Engineer

Date

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QUALIFICATION PROGRAM

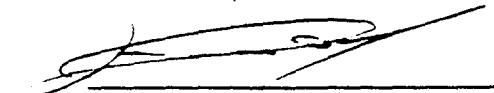
NUCLEAR CRITICALITY SAFETY ORGANIZATION (NCSO)

Approvals:

Qualification Verification Official:

R. G. Taylor

Manager, NCSO:



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1.0 PURPOSE

- 1.1 The Nuclear Criticality Safety Organization (NCSO) is committed to developing and maintaining a staff of highly qualified personnel to meet the current and anticipated needs in Nuclear Criticality Safety (NCS) at the Oak Ridge Y-12 Plant. This document defines the Qualification Program to address the NCSO technical and managerial qualification as required by the Y-12 Training Implementation Matrix (TIM).
- 1.2 This Qualification Program is in compliance with DOE Order 5480.20A and applicable Lockheed Martin Energy Systems, Inc. (LMES) and Y-12 Plant procedures. It is implemented through a combination of LMES plant-wide training courses and professional nuclear criticality safety training provided within the organization.
- 1.3 This document supersedes Y/DD-694, Revision 3, 9/6/96, *Qualification Program, Nuclear Criticality Safety Department*. There are no backfit requirements associated with revisions to this document.

2.0 REFERENCES

NOTE: The Nuclear Criticality Safety Organization (NCSO) was previously designated as the Nuclear Criticality Safety Department (NCSD). During the transition period, some references may utilize the old designation.

- 2.1 DOE Order 5480.20A. *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*
- 2.2 DOE-STD-1070-94, *Guidelines for Evaluation of Nuclear Facility Training Programs*
- 2.3 Y10-027, *Conduct of Training Procedure*
- 2.4 Y/DD-552, *Nuclear Criticality Safety Organization Self-Assessment Program*
- 2.5 Y/DD-696, *Training Implementation, Nuclear Criticality Safety Organization*
- 2.6 Y/DD-710, *Guidance for the Development of Continuing Technical Training, Nuclear Criticality Safety Organization*

3.0 SCOPE

- 3.1 This Qualification Program is applicable to technical and managerial NCSO personnel, including temporary personnel, sub-contractors and/or LMES employees on loan to the NCSO, who perform the NCS tasks or serve NCS-related positions as defined in sections 5 and 6 of this program.
- 3.2 NCSO training documents referenced in this program are provided in Y/DD-696.

4.0 DEFINITIONS

NOTE: General definitions are provided in Y10-027, *Conduct of Training Procedure*.

- 4.1 **Individual Development Plan (IDP):** a document used to identify and document managerial and administrative responsibilities of a manager or senior staff person. It serves as a guide for the learning activities which address those responsibilities.
- 4.2 **Job Fundamentals Requirements:** the basic knowledge and skills common to all duty areas of a job. These requirements may be derived from the results of a job analysis, industry standards, or incumbent surveys.
- 4.3 **List of Qualified Personnel:** the approved listing of personnel who are qualified to perform NCS Tasks or serve in NCS-related duty assignments.
- 4.4 **Mentor:** a one-on-one advisor/guide/coach to personnel in the NCSO professional Qualification Program.
- 4.5 **Mentoring Checklist:** an instrument used to identify, guide, and document the professional development of technical staff at the program level. The checklist contains learning objectives derived from the applicable tasks/competencies statements.
- 4.6 **Mentoring Checksheet:** an instrument used to identify, guide, and document the professional development of technical staff at the task level. The checksheet contains performance standards derived from the applicable tasks/competencies statements for a particular checklist item, and includes evaluations appropriate to the subject matter.
- 4.7 **Qualification Program:** the composite list of requirements, based on job assignment, identified and validated by line management. It includes the formal training process that is used to fully prepare a trainee for the performance of assigned responsibilities.
- 4.8 **Qualification Verification Official (QVO):** an individual designated by line management who controls the record copy of the Qualification Program and verifies that candidates meet qualification requirements.
- 4.9 **Requirements/Qualification Status Report:** a Training Management System (TMS) report which lists an individual's assigned training requirements and the status of each requirement. This report is used to track an individual's progress through a training cycle.
- 4.10 **Supervisor:** as used in this document, the person to whom a Candidate reports administratively. The terms "Group Leader" and "Supervisor", as used in this document, are synonymous.
- 4.11 **Training Management System (TMS):** a data base which reflects the employees hard copy training records. TMS is used to aid the training organization in managing training activities and to assist line management in making work assignments.
- 4.12 **Y-12 Technical Support Center:** an accessible area set aside for providing an assembly area for operational support personnel during an emergency situation.

5.0 QUALIFICATION PROGRAMS

- 5.1 Qualification Programs establish the overall requirements for managerial and technical positions within the NCSO which are NCS related. NCSO Manager, NCS Engineer in Training, NCS Engineer, NCS Specialist, Technical Specialist, and Continuing Training Programs are provided for NCSO personnel. Technical personnel move through the Qualification Programs starting with Engineer in Training, continuing with either NCS Engineer or Technical Specialist, and ending up in the continuing education and training program. The NCSO Manager, NCS Engineer, and Technical Specialist are Training Implementation Matrix (TIM) positions. Appropriate education and experience requirements are contained in the programs.
- 5.2 The NCS Engineer in Training Qualification Program includes requirements for education, job fundamentals, basic theory and practice knowledge, and basic documents knowledge.
- 5.3 The NCS Engineer Qualification Program includes requirements for continuing training in job fundamentals, as required, duty area access, functional area specific basic facility knowledge, task qualification in tasks 1 - 4 described in section 6, and experience.
- 5.4 The NCS Specialist Qualification Program includes requirements for continuing training in job fundamentals and duty area access, as required, task qualification in tasks 5 and 6 and 2 additional tasks from tasks 7 - 9 described in section 6, and experience.
- 5.5 The Technical Specialist Qualification Program includes requirements for continuing training in job fundamentals, as required, duty area access, basic facility knowledge as necessary to support selected specialization tasks, task qualification in 3 tasks from tasks 1 - 9 described in section 6, and experience.
- 5.6 The NCSO Manager Qualification Program includes requirements for LMES managerial job fundamentals and duty area access supplemented with an Individual Development Plan (IDP).
- 5.7 The Continuing Training Qualification Program includes fixed and flexible requirements. The fixed requirements consist of LMES courses required to maintain qualification in job fundamental and duty area access training. The flexible requirements may include an Individual Development Plan, optional LMES and/or off-site training to enhance and diversify the individuals knowledge, skills, and abilities, and any training needed to address performance deficiencies, facility or procedure changes, or applicable operating experiences.

6.0 TASK AND DUTY ASSIGNMENT QUALIFICATIONS

6.1 The qualification to perform NCS tasks or serve in NCS and training related duty assignments is attained on a task or duty assignment specific basis. Tasks and duty assignments addressed are listed below.

6.1.1 NCS Task and Duty Assignment activities:

- 6.1.1.1 Task 1 - External Monitoring
- 6.1.1.2 Task 2 - NCS Evaluation and Documentation
- 6.1.1.3 Task 3 - Implementing Documentation Approval
- 6.1.1.4 Task 4 - NCS Computation
- 6.1.1.5 Task 5 - NCS Computation Review
- 6.1.1.6 Task 6 - NCS Evaluation and Documentation Review
- 6.1.1.7 Task 7 - Emergency Response Planning
- 6.1.1.8 Task 8 - Criticality Accident Alarm System Support
- 6.1.1.9 Task 9 - Order Compliance and NCS Procedures
- 6.1.1.10 Task 10 - Independent Technical Review Board (ITRB)
- 6.1.1.11 Task 11 - Final NCS Technical Documentation Approval
- 6.1.1.12 Task 12 - NCS Program Oversight
- 6.1.1.13 Task 13 - Y-12 Technical Support Center Support
- 6.1.1.14 Task 14 - Computation Technologist

6.1.2 Training-related Duty Assignments:

- 6.1.2.1 Qualification Verification Official
- 6.1.2.2 Mentor
- 6.1.2.3 Training Coordinator

6.2 NCSO personnel shall be qualified to perform specific tasks through completion of the task specific qualification requirements, normally while working toward the overall program qualification. Note that some tasks are functional area or computer code specific. Qualification in these tasks applies to performing the task for a specific functional area or computer code only.

6.3 When used as a basis for qualification, personnel qualified to a higher technical qualification than specified are considered qualified for the position/board/assignment/activity. The hierarchy of technical qualification, from lower to higher, is:

NCS Engineer in Training NCS Engineer NCS Specialist	or	NCS Engineer in Training Technical Specialist
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6.4 Summary descriptions, knowledge, skills and abilities (KSAs) requirements, experience requirements, and qualification requirements for the various tasks and duty assignments are provided in Table 1.

Table 1 - Task and Duty Assignment Qualification

TASK OR DUTY ASSIGNMENT	APPLICABLE KNOWLEDGE, SKILLS, ABILITIES	EXPERIENCE REQUIREMENT	QUALIFICATION REQUIREMENT
<p>Task 1 - External Monitoring: Perform a comparison of operating area conditions and activities with the assumptions, limits and requirements of CSAs, CSRs, CSEs, and implementing documents in accordance with approved procedures and instructions. Note that this is a functional area specific task and qualification is attained for the assigned functional area only.</p>	<p>Knowledge of NCS theory, standards, procedures, and practices. Knowledge of the process and equipment being analyzed and Operational Safety Requirements (OSRs). Skill in the use of applicable reference documents and drawings. Knowledge of applicable plant, NCSO and operating procedures. Skill in interpersonal communications.</p>	<p>None beyond NCS Engineer in Training requirements</p>	<p>Qualified as NCS Engineer in Training. Completion of the task requirements as listed on the associated Task 1 checksheet and Basic Facility Knowledge checksheet, including Duty Area Access-related LMES training in Rad Worker II and NCS. This is an operating facility specific qualification.</p>
<p>Task 2 - NCS Evaluation and Documentation: Perform NCS evaluation to demonstrate satisfaction of the double contingency principle; document requirements and limits in CSAs/CSRs in accordance with approved procedures.</p>	<p>Knowledge of NCS theory, standards, procedures, and practices. Knowledge of the process and equipment being analyzed and Operational Safety Requirements (OSRs). Skill in the use of applicable reference documents and drawings. Skill in the completion of CSAs/CSRs.</p>	<p>None beyond NCS Engineer in Training requirements</p>	<p>Qualified as NCS Engineer in Training and in Task 1. Completion of the task requirements as listed on the associated Task 2 checksheet.</p>
<p>Task 3 - Implementing Documentation Approval: Ensure that CSA/CSR limits and requirements are correctly stated in operating procedures/JPAs which have been submitted for review, in accordance with approved procedures. Ensure that CSA/CSR design features are correctly depicted in drawings which have been submitted for review, in accordance with approved procedures. Note that this is a functional area specific task and qualification is attained for the assigned functional area only</p>	<p>Knowledge of procedures Y10-102 and Y10-103. Knowledge of operating processes, equipment, and support activities. Skill in written communication.</p>	<p>None beyond NCS Engineer in Training requirements</p>	<p>Qualified as NCS Engineer in Training and in Task 1 or 2. Completion of the task requirements as listed on the associated Task 3 checksheet. This is an operating facility specific qualification.</p>

TASK OR DUTY ASSIGNMENT	APPLICABLE KNOWLEDGE, SKILLS, ABILITIES	EXPERIENCE REQUIREMENT	QUALIFICATION REQUIREMENT
Task 4 - NCS Computation: Perform NCS related computer calculations in accordance with approved procedures. Note that this is a computer code specific task and qualification is attained for the specified code(s) only.	Knowledge of NCS theory, ANS standards, LMES and Y-12 Plant procedures, and calculation methods. Skill in the use of appropriate computer hardware and software.	None beyond NCS Engineer in Training requirements	Qualification as NCS Engineer in Training and completion of the task requirements as listed on the Task 4 checklist. This is a computer code specific qualification.
Task 5 - NCS Computation Review: Perform independent assessments of the adequacy of NCS computations produced by others in accordance with approved procedures. Note that this is a computer code specific task and qualification is attained for the specified code(s) only.	Same as Task 4.	None beyond NCS Engineer in Training requirements	Qualified as NCS Engineer in Training and in Task 4. Completion of the task requirements as listed on the associated Task 5 checklist. This is a computer code specific qualification.
Task 6 - NCS Evaluation and Documentation Review: Perform assessments of the adequacy of CSAs or CSRs and evaluations produced by others in accordance with approved procedures.	Same as Task 2.	None beyond NCS Engineer in Training requirements	Qualified as NCS Engineer in Training and in Task 2. Completion of the task requirements as listed on the associated Task 6 checklist.
Task 7 - Emergency Response Planning: Advise Plant Shift Superintendent and Emergency Preparedness (PSS&EP) in matters concerning Nuclear Criticality Accident emergency preparedness planning, in accordance with approved procedures.	Knowledge of Y40 series procedures; plant facilities, processes and equipment; and roles and responsibilities of organizations. Technical knowledge of nuclear criticality accident history and experience.	None beyond NCS Engineer in Training requirements	Qualified as NCS Engineer in Training. Completion of the task requirements as listed on the NCS Task Checklist and associated Task 7 checklist including LMES Assembly Station Director or Building Emergency Warden training.
Task 8 - Criticality Accident Alarm System (CAAS) Support: Participate as NCSO representative on the Configuration Control Board for the CAAS and act as subject matter expert in setting standards for the siting and testing of CAAS components.	Knowledge of ANSI/ANS-8.3, Y70-151 and facility OSRs. Knowledge of Y-12 CAAS design and installation. Knowledge of Plant Shift Superintendent and Emergency Preparedness (PSS&EP) and Facility Management Organization (FMO) procedures for fixed and portable alarms.	None beyond NCS Engineer in Training requirements	Qualified as NCS Engineer in Training. Completion of the task requirements as listed on the associated Task 8 checklist.

TASK OR DUTY ASSIGNMENT	APPLICABLE KNOWLEDGE, SKILLS, ABILITIES	EXPERIENCE REQUIREMENT	QUALIFICATION REQUIREMENT
Task 9 - Order Compliance and NCS Procedures: Evaluate DOE orders and guidelines; national standards; and LMES and plant procedures for impact on operations of the NCSO.	Knowledge of DOE orders and guidelines, ANSI/ANSI standards, and LMES/Y12 procedures that govern NCS activities. Skill in interpretation of complex technical documentation. Skill in written and oral communications, and in interpersonal relations.	None beyond NCS Engineer in Training requirements	Qualified as NCS Engineer in Training. Completion of the task requirements as listed on the associated Task 9 checksheet.
Task 10 - Independent Technical Review Board (ITRB): The Independent Technical Review Board provides the independent review of nuclear criticality evaluations and computations.	Board members have a thorough knowledge of NCS theory and practice, applicable orders, procedures and documents, and plant systems; and processes.	8 years nuclear with 5 years nuclear criticality safety and 3 years Y-12 nuclear criticality safety	Qualified as NCS Engineer or Technical Specialist and in Task 5 and/or 6. Completion of the task requirements as listed on the associated Task 10 checksheet.
Task 11 - Final NCS Technical Documentation Approval: Provide final approval of NCS technical documentation documents based on recommendation of the ITRB.	This is the NCSO Manager's or designated alternate's responsibility	None beyond NCSO Manager or Task 10 as appropriate	Qualified as NCSO Manager or NCS Specialist and in Task 10. Appointed in writing by the NCSO Manager.
Task 12 - NCS Program Oversight: Recommend modifications of NCS programs and procedures to ensure safety of operations, and continued improvement in the quality and professionalism of the NCSO.	Individuals performing this oversight need a thorough knowledge of applicable NCS documents and a knowledge of the interaction of NCSO with other disciplines. They need skills in written and oral communication, and in interpersonal relations along with the ability to analyze complex organizational problems and synthesize acceptable alternative solutions.	None beyond NCSO Manager, NCS Specialist, NCS Engineer, Technical Specialist, or Group Leader as appropriate	Serving as NCSO Manager or a NCSO Group Leader, or qualified as a NCS Engineer, NCS Specialist, or Technical Specialist. Appointed in writing by the NCSO Manager.
Task 13 - Y-12 Technical Support Center Support: Advise plant management of NCS considerations during real or simulated emergencies in accordance with approved procedures.	Personnel assigned this responsibility need a thorough technical knowledge of criticality safety, plus knowledge of the working procedures of the Y-12 Technical Support Center and the emergency response and management plans of the Y-12 plant. They need skill in assessing and responding to rapidly changing scenarios and the ability to communicate complex issues clearly and accurately.	None beyond NCS Specialist	Qualified as NCS Specialist and in Task 7. Completion of the task requirements as listed on the associated Task 13 checksheet.

TASK OR DUTY ASSIGNMENT	APPLICABLE KNOWLEDGE, SKILLS, ABILITIES	EXPERIENCE REQUIREMENT	QUALIFICATION REQUIREMENT
Task 14 - Computation Technologist: Perform computer code calculations, including data research, modeling, running the code, and reporting results, under the guidance of personnel qualified to perform NCS Computation.	Knowledge of ANS standards, LMES and Y-12 Plant procedures, and calculation methods. Skill in the use of appropriate computer hardware and software.	1 year job related	Completion of the task requirements as listed on the associated Task 14 checksheet.
Qualification Verification Official: The QVO verifies the professional qualification of NCSO personnel (qualification as NCS Engineer in Training, NCS Engineer, NCS Specialist and Technical Specialist) and provides overall direction for the professional Qualification Program.		None beyond NCS Specialist	Qualified as NCS Specialist and as an LMES basic instructor.
Mentor: Mentors serve as one-on-one advisors/guides/coaches to personnel in the professional Qualification Program.		None beyond NCS Engineer in Training	Qualified as NCS Engineer in Training, qualified in the task being mentored, and self-study of Y10-027, Section E, Y/DD-694, and Y/DD-696.
Training Coordinator		2 years nuclear, 6 months Y-12	Qualified as LMES basic instructor with TMS access and performance based training as needed.

7.0 PROGRAM, TASK AND DUTY ASSIGNMENT INITIAL QUALIFICATION

- 7.1 Technical and managerial NCSO personnel, including supplemental personnel who will perform NCS Tasks, may be enrolled in a qualification program assigned by their supervisor. Multiple programs, for example, both a managerial and a technical program, may be assigned. Personnel who have completed any managerial or technical program shall be enrolled in continuing training. Additional requirements for subcontractor qualification are provided in Y10-027.
- 7.2 The overall responsibility for an individual's training rests with the supervisor (Group Leader or Organization Manager as appropriate). The Supervisor is assisted by the QVO, Training Coordinator (TC), and mentors. In general terms, the Supervisor assigns individuals to a qualification program consistent with their assigned and anticipated duties and the program is then executed through LMES courses and mentored training. The TC assists the Supervisor by notifying the Supervisor of LMES qualification maintenance courses that will be due, by interfacing with the LMES Center for Continuing Education (CCE) to sign the Candidate up for any required courses, and maintaining training records. The QVO assists mentors and verifies qualification at the completion of required training.

- 7.3 Training is guided by a program checklist and amplifying checksheets. Upon completion of training required for a task or program, the Supervisor recommends qualification.
- 7.4 After recommendation for qualification in a program, the TC forwards the completed mentoring checklist to the LMES Training Records Center (TRC) and requests generation of a Qualification Card. The TRC verifies that documentation supporting the completion of qualification requirements is on file and forwards the Qualification Card to the TC for completion. Final qualification approval shall be performed by the NCSO Manager. The completed Qualification Card is returned to the TRC and the TC issues a revision to Y/DD-587, List of Qualified Personnel, to complete the process.
- 7.5 After completion of the Engineer in Training program, Candidates can attain qualification to perform task activities. Task qualification is documented on the Task Qualification Record, which is retained in the organization training files. As with program qualification, after approval of the task qualification by the NCSO Manager, the TC issues a revision to Y/DD-587 to complete the process. For both program and task qualification, completed mentoring checksheets which support the mentoring checklists are retained in the organization training files.
- 7.6 For the Computation Technologist task (Task 14) only, completion of the Engineer in Training program is not required. The Computation Technologist task qualifies personnel to perform computer code calculations under the guidance of personnel qualified to perform NCS Computation (Task 4), including data research and gathering, modeling, running the code, and summarizing the results in a report. Note that the Computation Technologist task does not qualify personnel to define the physical system to be modeled, the parameters to be varied, nor the range of variation to be studied. These problem definition activities, and definition of the input data needed, are performed and provided to the Computation Technologist by personnel qualified to perform NCS Computation.
- 7.7 Tasks 4, 5 and 14 are computer code specific and Tasks 1 and 3 are functional area specific. Initial qualification on these tasks may be attained with as few as one code or area, and over time qualification in additional codes or areas may be achieved. When adding a code or area to an existing task qualification, it is not necessary to requalify on the complete task, nor is a new Task Qualification Record required.
 - 7.7.1 To add a new computer code to a Task 4, 5, or 14 qualification, only the applicable Addendum Sheet provided with the Checksheets need be completed. Following completion, the TC issues a revision to Y/DD-587 to complete the process.
 - 7.7.2 To add a new area to a Task 1 or 3 qualification, only the applicable portion of the Basic Facility Knowledge Checksheets need be completed. Following completion, the TC issues a revision to Y/DD-587 to complete the process.
- 7.8 Each NCSO technical Candidate may have a lead mentor assigned by the QVO. If assigned, the lead mentor provides overall technical guidance to the Candidate during the qualification process and signs off completed tasks as required. Note that the lead mentor is not necessarily the only mentor the Candidate will have. Other mentors may assist the lead mentor for individual checklist or checksheet items and sign off completed training. If no lead mentor is assigned, the Supervisor will provide overall technical guidance to the Candidate during the qualification process.

7.9 Oral boards shall be held for qualification for all technical program qualifications, except NCS Engineer in Training, and for the NCS Computation Review and Evaluation Review tasks (Tasks 5 and 6).

7.9.1 When required, the oral board shall consist of, as a minimum:

7.9.1.1 For programs, the QVO, the NCSO Manager or Deputy Manager, and at least one NCSO member who is qualified in the subject program and not from the Candidate's group.

7.9.1.2 For tasks, the QVO, the applicable Group Leader, and at least one NCSO member who is qualified in the subject task and not from the Candidate's group.

7.9.2 Questioning by board members may proceed in any order, and shall continue until all board members are satisfied that the material has been covered in sufficient breadth to allow a judgment of the Candidate's knowledge. Records shall be kept of the questions asked and the board's assessment of the Candidate's response on a scale of 1 - 10 on the Oral Qualification Board Record. The overall grade shall also be recorded on a basis of pass/fail. A "pass" result shall be a unanimous decision of the board. Weak areas noted during a passed oral board shall be discussed with the QVO prior to qualification.

7.9.3 If a Candidate fails the oral board, a study plan shall be developed by the QVO addressing the weak areas. After completion of the study plan, and based upon the Candidate's Supervisor recommendation, a second oral board shall be held. The second oral board may focus on the Candidate's weak areas only, at the board's discretion.

7.9.4 Should a Candidate fail the second oral board, an individually designed plan shall be developed by the individual's Supervisor and QVO and approved by the NCSO Manager. This plan shall be composed of all or parts of the program for initial qualification. As a minimum, the content shall address aspects of qualification judged to be deficient.

7.10 For managerial positions or non-technical duty assignments only, individuals may be assigned and serve in these positions prior to the completion of the associated Qualification Program or training as long as they are in the process of completing the training. Any compensatory measures judged necessary by the individual's Supervisor shall be approved by the individual's Supervisor and NCSO Manager.

7.11 Experienced personnel, who may be either permanent staff, sub-contractors, or LMES employees on loan to NCSO, may have experience and qualifications from prior employment in the nuclear industry. In such cases, the qualification process may be expedited to credit previous knowledge, skills and abilities of the individual.

7.11.1 For experienced personnel, an Experienced Personnel Evaluation board may be convened to evaluate the existing knowledge, skills and abilities of the individual and define which portions of the assigned NCS training need to be completed. The board shall consist of a QVO and at least one other NCS Specialist or NCS Engineer.

7.11.2 Actions of the Experienced Personnel Evaluation board shall be documented by completing the Experienced Personnel Evaluation Form and by indicating which requirements on the Mentoring Checklists and Checksheets are ~~excepted~~ including the basis of the exception. Completed Experienced Personnel Evaluation forms shall be retained in the NCSO training records and documented in the LMES records with a request for exception if necessary. Acceptable bases for exception of a qualification requirement are provided in Y10-027. In addition for personnel in managerial positions only, an item may be excepted or waived if it will have no bearing on the duties which will be performed after qualification.

7.11.3 Acceptable documentation of past performance may be any of the following in order of preference:

- 7.11.3.1 A copy of the output (for example, the report, calculation, or attendance certificate).
- 7.11.3.2 A signed copy of the Candidate's resume, if the activity is documented in the resume.
- 7.11.3.3 A signed statement from the Candidate attesting to performance of the activity.

7.12 The process steps leading to qualification as a NCS Engineer in Training are listed below.

7.12.1 Enter Candidate in NCS Engineer in Training qualification program (TMS # 5939)

- 7.12.1.1 Supervisor obtains associated Mentoring Checksheets from the TC for Candidate.
- 7.12.1.2 If desired, QVO assigns a lead mentor.
- 7.12.1.3 TC verifies education and experience is documented in the training records, signs-up Candidate for LMES courses, and notifies Candidate of schedule.

7.12.2 Complete NCS Engineer in Training qualification

- 7.12.2.1 Candidate performs self-study activities.
- 7.12.2.2 Candidate discusses with mentor completion of self-study tasks.
- 7.12.2.3 Candidate attends LMES courses.

7.12.3 NCS Engineer in Training qualification verification

- 7.12.3.1 Supervisor reviews checklist and checksheets for completeness and recommends to QVO that Candidate be qualified.
- 7.12.3.2 QVO reviews and verifies Candidate's technical qualification.
- 7.12.3.3 TC forwards completed checklist to Training Records Center and requests generation of Qualification Card.
- 7.12.3.4 All complete the Qualification Card and NCSO Manager approves qualification.
- 7.12.3.5 TC enters qualification as NCS Engineer in Training in Candidate's training record and revises Y/DD-587.

7.13 The process steps leading to qualification as a NCS Engineer, NCS Specialist, or Technical Specialist are listed below.

7.13.1 Enter Candidate into individualized continuing training program (TMS # 5770).

- 7.13.1.1 On at least an annual basis, TC issue to Supervisor a listing of continuing LMES courses needed.
- 7.13.1.2 As required, TC signs-up Candidate for LMES courses and notifies Supervisor of schedule and Candidate attends courses.

7.13.2 Enter Candidate in NCS Engineer, NCS Specialist or Technical Specialist qualification program, as appropriate (TMS # 5761, 5762 or 5764)

- 7.13.2.1 Supervisor obtains associated Mentoring Checksheets from the TC for Candidate.
- 7.13.2.2 If desired, QVO assigns lead mentor.

7.13.3 While in training, qualify to perform specific tasks

- 7.13.3.1 Candidate performs task activities.
- 7.13.3.2 Mentor signs off task accomplishment.
- 7.13.3.3 Supervisor recommends and QVO reviews and verifies Candidate's qualification and convenes an oral board (Tasks 5 and 6 only).
- 7.13.3.4 All complete Task Qualification Report, NCSO Manager approves qualification, and TC enters qualification for the task in Candidate's training record and revises Y/DD-587.

7.13.4 Complete NCS Engineer, NCS Specialist, or Technical Specialist qualification

- 7.13.4.1 Candidate performs task activities and attends required LMES courses.
- 7.13.4.2 Mentor signs off task accomplishment.
- 7.13.4.3 TC notifies Supervisor of LMES training due and signs the Candidate up for courses as required.

7.13.5 NCS Engineer, NCS Specialist, or Technical Specialist qualification verification

- 7.13.5.1 Supervisor reviews checklist and checksheets for completeness and recommends to QVO that Candidate be qualified.
- 7.13.5.2 QVO reviews and verifies Candidate's technical qualification and convenes an oral board.
- 7.13.5.3 TC forwards completed checklist to Training Records Center and requests generation of Qualification Card.
- 7.13.5.4 All complete the Qualification Card and NCSO Manager approves qualification.
- 7.13.5.5 TC enters qualification as NCS Engineer, NCS Specialist or Technical Specialist as appropriate in Candidate's training record and revises Y/DD-587.

7.14 The process steps leading to qualification as a NCSO Manager are listed below.

7.14.1 Enter Candidate in NCSO Manager qualification program (TMS # 5763)

- 7.14.1.1 Develop IDP if necessary.
- 7.14.1.2 TC verifies education and experience is documented in the training records, signs-up Candidate for LMES courses and notifies Candidate of schedule.

7.14.2 Complete NCSO Manager qualification

- 7.14.2.1 Candidate completes IDP.
- 7.14.2.2 Candidate discuss completion of administrative self-study tasks as appropriate.
- 7.14.2.3 Candidate discuss with QVO completion of technical self-study tasks as appropriate.
- 7.14.2.4 Candidate attends LMES courses.

7.14.3 NCSO Manager qualification verification

- 7.14.3.1 TC forwards completed IDP to Training Records Center and requests generation of Qualification Card.
- 7.14.3.2 All complete the Qualification Card.
- 7.14.3.3 TC enters qualification as NCSO Manager in Candidate's training record and revises Y/DD-587.

8.0 MAINTENANCE OF QUALIFICATION AND REQUALIFICATION

8.1 For NCSO technical personnel, maintenance of qualification shall be part of continuing education and training. LMES required courses are part of the fixed portion of that program. Maintenance of technical task and program qualifications shall be part of the flexible portion of the program and is achieved by:

8.1.1 Satisfactory performance as documented during annual performance reviews. An overall performance rating of "CM" or higher shall be considered satisfactory. Supervisors shall provide the QVO a listing of any group personnel who fail to meet the criteria on an annual basis in conjunction with the Performance Planning and Review process along with a recommendation on which tasks or programs requalification should be conducted.

8.1.2 Completion of NCSO Continuing Technical Training. Continuing Technical Training shall be a combination of required reading and NCSO technical discussion meetings. The Continuing Technical Training program is discussed in Y/DD-710 and addresses:

- 8.1.2.1 Changes in LMES, Y-12 and NCSO procedures
- 8.1.2.2 Changes in DOE Orders and Industry Codes and Standards
- 8.1.2.3 Industry and site experience, including lessons learned
- 8.1.2.4 Client feedback
- 8.1.2.5 Deficiency trends
- 8.1.2.6 Management self-assessments

8.1.2.7 Internal and external audits and surveillance

- 8.2 An individual's qualification in a program or task may be removed for failure to meet the requirements of section 8.1 or for reasons of unsatisfactory performance. As necessary, the individual's Supervisor shall recommend removal of qualification to the QVO. The QVO shall develop and recommend corrective action to the NCSO Manager who shall approve any removal of qualification. Should qualification in a task or program be removed for any reason, the TC will remove the individual from Y/DD-587.
 - 8.2.1 Removal of task or program qualification for reasons of unsatisfactory performance shall be based on continuing failure to perform the activities embodied by the qualification in a satisfactory manner and documented in the Performance Planning and Review process and/or in the Positive Discipline program as appropriate.
 - 8.2.2 Requalification following removal for reasons of unsatisfactory performance shall be performed by completion of an individually designed program developed by the individual's Supervisor and QVO and approved by the NCSO Manager. This program shall be composed of all or parts of the program for initial qualification. As a minimum, the content shall address aspects of qualification judged to be deficient based upon the unsatisfactory performance which led to the removal of the qualification.
- 8.3 Failure to complete LMES required Job Fundamental or Duty Area Access compliance courses or NCSO Continuing Technical Training shall be rectified at the earliest opportunity, but formal removal and requalification in NCSO technical program or task qualifications is not required. Supervisors may recommend disqualification should the deficiency in LMES required Job fundamental or duty area access compliance courses or NCSO Continuing Technical Training impact the ability of the deficient individual to perform assigned tasks.
- 8.4 On a biennial basis, satisfactory completion of the continuing training shall be documented by the Training Coordinator (TMS Module 17890, NCS Engineer Requalification).

9.0 QUALIFICATION TRACKING

- 9.1 The completion of a Qualification Program shall be documented in the LMES TMS system with a qualification card as specified in Y10-027, a copy of which shall be maintained in the organization level training records.
- 9.2 The completion of task qualification requirements shall be documented with a Task Qualification Record which shall be maintained in the organization level training records.
- 9.3 Y/DD-587, *List of Qualified Personnel*, shall be maintained by the NCSO Training Coordinator and contain a listing of NCSO personnel who are currently qualified in programs, tasks, and duty assignments and the date their qualification was attained. An example of the tables which make up Y/DD-587 can be found in Y/DD-696. The list shall be revised as necessary to account for new, removed, and restored qualifications.
- 9.4 On a quarterly basis, the Training Coordinator shall generate a Requirements/Qualification Status Report for all NCSO personnel and distribute the list to the applicable supervisor.

10.0 EVALUATION OF QUALIFICATION AND TRAINING

- 10.1 Periodic self-assessments of the qualification program and associated training shall be performed to evaluate the effectiveness of the program. The assessments shall be performed on an annual basis and are intended to address three subjects as a minimum. Questions listed below are examples only.
 - 10.1.1 Compliance: Is the program documentation complete and correct? Are technical and managerial personnel enrolled in the qualification program? Is the program current with respect to applicable DOE Orders, industry standards and experience, and LMES/Y-12 procedures?
 - 10.1.2 Implementation: Are personnel completing qualification within the anticipated intervals? Is off-site training being utilized? Are personnel completing their assigned continuing development? Are managers and Group Leaders completing their Individual Development Plans as applicable?
 - 10.1.3 Effectiveness: Is the program producing sufficient qualified staff? Does the training program provide the knowledge required? Is it being retained after qualification?
- 10.2 The annual self-assessment shall be conducted in accordance with Y/DD-552, *Nuclear Criticality Safety Organization Self-Assessment Program*, DOE Standard 1070-94, and Y10-027, as appropriate.
- 10.3 A biennial review of training materials shall be conducted in accordance with Y10-027.
- 10.4 The results of all reviews and self-assessments, including resulting corrective actions, shall be filed in the organization training files.

Distribution:

K. J. Carroll

R. G. Taylor

C. A. Worley

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