

ACKNOWLEDGEMENTS

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In April of 2003 a team of individuals representing the liquid pipelines, natural gas industry, and regulatory representatives from around the country, were tasked with development of guidance for small system operators of liquid and natural gas systems, to comply with the Operator Qualification Rule (OQ). The Small System Operator Task Force (SSOQ), in this document has developed a:

- ◆ A list of definitions which may be helpful in understanding the OQ rule
- ◆ Model Plan for compliance to OQ rule
- ◆ A “How to Guide” to comply with OQ
- ◆ Guidance material which explains OQ audit protocols, which will be used to review an operators OQ plan

The following committee members are recognized as experts in their fields and have given generously of their unique knowledge. They were directly involved in the development of this guide material.

Richard G. Marini – Co-Chair – New Hampshire – Regulatory
Michael Comstock – Co-Chair – City of Mesa, Arizona – Municipal
Bert Kalisch – American Public Gas Association
Daren Gilbert – California Regulatory
Dave Hhara – Iowa Regulatory
Don Stursma – Iowa Regulatory
Glen Tong – California Regulatory
Jim Hotinger – Virginia Regulatory
John Gawronski – Federal OPS Consultant – Regulatory
Ken Taylor – White Mountain Oil Company – Regulatory
Lane Miller – Transportation Safety Institute – Regulatory
Mike Bostic – Dennbury Company – Liquids
Massoud Tahamtani – Virginia Regulatory
Phil Bennett – American Gas Association
Rudy Parcel – Iowa Municipal Organization
Stanley Kastanas – Federal OPS – Regulatory
John Erickson – American Public Gas Association

This guidance material was implemented under the sponsorship of the U.S. Department of Transportation. The material relies on sources representing the best opinion on the subject at the time of publication. However, it should not be assumed that all acceptable safety measures and procedures are mentioned in this manual. The reader is referred to the Code of Federal Regulations (49 CFR

Part 190-199, Part 40 and also NFPA 58 & 59) for the complete pipeline safety requirements.

Guidelines for Developing an Operator Qualification Program

These guidelines were prepared by a team of industry and government pipeline safety and training experts to assist small operators and master meter system operators to develop programs to ensure that individuals who operate and maintain these systems are qualified for the work they perform. Operators are required to prepare and follow an operator qualification program by federal regulations at 49 CFR 192 Subpart N and 49 CFR 195 Subpart G, as well as regulations adopted by some states.

Operator qualification programs must identify each individual, whether it be an employee of the operator or an employee of a contractor hired by the operator, who performs covered operations or maintenance activities on the piping system, identify the “covered tasks” that each individual performs and ensure that each individual is tested to ensure they have the necessary knowledge, skills and abilities to perform each task as well as to recognize and react to emergencies that may arise while performing these tasks. The process the operator follows to accomplish these objectives must be in writing. Records of the tests and other actions required in the plan must be made available for inspection by state and federal pipeline safety inspectors.

The following steps should be considered when preparing an operator qualification program.

Prepare a Written Operator Qualification Plan

The regulations require that you prepare and follow a written operator qualification plan that at minimum includes the following eight provisions:

1. Identify covered tasks (operation and maintenance activities affecting the integrity of the pipeline and required by the safety code);
2. Evaluate individuals performing covered tasks to prove that they are qualified;
3. Allow individuals that are not qualified to perform a covered task if directed and observed by an individual that is qualified;
4. Evaluate an individual if there is reason to believe that the individual's performance of a covered task contributed to an incident;
5. Evaluate an individual if there is reason to believe that the individual is no longer qualified to perform a covered task;
6. Communicate changes that affect covered tasks to individuals performing those covered tasks;
7. Establish re-evaluation intervals; and
8. Describe how training will be used in the OQ program where appropriate (new hires, refresher training for existing employees who transfer to new jobs or fail re-evaluations, etc.).

In addition to these minimum requirements, the written OQ Plan should:

1. Name the person who will be responsible for ensuring that the requirements of the plan are carried out;
2. Identify records necessary to carry out the program and where those records will be kept.

Identify Covered Tasks

A covered task is defined as any task that:

1. Is performed on a pipeline facility;
2. Is an operations or maintenance task;
3. Is performed as a requirement of this part (Part 192 or Part 195); and
4. Affects the operation or integrity of the pipeline.

The first step in identifying covered tasks is to identify tasks performed on your pipeline facilities. "Pipeline Facilities" means all underground piping and outdoor above ground piping; it generally does not include piping inside customer buildings, although if gas is sold to the customer through a gas meter located inside the building, "pipeline facility" extends inside up to the outlet of the meter.

A good source to identify tasks performed on your pipeline facilities is your Manual for Operations, Maintenance and Emergency Response. This will describe operations and maintenance tasks performed on your system.

The following is a list of common operations and maintenance tasks. Not all of these tasks may apply to your system and there may be additional tasks performed on your system that meet the definition of a covered task that are not listed here:

- Investigating leak/odor complaints
- Locating and marking lines
- Controlling and monitoring pipeline pressures and product flows
- Operating an odorizer
- Monitoring natural gas odorization levels ("Sniff tests")
- Repairing leaks
- Inspecting and testing pressure regulator station and overpressure protection
- Tapping pipelines under pressure
- Conducting leakage surveys
- Joining pipe for maintenance
- Inspecting critical valves
- Welding on a pipeline for maintenance
- Excavating and backfilling
- Repairing coating on existing steel pipelines
- Measuring pipe-to-soil potential
- Coating aboveground piping
- Inspecting for atmospheric corrosion
- Inspecting the condition of exposed pipe or pipe coating
- Installing/replacing a rectifier

- Installing/replacing an anode or test station
- Inspecting a rectifier
- Visually inspecting for internal corrosion
- Purging
- Patrolling
- Isolating sections of pipe or stopping off or otherwise controlling the flow of gas or product to a work site

Certain critical tasks fall outside the scope of the OQ rule. Relighting appliances and other work performed on gas piping or equipment inside the residences are not covered tasks since they are not performed on a pipeline facility as defined above. Conducting meter dial tests for leaks of internal piping also fall in this category. While individuals performing these tasks are not subject to the operator qualification program, you should ensure that you use competent people to do this work since mistakes can lead to accidents. OQ does not exempt you from the general good business practices to use competent individuals for all tasks that are important for the safe operation of your system.

You can also purchase covered task lists from many industry trade associations and other vendors. If you choose to utilize one of these lists, you should review the list carefully to ensure that it includes all the tasks performed on your system. You should also delete any tasks that are not performed on your system.

Evaluate Individuals Who Perform Covered Tasks

Evaluating means testing a person through written tests, oral exams, observation while performing the task on the job or in a classroom or simulated setting, or any other documented method that can prove the individual possesses the necessary knowledge, skills and abilities to perform the covered task and recognize and react to “Abnormal Operating Conditions (AOC’s).” A checklist is required if observation on the job or a simulation is used for evaluation. To be acceptable, each evaluation must include a document that states what is pass or fail for each step in the evaluation and indicates what knowledge, skills, abilities or AOC’s were tested or observed.

Your operator qualification program must list the specific evaluations (tests, observations, etc.) that you will accept as evidence of qualification in each covered task. You may list more than one acceptable means of qualifying individuals for a task. For example: You may adopt your contractors’ evaluations or evaluations by third parties (e.g. associations, vendors, state and local governments) however you are responsible to show that the evaluations are appropriate for the way the task is performed on your system.

You should be able to demonstrate that the evaluations you accept for each covered task measure the knowledge, skills and abilities required for the task. The evaluations should address critical skills and abilities in addition to critical knowledge needed to perform each task. For example, certain tasks require physical abilities and physical skills critical to accomplishing the covered task in addition to knowledge of how to perform the task. In that instance, you should ensure the evaluation includes a test to address the physical ability of the individual to perform the task. The

actual evaluation may involve a knowledge based test, plus a practical application in the field or classroom simulation to demonstrate physical ability and proficiency.

Further, the testing for covered tasks included in the qualification program must also include questions or hands-on demonstrations on Abnormal Operating Conditions (AOC's) associated with the task to both recognize and react to the AOCs. Abnormal operating condition means a condition that may indicate a malfunction of a component or deviation from normal operations that may:

- (a) Indicate a condition exceeding design limits; or
- (b) Result in a hazard(s) to persons, property, or the environment.

For example, a leaking gas pipe is a malfunction of the pipe (it's not supposed to leak) and can result in a hazard to persons and property.

Some typical AOC's include:

- Fire
- Odor report
- Leaking gas or product
- Component failure
- Operation of a safety device
- Unintended valve closure
- Overpressure
- Under-odorized gas

Some AOC's are specific to certain covered tasks (e.g. Component failure could be failure of a valve, regulator, relief valve, rectifier, etc. depending on the task). Other AOC's are general and apply to many, if not all, tasks (e.g. anyone performing operations or maintenance tasks should be able to recognize and react to gas odors, leaking product or spills).

You need to determine credible AOCs and identify how you expect personnel to react to these. Evaluations used by the operator should address how to recognize and react to abnormal operating conditions. AOC evaluations may be broken out into a separate section of the evaluation or may be incorporated within those portions of the evaluations that address routine knowledge, skills and abilities. You should be able to demonstrate that all abnormal operating conditions that can reasonably be anticipated to be encountered and related to the task being performed are addressed in the evaluations for that task, particularly if off-the-shelf evaluations are being used.

Some conditions such as recognizing low pipe-to-soil potentials or corroded pipe could be considered abnormal operating conditions or could be considered part of the routine knowledge, skills and abilities for covered tasks such as measuring pipe-to-soil potentials or inspecting pipe condition. For OQ compliance purposes as long as the evaluations for the covered task address how to recognize and react to these conditions it does not matter if these are classified as AOC's or normal conditions.

If you elect to accept evaluations developed by others, e.g. your contractors, state plumbers licenses, associations or other vendors, you must ensure that these evaluations address the knowledge, skills and abilities necessary to perform the task and recognize and respond to AOC's according to your procedures.

While not specifically required by the regulation, the written OQ Plan should address the qualifications of the individuals who will evaluate your employees and contractors. If the evaluations you choose require the evaluator to make a judgment whether the task was performed correctly, then the evaluator should possess adequate knowledge about proper performance of the task so that he/she can make a proper judgment when evaluating the task.

Allow individuals that are not qualified to perform a covered task if directed and observed by an individual that is qualified

You may allow individuals who have not met the evaluation criteria listed in your plan to perform covered tasks under controlled conditions. Your written plan must spell out the conditions under which individuals who have not met your qualification criteria may perform tasks under the observation and direction of a qualified individual. This is intended to allow on-the-job training and temporary labor work teams. You must ensure that non-qualified personnel are watched by a person qualified in the covered task being performed and the observer should be prepared to take immediate corrective action should he/she observe work being done that is not in accordance with the operator's procedures, or is being done in an unsafe manner. Supervising from a remote location is NOT acceptable – the qualified individual must be on-site, watching the task and ready to intervene immediately should it be necessary. Your written OQ Plan should provide guidance on how many non-qualified workers one qualified worker can direct and observe at one time and a list of any tasks you will not allow non-qualified persons to perform (e.g. hot taps).

You may specify in your plan that only qualified individuals may perform covered tasks in which case you may not use on-the-job training for covered tasks even with a qualified individual directing and observing the non-qualified individuals..

Post Accident/Incident Evaluation

Your written plan must specify that you will re-evaluate anyone whose performance of a covered task may have contributed to an accident (for hazardous liquid pipelines) or incident (for gas pipelines), either caused it, failed to respond appropriately or made it worse by responding inappropriately. For example, if an accident/incident occurs because a pipeline location was inaccurately marked, the individual who marked the line may have contributed to the accident/incident. Similarly, if an individual opens a valve that should remain closed and that causes an accident/incident to be worse, that contributes to the severity of the accident/incident. Your OQ plan must specify the process you will use re-evaluate these individuals.

Re-evaluation need not be by the same methods you used to initially evaluate the individual – but if you intend to use a different method this method must:

1. Address the knowledge, skills, abilities and AOC's for the task and
2. Be listed in your written OQ Plan as an accepted evaluation for the covered task.

For Cause Evaluation

Your written OQ plan must include provisions for how you will re-evaluate persons whom you have reason to believe are no longer qualified. The plan should include some guidance for supervisors to recognize and react to behavior that would trigger this provision. Reasons could include observation of the person not following procedures, injury or illness that reduces motor skills.

Communication of Changes

Your OQ Plan must specify how changes to policies, procedures, equipment or regulations are to be communicated to anyone who performs covered tasks affected by the change. Re-evaluation may be required if the changes affect the knowledge, skills and abilities required for the task. For example, if you purchase a new leak detection instrument you should consider whether the new instrument is basically the same as the old instrument it replaces, in which case you need only communicate to the persons using the device that it has been replaced. If, however, the new instrument operates on a different principle than the one it is replacing, it may be necessary to retrain the persons using it, develop new evaluations for the new equipment and re-evaluate the persons using it. Your OQ plan should spell out conditions under which re-evaluation will be required such as new tools, equipment and materials or when changes to policies, procedures, etc. require it.

Establish re-evaluation intervals.

To continue to be qualified, individuals performing covered tasks must be periodically re-evaluated. Re-evaluation intervals should be based on factors such as:

1. How frequently a person performs the covered task? More frequent performance may justify longer re-evaluation intervals;
2. How complex is the covered task? More complex tasks may require shorter re-evaluation intervals; and
3. What might the consequences be if the task is performed improperly? What is the worst that could happen if the covered task is not performed correctly, with “catastrophe” justifying shorter re-evaluation intervals and “nothing” justifying longer intervals.

Three years is a commonly accepted interval for most tasks. Intervals over 5 years will require justification. Tasks that are performed infrequently may require re-evaluation prior to performance.

Re-evaluation need not be by the same process as initial qualification but must address the knowledge, skills, abilities and AOC’s for the task.

Training

Your plan should describe how training fits into your OQ program. While qualification is accomplished through evaluation, not training, some individuals will require training to provide them with the knowledge, skills and abilities necessary to pass the evaluations for a covered task. Some examples of individuals requiring training are:

1. New hires
2. Individuals taking on new tasks (transferred or promoted)
3. Individuals who fail one or more evaluations

Refresher training should also be considered for individuals who require post incident or for cause re-evaluation.

This does not mean that every individual who performs a covered task needs to go through a training program before the individual can be re-evaluated. In fact, a common misconception is that training counts as evaluation for a task. Attendance records, certificates of completion, etc. from training classes are not evaluation records and cannot be used as the basis for qualifying an individual for any task. Where a training course includes written or oral exams, observations on-the-job or in a classroom simulation it is the records of these exams and/or observations that can be counted as evaluations for a covered task as long as they address the knowledge, skills, abilities and AOC's for the task.

Record Keeping

You must maintain records to prove that you are following your written OQ Plan. For each individual who performs a covered task on your system, you must be able to produce a record of the date the individual passed each evaluation required for each covered task the individual performs, the tasks for which the individual is qualified and the method used to qualify the individual. Records of re-evaluations for cause, post incident and when required by re-evaluation intervals must also be maintained. The method may include any combination of written or oral tests, observation in classroom, on-the job or simulation, or other methods specified in your OQ program as accepted for the covered task. You should be able to provide federal or state inspectors with copies of the evaluation methods, e.g. tests or observation checklists used to qualify a person for the task, so that the inspector can determine if the evaluations address the appropriate knowledge, skills and abilities for the covered task. You can make an inspection easier on both you and the inspector by having a list of the knowledge, skills, abilities and AOC's and identifying where each is addressed in your observation checklists, test questions and other evaluation tools.

Record Retention

Records must be maintained for 5 years after the evaluation is no longer required for current qualification for any covered task. In other words, the record retention period is 5 years PLUS the re-evaluation interval you specify in your OQ Plan for the covered task. For example, if an operator has a 3-year re-evaluation interval for a covered task, and an individual passes an evaluation on October 28, 2002, then re-passes the evaluation on October 28, 2005, the operator must maintain the record of the October 28, 2002 evaluation until October 28, 2010 since the date 10/28/2005 is the date on which the operator ceases to rely on the 10/28/2002 evaluation for qualification.

Contractors

Many operators use contractors to perform covered tasks on their pipeline system. The operator qualification regulation requires that any individual who performs a covered task on your system be qualified for that task according to YOUR operator qualification plan. If you use contractors

for any covered task, you are responsible to ensure that each contractor employee who performs one or more covered tasks on your system is qualified for that task or is being directed and supervised by a qualified individual (if your OQ plan allows for this).

Here are four approaches to handling contractor qualification:

1. You evaluate the contractor individuals using your evaluations.
2. You allow the contractor to evaluate its personnel using either the evaluations you use for the tasks or the contractor's evaluations for the tasks. In the latter case, you should obtain copies of the contractor's evaluations and ensure they address the same knowledge, skills, abilities and AOC's as your evaluations for the same tasks. Make sure the evaluations are documented, e.g. test questions are written and observation evaluations include checklists indicating what is observed. You must list these evaluations in your OQ Plan as evaluations you accept for these tasks.
3. Require the contractor to be evaluated by a third party (e.g. NACE, NCCR, etc.). You should contact the third party, obtain copies of the evaluations and verify that they address the same knowledge, skills, abilities and AOC's as your evaluations for the same tasks. Make sure the evaluations are documented, e.g. test questions are written and observation evaluations include checklists indicating what is observed. You must list these evaluations in your OQ Plan as evaluations you accept for these tasks.
4. Do not qualify contractor personnel; have one of your qualified individuals observe and direct non-qualified contractor personnel.

Record Keeping for Contract Personnel

If you use contractor personnel to perform a covered task, you must be able to produce records that they are qualified for the covered tasks they perform. The record requirements for contractors are exactly as described above for your personnel. The records must indicate the date the individual was qualified, the task(s) for which he/she is qualified and the method of qualification. The method must be a method listed in your OQ plan as accepted under your OQ plan for the covered task(s) the individual performs.

Contractor qualification records can be kept by you, by the contractor or by a third party. If you elect to have the contractor or a third party keep the records ensure that there are provisions for you to obtain the records should the contractor or third party go out of business. You must be able to produce these records for review for up to 5 years after the last date an individual performs a covered task on your system.

Enforcement Protocols

Attached is a copy of operator qualification enforcement protocols. These will be used by state and federal regulators to audit compliance with the operator qualification regulation. Included in these protocols are questions and guidance that provide insight into what the regulators expect to see when they audit your operator qualification compliance program. You can use these protocols to conduct a self-assessment of your operator qualification program to ensure that your program addresses all the important components that the regulators expect to see in an acceptable OQ program.