Northeast
GAS ASSOCIATION

May 28, 2019

Honorable Kathleen H. Burgess
Secretary
New York State Public Service Commission
Three Empire State Plaza
Albany, New York 12223-1350

Re: Case 14-G-0212 – Proceeding on Motion of the Commission to Investigate the Practices of Qualifying Persons to Perform Plastic Fusion on Natural Gas Facilities; and Case 17-G-0318 – In the Matter of an Investigation into Local Distribution Company Use of Northeast Gas Association Operator Qualification Program.

Via Email

Dear Secretary Burgess:

The Northeast Gas Association[1] and the undersigned New York based natural gas distribution companies have reviewed the Department of Public Service February 12, 2019 Staff White Paper on Operator Qualification and appreciate the opportunity to submit these joint industry comments. The undersigned participants in these joint industry comments will hereafter be referred to as "NY LDCs".

The NY LDCs appreciate the effort of the New York State Department of Public Service (NYSDPS) through this initiative to develop and propose changes to Operator Qualification requirements as outlined in the White Paper. This effort will enhance public safety in most cases and help ensure overall competency of the workforce. NY LDCs fully support the intent of best practices outlined in the White Paper to underpin our parallel goals of maximizing competency of our workforce and minimizing unintended negative consequences human factors play in day-to-day operations. We support many of the best practices stipulated in the White Paper. We respectfully offer several comments relative to certain sections of the White Paper, as discussed in the May 8th OQ White Paper stakeholder workshop, regarding the proposed changes to Operator Qualification requirements.

[1] The Northeast Gas Association is a regional trade association that focuses on education and training, technology research and development, operations, planning, and increasing public awareness of natural gas in the Northeast U.S. The Northeast Gas Association (NGA) represents natural gas distribution companies, transmission companies, liquefied natural gas suppliers and associate member companies. Its member companies provide natural gas service to 13 million customers in 9 states (CT, MA, ME, NH, NJ, NY, PA, RI, VT).

Comments:

1. Continuous Improvement of OQ Programs[2]

NY LDCs support Staff's interest in improving Operator Qualification in New York. To that end, NY LDCs have made and continue to make significant program enhancements to their Operator Qualification (OQ) Programs, many of which address issues highlighted in the White Paper. These concerted efforts commenced in Q1 2017 and have continued in earnest since then, addressing many of the issues discussed during the NYSDPS OQ technical conference in October 2017. NY LDCs individually and collectively, through NGA, have made significant investments in these training and qualification program enhancements. We believe this illustrates NY LDCs' alignment with the intent of the White Paper as well as the continuous, rigorous and ongoing efforts by NY LDCs to improve OQ Programs. NY LDCs hope to convey to Department of Public Service staff (Staff) our commitment to working cooperatively with Staff to incorporate these enhancements into forthcoming OQ requirements. A summary of these program enhancements can be found in Exhibit A.

2. "Off-the-Shelf" Program[3]

The White Paper emphasizes that the NGA OQ Program is an "off-the-shelf" program. NY LDCs strongly disagree with this characterization. While there is clearly an opportunity to further improve the program, the NGA OQ Program is different than a typical off-the-shelf program as *the NGA OQ Program is an OQ framework designed and built by operators for operators.* NGA expects this framework to serve as a strong structural core for its members' OQ plans, with the intention that each adopting company then adds its own components to fully customize a plan specific to that company's procedures, tools, and equipment.

NY LDCs have invested and continue to invest significant time and resources participating on NGA committees charged with establishing program policies, procedures, and governance as well as the technical content of training, knowledge exams, and skill evaluations. It is through this direct engagement that operators ensure alignment of program requirements and technical content with company requirements. More importantly, this unique program development forum affords each participating member the opportunity to learn from one another and share individual experiences in developing and demonstrating workforce competency. The following is a list of NGA committees in which NY LDCs actively participate and thereby directly influence NGA training and qualification programs, while sharing experiences and learning from each other:

- Operator Qualification Committee

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[2] Reference: *Introduction* p. 8-9; *Background* p. 15 and p. 17; *Discussion* re: OQ program adaptability p. 17-18 and re: AOCs p. 19; *NYS Specific Concerns*/Findings (7) re: AOCs and (10) re: test security p. 22

[3] —Ref: *Definitions*: "Off-the-Shelf Program" p. 4; *Introduction* p. 5-6; Footnote 5, p.6; *NYS Specific Concerns*/Findings (1) p. 21; and *Conclusion* p. 23-25

- Training & Qualification Committee
- Plastic Pipe Joining Committee
- Corrosion SME Team
- Distribution SME Team
- Damage Prevention SME Team
- Leak SME Team
- Line Locating and Mark-out SME Team
- Meter Installation / Customer Service SME Team
- Odorization SME Team
- Pressure Regulation SME Team
- Transmission SME Team
- Welding SME Team.

Regarding written and practical exams, utility participants on SME teams make concerted efforts to ensure that exams encompass but do not conflict with their respective companies' operating procedures. Furthermore, NY LDCs believe that supplementing fundamental knowledge exams with company specific procedural evaluations (written, oral and/or practical) is a best practice in adapting the core NGA OQ Program to encompass company specific requirements. This approach is currently in use by some NY operators and is working well. NY operators believe this approach meets the intended outcome of Staff but simply takes an alternate, but parallel path to maximize efficiency and public safety value in achieving our common goals.

The NGA framework facilitates a forum for best practice type discussions, which Staff encourages - learning from each other's experience while maximizing the effectiveness and efficiency of program implementation. The NGA OQ Program was developed in this collaborative manner by operators leveraging the collective expertise and experiences across the region. The common use of the NGA OQ Program and framework as the basis for company specific OQ Programs also creates efficiencies in program development and administration. Utilization of a common baseline OQ framework and covered tasks also enables efficient use of mutual aid resources. For the contractor community, which represents approximately 50% of the workforce, the use of the NGA OQ Program creates efficiencies in the training and qualification process, thereby enabling flexibility of the contractor workforce to meet the growing demands of regional operators. The fit-for-purpose use and adoption of the NGA OQ Program as a common OQ framework for addressing fundamental knowledge and core skills - while also enabling this framework to be supplemented with company specific training and evaluations, as appropriate - is a model for the industry to consider. In our view, this model leverages the benefits of collaboration, allows for the sharing of best practices, and addresses both fundamental and company specific knowledge/skills, while also creating efficiencies and allowing for flexibility of the contractor workforce. This approach is similar to that being developed by the Distribution Contractors Association in that it is a hybrid model which leverages a core program to the fullest extent possible and then supplements it with company specific training and qualification requirements.

3. Mutual Aid Requirements[4]

Mutual aid requirements proposed in the White Paper stipulate that individuals would need to be qualified under the OQ plan of the operator seeking mutual aid or that the operator must review the program that the mutual aid was qualified under and document that it meets or exceeds the requesting operator's plan. The White Paper further stipulates that span-of-control limitations must be maintained.

This proposed approach is reasonable provided the OQ plan of the responding company aligns with that of the operator. A concern arises however in those circumstances where the plan or procedures of the operator and mutual aid responder do not align. The vast majority of requests for mutual aid involve customer turn-offs and turn-ons. These activities are performed by one-person crews, thereby rendering work under span-of-control moot; i.e., an operator would simply have their qualified person perform the work versus watching a non-qualified person perform the work. Time is of the essence with mutual aid when the focus is to make the system safe and restore service to customers as quickly as possible. The OQ requirements, as proposed in the White Paper, may prevent or hinder the use of mutual aid in these circumstances and inadvertently extend a system outage if qualified responding personnel are required to go through the operator's formal training and qualification processes before assisting with the incident response. This delay to a safe and rapid restoration of service in a mass outage during cold temperatures is potentially dangerous. The industry must proactively develop solutions to this issue.

NY LDCs recommend that OQ requirements be established by the operator requesting mutual aid based on the scope of work that is required and that "mutual aid procedural reviews" be conducted by the operator for all mutual aid responders prior to commencement of work. This mutual aid procedure review would bridge the gap, if any exists, by reviewing company specific requirements with all mutual aid response personnel and would supplement and enhance the mutual aid responder's existing qualifications for the covered task. This procedural review is a company specific on-boarding approach to supplement existing qualifications. This practice has proven to work effectively during mutual aid events. It enables effective and efficient use of mutual aid, accelerating the system isolation and customer restoration process. The conduction of the "mutual aid procedural review" would be documented as a requirement of the operator's OQ Program, such as in a structured approach using pre-job briefs.

4. Inclusion of Engineering Design Within Operator Qualification[5]

NY LDCs are fully supportive of establishing engineering qualifications and design review practices. While on the surface the Operator Qualification framework may seem like a logical solution to ensure design review competency, the OQ framework does not lend itself to the significantly different competency demonstration requirements of natural gas system

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[4] Reference: *"Model" Plan* Key Element #9
[5] Reference: *"Model" Plan* Key Element #11 and *Best Practices/Evaluation* #15

engineering and design review. OQ is very task/function oriented and specific. Engineering on the other hand involves the application of a variety of design concepts and the strategic integration of these concepts and theory as related to constructability and operability of the design. As a result, competency demonstration of engineering design review requires very broad as well as system specific knowledge which often requires technical review by multiple SMEs.

Given NTSB's recommendation following the Merrimack Valley incident relative to the engineering plan and constructability review process, NGA, NY LDCs, and LDC engineering SMEs have undertaken an effort to develop fit-for-purpose guidelines for Gas System Engineering Design Review. The guideline would define the education and experience requirements for engineering personnel, outline the design review and approval process for both standard (e.g., distribution mains and services) and non-standard (e.g., M&R stations, transmission facilities) design and construction drawings, recommend a management of change framework, and include practical design and construction review checklists based on asset types. This guideline is intended to provide a flexible and scalable review framework, with essential principles applicable to all pipeline operators, from large to small. Operators would adopt essential elements of the guideline and amend it accordingly based on their specific assets and unique operating environments.

NY LDCs recommend that an Engineering Design Review process, based on the fundamentals identified in the guidance document, be developed by each operator, but that this should be done outside the scope of Operator Qualification.

5. Company Specific Requirements Relative to Standards & Procedures, Tooling/Equipment, and Materials of Construction[6]

As indicated above, multiple operators are utilizing various approaches to ensure that company specific requirements are sufficiently covered in both training and OQ evaluations. Flexibility is required in this regard as there are multiple paths that can be taken to achieve a common objective. Operator characteristics such as size, geographic footprint, extent to which contractors are utilized, and the availability of training facilities and staff all impact the optimal path to achieving this goal. One common step is an operator assessment to determine the need for company specific training and/or evaluations which extend beyond the limits of fundamental gas training programs and/or the NGA OQ testing program. Company specific training, on-boarding programs, and/or evaluation programs should include standards, procedures, tooling, and materials of construction. This "layers of protection" approach helps ensure competency in fundamental gas knowledge and skills along with company specific requirements. Operators and contractors, performing work on behalf of the operator, should participate in a company

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[6] Reference: *Introduction* p. 6; *Discussion* p. 17-18; *NYS Specific Concerns* p. 19-20; "Model" Plan Key Elements #1, 3a, and 4a; Best Practices/*Training* #4 and #5; Best Practices/*Qualification (General)* #1c and 1d; Best Practices/*Written Evaluation* #10; and Best Practices/*Practical Evaluations* #3–#5

approved training or on-boarding programs which cover the aforementioned topics as applicable based on the work that each individual or group of individuals is expected to perform for the company. Operators should also assess the need for knowledge evaluations and performance demonstrations to demonstrate competency in company specific requirements. The necessity and format for company specific evaluations should be determined by the operator and could be performed as part of the training program or performed subsequent to the training program. Successful completion of a company specific training program and evaluations, where applicable, should be documented, and these records should become part of the individual's OQ Competency Record.

This "layers of protection" approach leverages the fundamental training and assessments provided through the NGA OQ Program. The scope of the company specific training and knowledge/skill evaluation process ensures technicians are competent in the use of individual company procedures, work methods, tools, equipment and materials they will be expected to use in day-to-day operations working for a specific company.

To illustrate the above "layers of protection" approach to address fundamental knowledge, core skills and company specific requirements, we offer the following scenarios that may be adopted by operators. These scenarios are illustrative only, as other equivalent approaches may be developed.

Approaches to Training:

- Use of an operator developed training program which integrates fundamental knowledge and skills with company specific procedures, equipment, and materials of construction.
- Use of an industry standard training program (e.g., GTI Field Skills Training Program) for fundamental knowledge and skills *integrated* with company specific training covering procedures, equipment, and materials of construction.
- Use of an industry standard training program (e.g., GTI Field Skills Training Program) for fundamental knowledge and skills *supplemented* with company specific training covering procedures, equipment, and materials of construction.
- Use of a contractor developed and *operator approved* training program for fundamental knowledge and skills supplemented with company specific training covering procedures, equipment, and materials of construction.

Regarding the delivery of training, there are different models which could include delivery by the operator, contractor, or independent third party. For training on company specific requirements, the training should be provided by the operator or a contractor or independent third party – provided they have been through a train-the-trainer or certification program and are authorized by the operator to deliver the company specific training.

Approaches to Qualification of Personnel:

- Use of company specific knowledge and skill evaluations.
- Use of NGA knowledge and skill evaluations supplemented with company specific evaluations, where warranted, on procedures, equipment, and materials of construction.

Note that there is commonality in procedures among operators for many covered tasks. For example, the majority of operators use common plastic fusion and mechanical joining procedures. Similarly, there is commonality in tapping, stopping and other equipment sensitive processes. Leveraging common evaluations, where applicable, creates efficiencies in the qualification process, enhances pipeline safety, and strengthens mutual aid plans.

6. Covered Task (Proposed Definition)[7]

The White Paper proposes the following broader definition of a Covered Task:

Covered Task – an activity, identified by the operator, that:
(1) Is performed on a pipeline facility;
(2) Affects the operation or integrity of the pipeline.

NY LDCs fully support the intent to include new construction tasks as a component of Operator Qualification. In fact, NGA's OQ Program formally adopted new construction tasks as part of OQ in 2005. However, NY LDCs have concerns with the proposed two-part definition of a covered task. This proposed definition, in our view, is ambiguous and quite open to subjective interpretation. More specifically, the above language could be interpreted to include activities that are performed *directly* or *indirectly* on a pipeline facility. Based on the discussion during the stakeholder's meeting with Staff on May 8, 2019, we believe Staff's intent is to limit the definition of a Covered Task to those activities that are performed *directly* on a pipeline. To that end, NY LDCs recommend this clarification be formalized by inclusion of the word "*directly*" into part (1) of the definition. Alternatively, the proposed revision to the definition should refer to a *pipeline* as defined in 49 CFR Part 192.3, rather than a *pipeline facility*. NY LDCs believe this recommendation would achieve Staff's goals.

7. Practical Evaluations for Each Covered Task[8]

The White Paper has a strong and recurring emphasis on practical evaluations[9] with prescriptive requirements including, "[e]ach evaluation must include a written (or oral) examination and a practical evaluation" and "[q]ualifications shall not be determined by written evaluations alone."

NY LDCs are committed to instituting practical (e.g., performance/skill) evaluations for all tasks in which it is warranted. To that end, NGA and NY LDCs formed a sub-committee to re-evaluate the process for determining which covered tasks warrant a practical evaluation. The sub-committee ultimately proposed an analytic approach based on recommendations contained in the industry standard for OQ, ASME B31Q-2016 Pipeline Personnel Qualification, and more

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[7] Reference: *Definitions*: "Covered Task," p. 3
[8] Reference: *Introduction* p. 8; *"Model" Plan* Key Element #4; *Best Practices/Evaluation* #1 and #10; and *Best Practices/Practical Evaluations* #1
[9] Staff indicate in the White Paper that plastic fusion qualification was obtained by the simple act of passing a written examination. NY LDCs disagree with this assertion as the NGA program has included practical evaluations (including destructive test) since the program's inception.

specifically, Appendix F: Evaluation Method Selection. The approach involves a set of discrete criteria for determining whether a Covered Task calls for a performance/skill evaluation or requires only a knowledge evaluation. The ASME B31Q evaluation method selection process presumes that knowledge of some type is required for each task and therefore a written/oral evaluation is required in all cases. The evaluation method selection approach therefore determines whether a skill is required to perform each task and warrants a performance/skill evaluation in addition to a written/oral knowledge evaluation. Use of these criteria will establish a definitive rationale for any case in which a performance/skill demonstration is not used to qualify personnel on a Covered Task. Also included in the approach is an analysis to determine: (a) which of two proposed evaluation protocols should be adopted for performance/skill demonstration of a Covered Task, and (b) whether such demonstration should also be required for subsequent requalification on the task.

There are numerous covered tasks in which mastery of task-relevant knowledge is sufficient to learn how to perform and become proficient at the task. Examples would include inspection work (e.g., visual inspection tasks), highly technical tasks that are limited to observation (e.g., overseeing uprating procedures), and tasks that are quite easy to learn and perform (e.g., installing tracer wire). For these types of Covered Tasks, a knowledge exam is sufficient to determine an individual's ability to perform the task. Furthermore, it is NY LDCs' position that ability/skill to perform visual inspection tasks can be adequately assessed by knowledge exams which incorporate photos of piping, components, equipment, etc., to be "inspected" during the exam and judged by examinees. Similarly, graphic material (i.e., photos, maps, illustrations, schematics) and scenario-based questions can be presented on knowledge exams to assess application of knowledge or analysis of material presented to help ensure rigorous assessment of an individual's ability to perform a task.

The draft recommendations from this practical evaluation sub-committee were presented to NYSDPS Staff on February 7, 2019 and are attached here as Exhibits B1 and B2. NY LDCs recommend that practical evaluation requirements be based on analysis performed in accordance with ASME B31Q Appendix F. Alternatively, NY LDCs recommend a revision in language regarding practical evaluations to clarify that "… the plan must clearly identify the task(s) and the reasons why a practical evaluation is not *warranted*" (versus *feasible*).

An equally important issue relative to the expanded use of practical evaluations is the availability of resources to perform these evaluations. Expanding the number of covered tasks requiring practical evaluations coupled with an increase in company-specific evaluations will increase the demand for experienced evaluators by a factor of 3 or more. The demand for these resources will outpace availability. NY LDCs are anticipating this increase in demand, but the reality is that it will take time to identify and build this pool of resources. We expect that it will take upwards of 2 years to build this resource base sufficiently.

8. Practical Evaluations Through On-the-Job Performance[10]

NY LDCs note that the White Paper stipulates that *practical evaluations must be accomplished through on-the-job performance* (using company procedures and equipment) *while under the direction and observation of a qualified person*. NY LDCs respectfully request that Staff clarify the intent of this provision. We note that there are many covered tasks with a span-of-control of 1:0, meaning that the individual performing the task must be qualified and therefore cannot work under the direction and observation of a qualified person in an on-the-job environment. We believe that practical evaluations should continue to be performed in a simulated environment (e.g., training center). In some situations, where span-of-control allows, practical evaluations could be performed in an on-the-job environment, but this is not the norm. We believe that the description found in Best Practices/Evaluation #1 (p. 33 of the White Paper) more accurately reflects the intent of Staff relative to the conduction of practical evaluations through observation during performance on the job *or during simulation(s)*. Based on feedback received from Staff during the May 8th stakeholder workshop, we believe that the intent of industry and Staff are aligned. We therefore request clarification on any forthcoming requirements.

9. Practical Evaluation Reference Materials[11]

The White Paper stipulates that during practical evaluations, operator procedures can be referenced by the person being evaluated. However, no other documents shall be allowed.

NY LDCs note that equipment operating manuals/instructions and component installation instructions should also be allowed during practical evaluations. This is currently the practice and helps reinforce the use of applicable reference materials in the field. Both operating manuals and component installation instructions contain pertinent information that should be referenced during the practical evaluation. Equipment manuals are necessary to ensure the proper equipment and equipment components are being utilized for the application and that complex instructions are available for reference while the equipment is in use. Tapping and stopping equipment manuals are good examples to illustrate this point. Likewise, component installation instructions, which are typically included in the packaging of the component, should be reviewed prior to and during the installation of the component to ensure proper torque, measurements, etc., are utilized during installation. Manufacturers can change/update component installation directions from time-to-time and this step helps ensure proper installation. In all cases, the individual must demonstrate competency in performing the task. Based on feedback received from Staff during the May 8th stakeholder workshop, we believe that the intent of industry and Staff are aligned. We therefore request clarification regarding any forthcoming requirements.

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[10] Reference: *"Model" Plan* Key Element #4a; *Best Practices/Evaluation* #1; and *Best Practices/Practical Evaluations* #1

[11] Reference: *Best Practices/Practical Evaluations* #7

10. Practical Evaluations – One-to-One Basis[12]

The White Paper stipulates that practical evaluations must be administered on a one-to-one basis (one evaluator and one person being evaluated) unless the specific covered task cannot be completed by only one person. NY LDCs request clarification that Staff's intent is to require individuals to work independently and receive no 3rd party assistance during the course of the evaluation. NY LDCs note that certain performance evaluations can be designed using "inspection points" and "hold points" which would allow one evaluator to oversee multiple performance evaluations, being performed in parallel, and to witness all essential elements of each evaluation. This approach meets the intent of the one evaluator to one student ratio while increasing efficiency of the evaluation process. NY LDCs also note that securing a sufficient number of competent evaluators to meet the requirements of the NY LDCs and contractor community, given the proposed expansion of practical evaluations, will be a challenge that will take time to address.

11. Qualification Requirements – Physical Abilities[13]

The White Paper requires individuals to demonstrate the physical abilities required to perform the covered task. Consistent with federal government definitions of knowledge, skills, and abilities (KSAs), NY LDCs view "abilities" as "capacities to perform" actions or activities and thus integral to learning to perform complex tasks. OQ evaluations therefore focus on assessing whether individuals have acquired the necessary knowledge and developed the necessary skills to perform covered tasks. Successful completion of knowledge and/or skill evaluations inherently validates the abilities required to perform the task. During the May 8th stakeholder workshop, Staff clarified that their intent is to simply ensure that an individual is physically able to perform the task. We therefore believe that the intent of industry and Staff are aligned and request clarification on any forthcoming requirements.

12. Qualification Requirements – Maintenance and Calibration of Equipment[14]

The White Paper cites maintenance and calibration of equipment as a requirement for qualification. Maintenance and calibration of equipment is not performed on a pipeline facility and is therefore, by definition, beyond the scope of operator qualification requirements. Further, these activities are often performed by the original equipment manufacturer (OEM) or an authorized 3rd party at a different location than where work is being performed. That said, individuals should be able to determine proper operation of the equipment as well as calibration interval and due date. NY LDCs recommend that the maintenance and calibration of equipment be eliminated for consideration as a requirement of operator qualification. Based on feedback received from Staff during the May 8th stakeholder workshop, we believe that the intent of

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[12] Reference: *Best Practices/Evaluation* #12 and *Best Practices/Practical Evaluations* #2 and #6
[13] Reference: *Best Practices/Qualification (General)* #1e (see also *Discussion*, top of p. 19)
[14] Reference: *Best Practices/Qualification (General)* #1c

industry and Staff are aligned. We therefore request clarification on any forthcoming requirements.

13. Requalification Requirements[15]

The White Paper stipulates that *requalification must include both training and evaluation* (using operator procedures and equipment) *similar to the process for an individual's initial qualification* to verify that they still possess the required KSA to properly complete a covered task.

Approaches to Refresher Training:
The training needs of an individual vary widely based on the experience of an individual. For example, new employees require the greatest amount of training (assuming they are new to the natural gas industry). Training for new employees typically includes classroom and hands-on training with emphasis on fundamental knowledge and core skills, followed by company specific training on procedures, work methods, materials, safety protocols, etc. Some new employees may come from other utility industries or trades. This group of employees may follow the same training curriculum but require less time in certain areas since some level of foundational knowledge already exists. Qualified employees are presumed to already have the fundamental knowledge, core skills, and years of experience performing the same work on a regular basis. Training prior to the requalification process is typically in the format of refresher training which is an abridged version of the knowledge and/or hands-on training components and is performed at the discretion of the operator or contractor based on the needs of the individual. In many cases where the individual is performing the task on a frequent basis, there may be no need for refresher training. Conversely, infrequent performance of a task or workmanship concerns may warrant retraining. Broad statements that imply formal training, equivalent in scope and content of initial training, is required in all cases prior to requalification is of limited technical benefit and would not significantly enhance public safety value. NY LDCs recommend that each operator provide a plan outlining their respective approach to refresher training prior to requalification. Based on feedback received from Staff during the May 8th stakeholder workshop, we believe that the intent of industry and Staff are aligned. We therefore request clarification on any forthcoming requirements.

Approaches to Practical Evaluations for Requalification:
Regarding practical evaluations required for requalification, NY LDCs note ASME B31Q-2016 Pipeline Personnel Qualification, Appendix F: Evaluation Method Selection, includes a methodology to determine when it is appropriate to require a practical evaluation for requalification. We also note that the vast majority of covered tasks do not require a practical evaluation for requalification according to ASME B31Q. NGA and NY LDCs applied this methodology in the aforementioned and attached covered task analysis but did so in a more conservative manner than the ASME standard, resulting in the recommendation that the vast majority (but not all) covered tasks that require a practical evaluation upon initial qualification

[15] Refence: *"Model" Plan* Key Element #5

also require one upon requalification. We believe the ASME methodology is a sound approach that should be used in making this determination.

Collectively, these two recommendations are fit-for-purpose applications of industry practices which optimize pipeline safety investments.

14. Span-of-Control Requirements[16]

The White Paper indicated that span-of-control, meaning the OQ program's allowed number of non-qualified persons being directed and observed by a qualified person, often seemed unreasonable and unsafe. The White Paper then stipulated that if span-of-control is greater than 1:1 for any covered task, the plan must include documented justification (e.g., a review of OQ for each job location, a qualified inspector is assigned for each working location).

NGA and NY LDCs utilized a SME consensus process, as recommended by ASME B31Q, in determining span-of-control ratios for each task. This SME consensus process included task complexity, risk, and associated abnormal operating conditions in determining span-of-control ratios. The range of span-of-control for covered tasks ranges from 1:3 (qualified to non-qualified individuals) to 1:0 (meaning that an individual must be qualified to perform a covered task). We note that there are a number of covered tasks, including tapping an energized pipeline, welding, and joining plastic pipe, where a non-qualified person cannot perform the covered task even under the direction and observation of a qualified person. We also note that the maximum ratio of qualified to non-qualified individuals specified in ASME B31Q is 1:5. This indicates that NGA span-of-control standards are more stringent than the industry standard. As such, NY LDCs respectfully request clarification from Staff as to which covered tasks they consider to have an unreasonable or unsafe span-of-control. NY LDCs are committed to the safe operation of natural gas distribution systems and will review and adjust span-of-control requirements where warranted.

NY LDCs believe the rigor used in the SME analysis and the resulting conservative span-of-control ratios are appropriate for their associated tasks. Moreover, Section 7.0 of the OQ Written Plan (Rev L) imposes strict controls on how span-of-control is executed at a job site. It stipulates that qualified individuals directing/observing non-qualified individuals must undertake all due responsibilities for safe, proper performance of the task, including:

(a) Remaining in direct visual and verbal contact at all times with a non-qualified individual who is performing a Covered Task.

(b) Allowing multiple Covered Tasks to be performed simultaneously only if direct visual and verbal contact with non-qualified personnel is maintained at all times during the performance of those Covered Tasks. A qualified individual observing multiple non-

[16] Reference: *NYS Specific Concerns*/Finding (9), p. 22 and *Best Practices/Evaluation* #6

qualified individuals performing Covered Tasks simultaneously must abide by the most stringent (lowest) span-of-control ratio for the Covered Tasks being performed.

(c) Exercising due diligence in identifying and reacting to abnormal operating conditions, as needed, in the course of observing and directing the work of the non-qualified individual.

(d) If an abnormal operating condition occurs when a qualified individual is directing the work of one or more non-qualified individuals or if the qualified individual must intervene to ensure proper, safe performance of a Covered Task by any non-qualified person, the qualified individual must:
- Stop all work being performed by non-qualified personnel under his/her direction and observation. No work on any Covered Task shall be performed by non-qualified personnel until such time as a qualified individual can resume the required oversight and responsibility for proper, safe performance of the Covered Task(s).
- Prescribe immediate corrective action in response to the situation.

NY LDCs believe the job site controls stipulated above and currently in use meet NYSDPS's intent for job location reviews, controls and assurances that qualified personnel are on site and work is truly being performed under the direction and observation of qualified personnel.

15. Span-of-Control Records[17]

On-the-job training (OJT) is used by many operators and has proven to be an effective training tool. OJT is commonly and intentionally used with span-of-control to develop individuals under the direct oversight of experienced and qualified employees. The continued and effective utilization of on-the-job training should be considered when contemplating span-of-control requirements. NY LDCs also note that, in general, the qualifications carried by most operating personnel has expanded over the years, thereby reducing the frequency in which span-of-control is utilized.

The White Paper stipulates that records must be maintained for any instances where non-qualified individuals performed work on the pipeline while being directed and observed by a qualified individual. NY LDCs are concerned about this requirement. Accountability for adherence to span-of-control requirements and overall quality of the work performed resides with the crew chief (or equivalent position/title). The challenge presented here is not compliance itself but rather documentation and information systems to support compliance.

LDC work management systems capture the work function performed, assets installed/retired, work crew, date of work performed, and many other parameters based on the work performed. That said, work management systems are not configured to track work performed by covered task. Note that a simple work function such as installation of a service may require 15 or more

[17] Reference: *"Model" Plan* Key Element #8

covered tasks. To meet this proposed records-keeping requirement, each covered task would need to be tracked as an independent sub-function within each and every work order. The functionality to accurately track this data simply does not exist and would require a major information systems enhancement of each operator's work management system, or the development of a new, likely disparate stand-alone system simply to track work performed under span-of-control. This potentially complex record keeping requirement will be extremely expensive and adds no public safety value. To illustrate the potential expense associated with this requirement, one operator spent approximately $5 million in the development and implementation of a similar system to track the specific requirements for plastic fusion alone, which represents only three of 80+ covered tasks.

NY LDCs recommend that alternative and simpler approaches to documenting span-of-control be considered. For example, the crew chief (or equivalent) could attest that all work performed on a given project was done by a qualified person or performed in accordance with that operator's span-of-control requirements. We believe this or similar approaches meet the intent of the White Paper and could be implemented more cost effectively.

16. "Critical Function" Requalification Intervals[18]

The White Paper stipulates that evaluation intervals for covered tasks involving critical functions (pressure regulation, etc.) shall occur at least annually. NY LDCs are concerned about this requirement. NGA and NY LDCs recently reviewed and updated the re-evaluation interval analysis used by the NGA OQ Program. This review concluded that the current methodology used is consistent with the methodology found in ASME B31Q Appendix G – DIF Analysis for Subsequent Qualification. NGA did, however, recommend updating the definitions and rating scale used in the SME evaluation process to ensure consistency across all covered tasks. The definitions and rating scale adopted by NGA are based on those in ASME B31Q Appendix G. The draft recommendations from this analysis were presented to NYSDPS Staff on February 7, 2019 and attached here as Exhibits C1 and C2. The methodology recommended in ASME B31Q and used by NGA in this analysis includes three factors that contribute to the determination of the appropriate re-evaluation interval. These factors are:

1. Frequency task is performed by the operator;
2. Difficulty or Complexity of the task; and
3. Importance or Consequence of performing the task incorrectly.

NY LDCs believe these factors are comprehensive and the process is appropriate for determining requalification intervals. Furthermore, the introduction of the ambiguous term "critical functions" introduces subjectivity and inconsistency into the evaluation process. From a practical standpoint, personnel selected to perform critical tasks such as pressure regulation have demonstrated both intellectual and mechanical competency before being selected to work in these positions. Additionally, personnel in these safety sensitive roles tend to be dedicated to this specific work function - performing the same tasks on a regular and even on a daily basis.

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[18] Reference: *NYS Specific Concerns*/Findings (5), p. 22 and *Best Practices/Evaluation* #11

NY LDCs recommend that a formal analysis, as recommended in ASME B31Q Appendix G, be utilized to determine requalification intervals. Operators should, of course, affirm this analysis for their company/operating environment and amend requalification intervals if warranted.

17. Written Evaluation Test Centers[19]

The White Paper stipulates that all written evaluations must take place at either the operator's facility or a third-party test center. In no case shall evaluation take place at a contractor's location unless administered and proctored by the operator.

NGA and NY LDCs are transitioning security and administration of written evaluations to an industry-leading independent 3rd party, Prometric. Prometric brings more than 25 years of experience in the secure delivery of online exams. They deliver over 7 million tests annually to approximately 300 clients in areas where a qualifying credential is of paramount importance, such as medical professions (National Board of Medical Examiners, The American Board of Pediatrics, American Dental Association, NYS Certified Nurse Aide, etc.) and financial industries (Financial Industry Regulatory Authority, American Institute of Certified Public Accountants, etc.), along with numerous other academic, corporate, professional and industrial clients. Prometric security protocols have been honed over decades and are believed to be among the most effective in the secure delivery of online exams nationally and internationally. NY LDCs believe the security expertise and measures provided by Prometric exceed that of all other OQ Programs in the U.S.

Prometric delivers online exams in test centers which they own as well as test centers on client property. Test centers on client premises[20] are built and configured to Prometric standards, including 24-hour/day, 365 day/year video and audio recording, data network security, computer security, and all physical security measures. Test centers on client premises are staffed by Prometric personnel and the security of the test room is restricted to Prometric personnel. NY LDCs contend that Prometric compliant test centers built on client premises which are operated and controlled by Prometric meet the intent of a "third-party test center". The union and contractor workforce represent nearly 50% of the natural gas industry workers in New York State. The large number of union and contractor personnel requiring qualifications warrant this consideration as the capacity and scheduling constraints of existing test facilities is limiting.

Given the above, clarification is requested which would enable unions or contractors the option of building a Prometric compliant and Prometric operated test center on their premises. Based on feedback received from Staff during the May 8th stakeholder workshop, we believe that the intent of industry and Staff are aligned and that any forthcoming requirements would not prohibit the use of independent, professionally operated test centers on union/contractor premises.

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[19] Reference: *Best Practices/Written Evaluations* #2

[20] Staff toured the Prometric compliant test center constructed at Con Edison's Learning Center on March 19, 2019 during which Prometric provided an overview of their security measures.

18. Written Evaluation Security Protocols[21]

The White Paper identifies Best Practices regarding security provisions for written examinations, including a minimum number of proctors per session, required deactivation of proctor passwords, and configuration of test rooms. These Best Practices were *interim* security measures developed and adopted by NGA and NY LDCs and utilized for a period of time while our transition to Prometric was being implemented. These measures were effective in securing online exams during this transition, but we note that these measures were designed in a manner that utilized physical security measures to compensate for potential weaknesses in data/network security. After a thorough review of Prometric security protocols and working with Prometric for over a year, we recommend that security protocols utilized by professional testing firms, such as Prometric, be permitted. The security measures and protocols utilized by profession testing firms are more comprehensive and stringent than the interim measures outlined in the White Paper.

19. Written Evaluation – Task and Exam Equivalency[22]

The White Paper stipulates that all contractors must take the same written evaluation as operator personnel. This would be in addition to any generic operator qualification tests taken prior to working for the operator.

Some NY LDCs utilize the concept of "task equivalency" and "exam equivalency". Equivalent tasks are typically created when an NGA task goes well above and beyond the requirements an operator may have for its own employees or contractors performing work—that is, in cases where the NGA written exam is more expansive, covering a wider scope than that of the LDC equivalent. Therefore, operators would accept an NGA covered task or an NGA exam that is listed as an *equivalent* to an operator's task or exam. NY LDCs recommend the inclusion of operator identified equivalent tasks and equivalent exams as a best practice.

20. Written Evaluation Critical Fail Questions[23]

The White Paper stipulates that each written evaluation shall include questions on AOCs specific to the individual task. Additionally, written evaluations shall include critical questions related to the covered task(s), including but not limited to steps that, if performed incorrectly, could lead to an AOC. All such questions must be answered correctly. The concern raised by Staff in the White Paper is that a person seeking to be qualified can answer multiple questions on AOCs incorrectly and still be qualified, as long as they achieve a minimum test score.

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[21] Reference: *Best Practices/Written Evaluations* #4, 7, and 9
[22] Reference: *Best Practices/Written Evaluations* #11
[23] Reference: *NYS Specific Concerns*/Finding (5), (6) and (8), p. 22; and *Best Practices/Written Evaluations* #13

NY LDCs believe that the use of critical fail questions, as proposed, is not generally regarded as a "best practice" for written exams and, if adopted, may have unintended negative consequences, including unnecessarily impacting the availability of the workforce and the ability of operators to meet mandated work requirements and performance metrics.

NY LDCs offer the following rationale in support of our position along with recommendations to adopt the concept of critical fail questions in a fit-for-purpose manner:

- NGA and NY LDCs, through the SME teams, have reviewed each task and identified associated AOCs. Many AOCs are common to all covered tasks, and for efficiency in training and testing, these AOCs are aggregated into one task (e.g., Task 70 – Identifying and Responding to Abnormal Operating Conditions and Unsafe Conditions). Where applicable, incremental task specific AOCs have been identified and are included in the evaluation process for the respective task. As outlined in Revision L of the NGA OQ Written Plan, all covered tasks include the full set of common AOCs and 45 of 84 tasks include task specific AOCs. NY LDCs commit to continuous review and update of task specific AOCs but note that not all tasks will have AOCs which extend beyond those that are common to other tasks.
- The online examination process utilized by NGA and NY LDCs incorporates a systematic review of incorrectly answered questions upon successfully passing an exam. The intent of this review is to ensure that an individual who meets or exceeds the passing standard for an exam knows which questions he/she answered incorrectly and learns the correct response to those questions. This review occurs immediately upon completion of the exam and includes all incorrectly answered questions (not just AOC related questions) so that an individual is fully aware of all proper responses before returning to work. This measure is a safeguard against the concern noted above.
- Many written evaluations exceed 30 questions, with some exams exceeding 80 questions. The questions are designed to be challenging, to test the breadth and depth of knowledge on the subject (inclusive of AOCs) and to help ensure the competency of the individual. Many of the fundamental knowledge questions are equally or more important in terms of proper operation and pipeline safety than certain AOC questions. To designate all AOC questions as critical fail items would overweigh the significance of some AOC items compared to the broader knowledge domain for a given task. Given the nature and scope of these evaluations, we believe that the use of an 80% pass rate for an exam as a whole is appropriate. This passing standard is typical across many industries and professions, including safety critical areas such as engineering, medical, etc. We are concerned that the establishment of a 100% pass rate on all AOC questions creates an unachievable standard.
- Written evaluations are not suited for critical fail questions. We are not aware of any major credentialing organization or agency, within or beyond the natural gas industry, that utilizes critical fail questions in scoring or interpreting the results of written examinations. By contrast, the critical fail approach is relatively well established for performance evaluations, the most notable example being driving tests required for obtaining a state driver's license.

- Fear of poor test performance can lead to test anxiety and the introduction of critical fail questions will increase that fear, leading to higher failure rates for reasons not related to the test taker's knowledge of the subject being tested.
- The critical fail approach could lead to undesirable behavior on the part of examinees in an attempt to pass required exams. It is well known that high-stakes testing (e.g., critical fail questions) increases the likelihood of unethical behavior.
- Performance/practical evaluations may be better suited for a limited number of critical fail questions. Practical exams already require an individual to successfully meet 100% of all criteria in order to pass. It is conceivable that a limited number of critical fail questions on truly "critical" AOCs (as determined by SMEs) could be used to achieve the desired goal. The placement of critical fail questions within the practical exam would help ensure the scenario/question being asked is clear to the examinee as an evaluator would ask the question and could clarify or probe if required.
- Not all tasks and not all AOCs are equal in severity and importance. This is recognized in ASME B31Q where Appendix G utilizes a rating scale to determine the *Importance* of a task. *Importance* is judged in terms of the consequences of inadequate performance. Likewise, NGA and NY LDCs have adopted this approach. The NGA OQ Written Plan includes a rating of *Risk/Consequence of Improper Performance* for each task (reference Exhibits C1 and C2). The most severe Importance rating as defined by ASME B31Q is as follows:

  Importance Rating 4 (High Risk/Consequence): Improper performance of the task may result in an abnormal operating condition while the task is being performed that is a hazard to persons, property, or the environment, or in a reportable condition.

  NY LDCs recognize that tasks with a high risk/consequence rating, as defined above, may warrant the use of critical fail AOC questions. This approach of utilizing critical fail questions for a discrete set of truly high risk/consequence tasks within the confines of a performance evaluation aligns with our broader research of how other credentialing programs integrate the critical fail concept into their overall competency evaluation strategy. Accordingly, we emphasize that the most common use of the critical fail approach – in the licensing process to drive a motor vehicle – incorporates the critical fail concept in performance evaluations (i.e., the driving test) but not in the corresponding written evaluation.

As these comments indicate, NY LDCs are not supportive of critical fail questions in written exams. We believe the approach and measures currently in use relative to AOCs associated with low and medium risk/consequence ranked covered tasks are prudent and sufficient. NY LDCs believe that the applicability of critical fail AOC questions should be limited to those tasks with a risk/consequence rating of "high," as these safety sensitive tasks and AOCs warrant this incremental measure. We also recommend that this critical fail question concept be incorporated into practical evaluations (versus written evaluations). This fit-for-purpose approach to the use of critical fail questions will enhance public safety and limit the potentially significant unintended consequences associated with the widespread use of critical fail

questions. We also note that a stronger emphasis on training, as recommended in the White Paper, will provide the best assurance regarding competency of the workforce relative to AOCs. Lastly, to enhance the recognition of task specific AOCs and as a potential alternative to imposing a general critical question pass/fail approach for written exams and in combination with strategically designed questions during performance exams, NY LDCs are supportive of developing a standardized approach to AOC prevention, recognition and reaction through pre-job briefs. This strategic approach to recognizing, responding to and preventing AOCs provides a behavior influencing environment prior to every job and "tests" a technician's ability to recognize actions that could result in an AOC in their routine operating environments.

Should the Commission insist on critical fail questions in the manner suggested in the White Paper, we respectfully request that NY LDCs be granted the opportunity to further study and benchmark best practices in an effort to avoid the aforementioned potential unintended consequences and to better understand how this practice is successfully working for others. Alternately, NY LDCs suggest that industry work collaboratively with Staff through a pilot program to develop potential solutions to this challenge. This includes assessing the use of enhanced pre-job briefs as a behavior influencing tool to recognize, avoid and respond to AOCs coupled with the use of critical pass/fail questions during practical exams. A pilot program will allow for the efficient development of various testing solutions and evaluation of results prior to broad adoption.

21. Use of Item Pools for Written Evaluations[24]

NY LDCs recognize the value of item pools/banks as a means of minimizing the exposure of test questions over time and thereby fortifying test security. Assuming this is Staff's reason for proposing it, we concur with the idea that the *ultimate* use of item pools for constructing OQ written exams is a laudable goal. At the same time, we are well aware of the very considerable time and effort required to build a bank of items to draw on for all OQ written evaluations. It is an undertaking of major proportions for a program which has in excess of 80 covered tasks and relies on the expertise of numerous SMEs.

In our view, a well-designed OQ evaluation program adopts and pursues a defined strategy for minimizing test question exposure and refreshing exam content over time, such as development and use of intact alternate test forms (i.e., second/alternate exam) or development and use of item pools for test construction. Not incidentally, we note that the former strategy can be leveraged as a stepping stone toward the latter.

NY LDCs therefore recommend that the best practice on item pools be reframed more broadly so as to focus on the *purpose* of item pools/banks while allowing that various strategies may be employed to protect the integrity of the evaluation process *over time*.

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[24] Reference: *Best Practices/Written Evaluations* #8

22. Videotaping of Non-Written Versus Written Evaluations[25]

Within the *Written Evaluations* section of the White Paper, a requirement states that all non-written evaluations shall be videotaped with full video and audio capability function and shall be maintained while the individual is performing the covered task. NY LDCs are concerned with this requirement. More specifically, we are concerned with two specific and limited use cases – when oral testing is used to facilitate a written exam as a "reasonable accommodation," and when oral questions are embedded in a practical exam.

As previously indicated, the NGA OQ Program utilizes Prometric to administer *written* evaluations. All test sessions are video/audio recorded. Prometric maintains these recordings for 120 days, which is considered best in class for professional testing firms. Special accommodations (e.g., reader for people with dyslexia, interpreters) are provided by Prometric. These readers/interpreters are not associated with the natural gas industry and therefore do not possess the knowledge to assist the examinee in any way beyond their intended role. These test sessions are likewise video/audio recorded and retained for 120 days. The exam responses during special accommodation sessions are captured electronically within the exam and archived in the OQ database in precisely the same manner as results from all exams are archived. Given the controls on the reader/interpreter process and that these exam results are recorded in the database, we do not believe that special accommodation testing warrants audio/video recording requirements beyond that which is already provided by Prometric. We also note that the very limited use of readers/interpreters, estimated at less than 1% of all exams, and the corresponding cost for extended video recording, has minimal, if any, public safety value.

Some NY LDCs also use combined practical and oral (knowledge) examinations for certain covered tasks. These are predominantly skill based but include some knowledge questions. Practical evaluations are not video/audio recorded. However, all individual observation step results are documented by the evaluator and archived in the LMS. Given that these evaluations are predominantly practical evaluations, we do not believe this combined practical/oral evaluation falls within Staff's intent of audio/video recording *written evaluations*.

If the intent is truly to audio/video record all written evaluations and/or practical/oral evaluations and retain these recordings for a period of three years, the cost impact would be tremendous. Prometric would need to upgrade their hardware across their entire U.S. footprint as contractors from other regions can take written exams at any Prometric center in the U.S. This undertaking is not aligned with Prometric's security roadmap, in part because they recently upgraded DVR equipment to high-definition equipment. Additionally, mobile DVR recording systems and data archiving systems would need to be developed and implemented to capture all combined practical and oral examinations. This would increase labor costs significantly as a videographer

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[25] Reference: *Best Practices/Written Evaluations* 17

would need to be recording all such exams and the efficiency of testing would be dramatically reduced. NY LDCs do not believe there is public safety value in such an investment.

23. Enhancements to Learning Management Systems

The outcome from these proceedings and forthcoming OQ requirements will have a profound impact on Learning Management System(s) (LMS) functionality and configurations. From an information systems perspective, these changes are expected to be large in scope and will take up to two years to implement. Clarity on many of the issues contained herein is required before definitive project plans can be determined. From an LMS perspective, areas of highest impact include:

- Identification, development and implementation of new covered tasks to comply with the proposed definition of Covered Task
- Tracking of initial and refresher training
- Implementation of training as a prerequisite to testing
- Transition to a new exam software platform to accommodate banks/pools of test questions
- Development, implementation and beta testing of test question banks/pools
- Development and implementation of incremental/common practical evaluations
- Development and implementation of company specific practical evaluations
- Development and implementation of company procedure/work method evaluations
- Enhancements required to accommodate program effectiveness measures.

24. Applicability to Very Small Operators

Some of the requirements in the White Paper will be especially challenging for very small operators. NY LDCs recommend that Staff consider the challenges faced in this regard and examine potential exemptions, grandfathering and/or other compliance options, where it makes sense, while allowing flexibility in implementation timeframes for new requirements (as may be necessary). From the discussion at the May 8th stakeholder workshop, we believe that Staff understands this concern and we appreciate any consideration that may be offered.

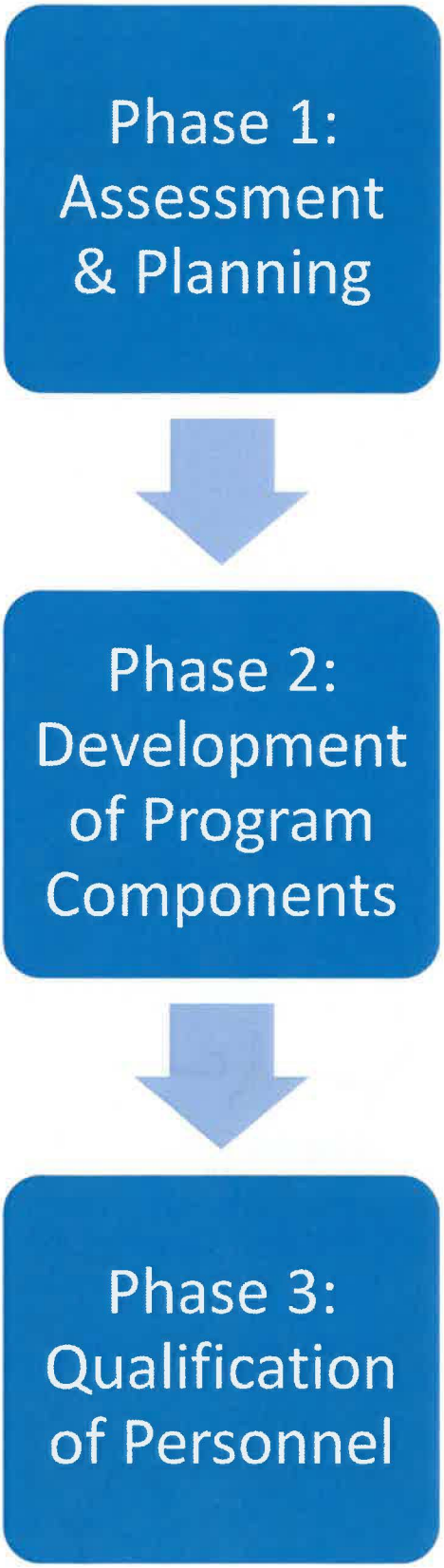
25. Timeframe and Cost for Implementation and Compliance

The scope of work required to meet the desired outcome may be significant for some NY LDCs. Furthermore, the need to engage key SMEs as part of multiple initiatives will limit the extent to which activities can be performed in parallel. We offer a general timeline in Figure 1 illustrating key milestones for implementation.

NY LDCs will need to evaluate the final requirements before a reasonable estimate can be made regarding an implementation timeline. In all likelihood, there will be common initiatives that could be undertaken in a collaborative format and there will also be numerous initiatives that are company specific. Timelines to implement company specific components will vary depending on the scale of the company and their current status/progress towards achieving the desired end state.

We envision 3 phases of implementation. First is assessment and planning. During this phase, requirements will be analyzed, a gap analysis will be performed, and a project plan will be developed. At the completion of this phase, each operator will be able to provide a project plan and implementation timeline. The second phase will focus on the development of programmatic components (e.g., new performance evaluations, company specific tasks/evaluations, company specific training requirements, etc.). Phase three will focus on the requalification of existing personnel. NY LDCs plan to implement the new qualification requirements utilizing the established requalification intervals. As such, requalification of personnel utilizing the new criteria will occur over a 3-year requalification period.

The cost impact of implementing the recommendations in the White Paper should not be underestimated. In many cases, operators will need to secure the funding required for these investments, which will extend their implementation timeline. A number of the White Paper's recommendations have already been addressed or are in the process of being addressed by NGA and NY LDC operators. We outline these areas herein and make recommendations that we believe meet the intent of the White Paper but provide greater flexibility and cost efficiencies in achieving the desired outcome. It should also be understood that additional compliance costs associated with internal resources and contractors will ultimately get passed on to the LDCs' natural gas customers. We therefore strongly recommend that Staff consider these recommendations and allow each LDC to offer its cost/benefit analysis before adopting certain provisions that may offer limited public safety value.



Phase 1: Assessment & Planning:

- Analysis of OQ requirements
- Conduct gap analysis
- Develop project plan
- Resource project plan

Phase 2: Development of Program Components:

- Identify & develop new covered tasks
- Revise structure of covered tasks; adding Performance Evaluations (PEs)
- Identify tasks which require company specific training / qualification
- Develop supplemental company specific training
- Develop common PEs and company specific PEs
- Develop critical fail questions for PEs
- Develop new LMS functionality to track initial and refresher training; incorporate critical fail questions into PEs; implement "task profiling" functionality; transition to new exam software platform with advanced functionality; develop company specific exams; QA/QC and beta test new exams; enhance PE data capture process
- Develop new test questions and implement item banking strategy
- Develop process to review/approve/audit contractor training including record keeping
- Formalize criteria and training requirements for Evaluators
- Recruit and train new Evaluators and Trainers
- Review and update span of control, where applicable
- Incorporate the above into OQ Written Plans
- Develop and implement engineering design review process

Phase 3: Qualification of Personnel

- Training and qualification of new personnel
- Requalification of existing personnel (3-year requalification interval)

Figure 1 – Phased Implementation

Conclusion

NGA and the New York State LDCs appreciate the opportunity to present these comments. Our goal in offering these comments is to provide practical alternatives to certain Best Practice recommendations which will enhance the competency of the workforce while maximizing public safety value. We hope that our efforts will help the Department in achieving concrete improvements in the state's gas safety objectives. Please contact us if you have any questions.

Respectfully submitted,

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Exhibit A

Summary of Training and Qualification Program Enhancements Undertaken by NY LDCs

Exam Security Enhancements:
Significant investments have been made to achieve the following exam security enhancements, which are now believed to be the most comprehensive in the industry:

- Rewrite and implement all new exams (2/2017);
- Implement interim/enhanced exam security protocols (2/2017);
- Consultant review and recommendation for best-in-class exam security options (6/2017);
- Execution of contract with Prometric for exam security (9/2017);
- Integration of Prometric platform with Learning Management System (LMS) platform completed (12/2017);
- Commence transition to online testing via Prometric (1/2018) (conversion to Prometric currently 90% complete);
- Cloning of all exam questions so that spare exams are available as a contingency plan in the event of an exam breach (4/2017 – 6/2018).

OQ Program Roadmap:
In September 2017, NGA and NY LDCs released a Draft OQ White Paper[26] (reference Exhibit D) outlining planned OQ program enhancements including:

- Encouraging a paradigm shift regarding "Operational Ownership" of the OQ Program by each LDC by adopting a layered approach to ensure both training and qualification covering fundamental knowledge and skills as well as integrating company specific procedures, work methods and materials of construction into Company specific OQ Programs;
- A refreshed look at the fundamental balance of Written Exams and Performance Evaluations in determining competency of individuals by adopting the approach outlined in ASME B31Q to determine which tasks require performance evaluations and the development of additional performance evaluations. Draft recommendations regarding performance evaluations were discussed with DPS Staff on February 7, 2019;
- Incorporation of fundamental knowledge and core skills training in addition to company specific training as a requirement of qualification;
- Adoption of a Core Skills Training Program for both operators and contractors (Gas Technology Institute's (GTI) Field Skills Training Program) (Completed 1/2018);
- Development of a framework for the training of contractor personnel including the delivery of requisite training of contractors addressing fundamental knowledge, core skills, LDC specific procedures, and use of company specified equipment and materials of construction.

[26] NY LDCs and NGA met with DPS Staff on October 3, 2017 to review the roadmap recommendations contained within NGA's Draft OQ White Paper.

OQ Program Enhancements:
A number of recent changes to the OQ program have increased the rigor of the program. These enhancements include:

- Shortened all 5-year requalification intervals to a more conservative 3-year interval (OQ Written Plan, Rev K);
- Addition of seven new performance evaluations including exothermic welding, leak survey, line locating, regulator station inspection and three compressor station related tasks (OQ Written Plan, Rev K/L);
- Review and adoption of more conservative span-of-control, where applicable (OQ Written Plan, Rev K);
- Inclusion of Task-specific abnormal operating conditions (AOCs) in the domain of content covered by evaluations, where applicable (OQ Written Plan, Rev L);
- Subject Matter Expert (SME) review and update of Covered Task domains, elements, and AOCs (OQ Written Plan, Rev L);
- Update to the OQ management of change process (OQ Written Plan, Rev L).

Training Enhancements:
Increased emphasis on training as a central component of OQ has been achieved through:

- SME review and update of all web-based refresher training modules (6/2017);
- Execution of a license with GTI enabling access for all NGA OQ Program users (operators and contractors) to the GTI Field Skills (Core Skills) Training Program (1/2018);
- Execution of an agreement enabling NGA and NY LDCs to work with GTI regarding updates and enhancements to the Field Skills Training Program to help ensure that the program will remain current with changing technology, revisions to code, etc. (1/2018);
- Execution of an agreement enabling NY LDCs and contractors to integrate company specific training requirements into the GTI Field Skills Training Program, to construct a training program tailored for the needs of each operator and contractor. (1/2018).

Company Specific Enhancements:
The majority of NY LDCs have made or are in the process of making additional company specific enhancements to *their OQ Program* to ensure that their operational requirements are addressed. Company specific enhancements include:

- Use of Appendix D (Company-Specific Amendments to NGA OQ Program Written Plan) and Appendix E (Company-Specific Forms, Policies, and Procedures) to define, refine, and/or explain ways in which each operator conducts and manages its OQ program;
- Development of company specific tasks and associated knowledge and practical evaluations where the operator's requirements exceed or differ from those found in the NGA OQ Program;
- Investment in LMS and internal resources to develop company specific series of tasks and track qualifications for both internal and contractor employees;

- Development of knowledge and/or practical exams covering company specific operating procedures that supplement or replace NGA exams to help ensure that an individual understands the operator's procedures and work methods;
- Development of various approaches and methods regarding the training of contractor personnel for fundamental knowledge and skills as well as company specific requirements.

Exhibit B1

Criteria for OQ Performance/Skill Evaluations
Draft for Review and Comment
January 25, 2018

Background: The concepts put forward herein are intended to ensure compliance with CFR 192 Subpart N Operator Qualification (OQ) regulations with emphasis on ensuring that an individual can *perform* a Covered Task as part of the qualification process. The NGA OQ Program has historically utilized a subject matter expert (SME) review process in conjunction with guidance from a professional testing specialist to decide which Covered Tasks require a performance/skill evaluation for qualification on the task. Following this process, the NGA OQ Program presently has performance/skill evaluations for 32 of the Program's 82 Covered Tasks (39%), as specified in Rev. L of the *OQ Written Plan* released May 1, 2018. State pipeline safety regulators have indicated that they expect OQ Programs to have a performance/skill evaluation for the majority of Covered Tasks and that a justification should be provided if a Covered Task does not have an associated performance/skill evaluation.

Approach: NGA and its member companies, working through the NGA Operator Qualification Committee and Training and Qualification Committee, have reviewed the issue of performance/ skill evaluations and propose an analytic approach based on recommendations contained in *ASME B31Q-2016, Appendix F*: *Evaluation Method Selection*. The approach involves a set of discrete criteria for determining whether a Covered Task calls for a performance/skill evaluation or requires only a knowledge evaluation. Use of these criteria will establish a definitive rationale for any case in which a performance/skill demonstration is not used to qualify personnel on a Covered Task. Also included in the approach is an analysis to determine: (a) which of two evaluation protocols should be adopted for performance/skill demonstration of a Covered Task, and (b) whether such demonstration should also be required for subsequent requalification on the task. The following description of the proposed new policy direction is offered for review and comment.

Definitions: Definitions were extracted from ASME B31Q where applicable. Definitions are as follows:

1. *Ability:* the mental and physical capacity to perform a task.
2. *Knowledge:* a body of information applied directly to the performance of a task.
3. *Skill:* the ability to perform mental and physical activities acquired or developed through training and experience.
4. *Practice*: repeated exercise in or performance of an activity or skill so as to acquire or maintain proficiency in it.

Exhibit B1

The ASME B31Q evaluation method selection process presumes that knowledge of some type is required for each task and therefore a written/oral evaluation is required in all cases. The evaluation method selection approach therefore determines whether a skill is required to perform each task and warrants a performance/skill evaluation in addition to a written/oral knowledge evaluation.

"Abilities" are prerequisite to learning the "knowledge" and "skill" needed to perform complex tasks. OQ evaluations therefore focus on assessing whether individuals have acquired the necessary knowledge and developed the necessary skills to perform Covered Tasks.

Step 1: Determine if a performance/skill evaluation is required for *initial* qualification. The criteria for this determination will be operationalized in a set of eight questions that reflect questions listed in *Appendix F: Evaluation Method Selection* of ASME B31Q-2016. Four of the eight criteria focus on whether a "skill" is required to perform a task. Conversely, three other criteria focus on whether the task is largely "knowledge" based and may be suitably assessed by a "knowledge" test alone. These are the main criteria for determining if a performance/skill demonstration will be used as an evaluation method for initial qualification on a Covered Task. The eighth criterion concerns two perceptual abilities: ability to hear and ability to discern colors. Where applicable, this criterion may argue for requiring demonstration of the requisite perceptual ability to qualify on a task.

A SME analysis of each Covered Task will determine if it requires a "skill" and therefore may warrant a performance/skill evaluation. There are numerous Covered Tasks in which mastery of task-relevant knowledge is sufficient to learn how to perform and become proficient at the task. Examples would include inspection work (e.g., visual inspection tasks), highly technical tasks that are limited to observation (e.g., overseeing uprating procedures), and tasks that are quite easy to learn and perform (e.g., installing tracer wire). For these types of Covered Tasks, a knowledge exam should suffice to determine an individual's ability to perform the task.

Furthermore, it is NGA's position that ability/skill to perform *inspection* tasks can be adequately assessed by knowledge exams that incorporate photos of equipment to be "inspected" and judged by examinees. Similarly, graphic material (i.e., photos, maps, illustrations, schematics) and scenario-based questions can be presented on knowledge exams to assess *application of* knowledge or *analysis* of material presented to help ensure rigorous assessment of an individual's ability to perform a task.

The criteria for determining if a performance/skill evaluation should be required are as follows:

a. Does this task require physical prowess or dexterity beyond what an average person has? If yes, skill required.

b. Is any practice required to learn to perform the task? If yes, skill normally required. That is, must the person have at least some *hands-on* practice in order to learn how to

physically perform the task?

c. Does a person get better at the task with a lot of practice? If yes, skill normally required. That is, would a person need a lot of practice to achieve the expected level of *proficiency* in performing the task? (If no, a person can be expected to *successfully* perform the task without much practice.)

d. If a person has not performed the task for some time, will he/she have trouble with the physical coordination required to perform the task? If yes, skill normally required. That is, without frequent ongoing performance of the task, is *physical* proficiency (and the benefit of *hands-on* training/practice/experience) on the task likely to deteriorate?

e. Would a decrease in a person's ability to hear or to see colors make him/her unable to perform the task? If yes, distinctive physical ability is likely required. That is, is either of these abilities an essential element of the task (for which no reasonable accommodation could be made on the job)?

f. Could a person be successfully talked through performing the task if he/she has not performed it before? If yes, the task is mainly knowledge based. That is, without any prior experience/practice, is a person likely to perform the task successfully on his/her *first* attempt simply by following step-by-step *oral instructions/directions*?

g. Could a person perform the task by following company/equipment policies/procedures if he/she has not performed it before? If yes, the task is mainly knowledge based. That is, without any prior experience/practice, is a person likely to perform the task successfully on his/her *first* attempt simply by following *written instructions/directions or* specifications?

h. Does it take long to learn how to perform the task? If no, a minimal amount of knowledge and skill is likely required, so evaluating knowledge should be sufficient.

If the answer to one or more of the first five questions (a – e) is "Yes," a performance/skill evaluation should be required for initial qualification. Conversely, if the answer to one or more of the last three questions (f – h) suggests that a knowledge (online) examination would suffice, a performance/skill evaluation should not be needed for initial qualification. If there is a conflict in the responses and performance/skill evaluation decision between the first five questions and the last three questions, then a conservative approach to require a performance/skill evaluation should be followed. Any exceptions to this logic will be noted and justified.

This analysis will result in the need for an increase in the number of Covered Tasks that require a performance/skill evaluation. As proposed, the proportion of Covered Tasks *requiring* a

performance/skill evaluation will increase from the current 39% to 77%. Correspondingly, the number of unique performance/skill evaluations will increase from 41 to 73.

Step 2: Determine the evaluation protocol required for each performance/skill evaluation. NGA proposes to establish two distinct levels of evaluation protocols for performance/skill demonstrations (Level I and Level II). The protocol to be used for a given Covered Task will be determined based on the risk/consequence of improper performance of the task. A Level I protocol for performance/skill evaluations will be permitted for Low and Medium risk tasks, whereas Level II evaluations will be required for High risk tasks.

To ensure meaningful, valid assessment for OQ qualification, the following requirements will apply to both Level I and Level II protocols:

- The examinee must perform the task independently.
- The evaluation must entail *systematic, structured* observation of an Examinee's demonstration/simulation of a Covered Task.
    - The evaluation must be administered according to a documented protocol, regardless of where the evaluation is conducted.
    - A standardized checklist of measurable criteria must be used to minimize evaluator subjectivity in judging examinee performance
- The Evaluator must have the requisite subject matter knowledge to discern an examinee's ability to perform the task properly and confirm that the examinee can recognize and react to any AOC arising during the evaluation.
- The Evaluator cannot be a person who directly supervises the examinee on the job.

Following are the *definitive* requirements of Level I versus Level II evaluation protocols:

Level I Performance/Skill Evaluations:

- Level I performance/skill evaluations may be administered by NGA Evaluators or Operator's Evaluators, or by Contractor's/Union's Evaluators.
- Contractors/Unions who evaluate their own employees will be subject to auditing of the evaluation process and audit of evaluation records by the Operator and/or NGA. A Contractor's/Union's Evaluator also must have completed an Evaluator training and certification program.
- A Level I evaluation may be conducted in any of the following contexts:

- Demonstration in connection with on-the-job training or as part of a classroom/lab training program
- Demonstration of task performance *on the job* [see Note below]
- Simulation/demonstration of task performance in the field, at a training facility, or in a classroom/shop/lab.

- A Level I evaluation may be conducted in the course of or immediately upon completion of applicable training. In either case, the examinee must work independently to successfully complete the evaluation without the assistance of others.

  Note: Per 49 CFR 192.809(d) and (e), observation of on-the-job performance may not be the *sole* evaluation method for qualification on a Covered Task. In the NGA Program, any skill evaluation involving observation of *on-the-job* task performance will be paired with a knowledge examination.

Level II Performance/Skill Evaluations:

- Level II evaluations will be performed by NGA Evaluators and/or Operator's Evaluators. Contractors/Unions will not be permitted to evaluate their own employees.
- A Level II evaluation may be conducted in any of the following contexts:
  - Demonstration of task performance *on the job* [see Note above]
  - Simulation/demonstration of task performance in the field, at a training facility, or in a classroom/shop/lab.
- A Level II evaluation must be conducted at least 48 hours after the completion of training on the task.

Step 3: Determine if a performance/skill evaluation is required for *requalification*. For any task requiring a performance/skill evaluation for initial certification, it is necessary to determine whether a performance/skill evaluation will be required for requalification when the applicable "subsequent qualification interval" expires. This determination will be made as follows:

- If a Level II performance/skill evaluation protocol is required for initial qualification on the task, a Level II performance/skill evaluation also will be required for requalification.

- If a Level I performance/skill evaluation protocol is required for initial qualification on the task, a Level I performance/skill evaluation also will be required for requalification if the answer to either or both of the following questions is "yes":
    - If a person has not performed the task for some time, will he/she have trouble demonstrating the skill required to perform the task?
    - Would a decrease in a person's ability to hear or to see colors make him/her unable to perform the task?

Following this policy, 59 of 73 (81%) of unique performance/skill evaluations will require a performance/skill evaluation for requalification. The same evaluation protocol (Level I or Level II) will apply to a Covered Task for both initial and subsequent qualification purposes.

Note: A large percentage of ASME B31Q tasks require a performance/skill evaluation plus written/oral exams for initial qualification but require only written/oral exams for requalification. Therefore, the proposed NGA approach is significantly more conservative than ASME B31Q in that NGA's proposed approach requires a performance/skill evaluation in both initial and subsequent qualifications for most tasks.

Step 4 – Determine how company specific requirements will be addressed regarding Standards & Procedures, Tooling, Materials of Construction.
[Note: Step 4 is proposed to be incorporated into the body of the NGA OQ Written Plan. The remainder of this document is proposed as an appendix to the NGA OQ Written Plan.]

Operators shall assess the need for company specific training and/or evaluations to ensure their workforce is knowledgeable in company specific requirements which extend beyond the limits of fundamental gas training programs and/or the NGA Operator Qualification testing program. Company specific training and/or evaluation programs should include standards & procedures, tooling, and materials of construction. This "layered approach" will help ensure competency in fundamental gas knowledge and skills along with company specific requirements. Member companies and member company contractors, performing work on behalf of a member company, shall participate in a company approved instructor led training program which covers the aforementioned topics as applicable based on the work that each individual or group of individuals is expected to perform for the company. Operators shall also assess the need for knowledge evaluations and performance demonstrations to demonstrate competency in company specific requirements. The necessity and format for company specific evaluations will be determined by the operator and may be performed as part of the training program or performed subsequent to the training program. Successful completion of a company specific training program and integral evaluations, where applicable, shall be documented. Likewise, evaluations performed after training shall be documented. Where applicable, Company specific training and related evaluations shall be completed as a requirement for Operator Qualification

and said certification shall become part of the individual's OQ Competency Record and OQ process.

This "layered approach" leverages the fundamental training and assessments provided through the NGA OQ Program. The scope of the company specific training and skill evaluation process shall ensure technicians are competent in the use of individual company procedures, work methods, tools, equipment and construction materials they will be expected to use in day-to-day operations working for a specific company. Each operator will have the flexibility to tailor company specific training curriculums and assessments as necessary for their personnel.

Sub-Committee Members:
Lauren Toczylowski, Con Edison, Chair OQ Committee
Robert Plewa, National Fuel, Vice-Chair OQ Committee
Walter Munro, Liberty Utilities, Chair Training & Qualification Committee
Joseph Morello, New Jersey Natural Gas, Vice-Chair Training & Qualification Committee
Edward Kleinke, Elecnor Hawkeye, Contractor Representative
Dr. Sherry Rubinstein, Professional Testing Expert
Robert Wilson, NGA Staff
Paul Armstrong, NGA Staff

Exhibit B2
Print in color on 11x17

Covered Task	Does Task Currently have a PE? 0 = No 1 = Yes	Does Task have a Proposed PE? 0 = No 1 = Yes	# Existing Unique PE's 0 = No 1 = Yes	# Proposed Unique PE's 0 = No 1 = Yes	Proposed Level II PE's 0 = No 1 = Yes	Proposed Level I PE's 0 = No 1 = Yes	Proposed Level I PE's w/ Requals 0 = No 1 = Yes	Proposed Level I PE's w/o Requals 0 = No 1 = Yes	Complexity of Task	Risk / Consequence of Task	(a) Does this task require physical prowess or dexterity beyond what an average person has? If yes, skill required.	(b) Is any practice required to learn to perform the task? If yes, skill normally required.	(c) Does a person get better at this task with a lot of practice? If yes, skill normally required.	(d) If a person has not performed the task for some time, will he/she have trouble with the physical coordination required to perform the task? If yes, skill is normally required.	(e) Would a decrease in a person's ability to hear or see colors make him/her unable to perform the task? If yes, distinctive physical ability is likely required.	(k) If a person has not performed the task for some time, will he/she have trouble demonstrating the skill required to perform the task? If yes, skill evaluation normally required upon requalification.	(f) Could a person be successfully talked through performing the task if he/she has not performed it before? If yes, the task is mainly knowledge based.	(g) Could someone perform the task by following company/equipment policies/procedures who has not performed it before? If yes, the task is mainly knowledge based.	(h) Does it take long to learn how to perform the task? If no, a minimal amount of knowledge or skill is likely required, so evaluating knowledge should be sufficient.	(i) Skill Evaluation Required for Initial Qualification? Driven by (a) (b) (c) (d) (e)	(j) Skill Evaluation Required for Initial Qualification? Driven by (f) (g) (h)	Final Determination Skill Evaluation Required for Initial Qualification? More conservative of (i) (j)	Level I or Level II Skill Evaluation? Driven by Risk	Skill Evaluation Required for Requalification Driven by (k) and (e)	Exceptions/Comments
1. Inspecting for shorted casings	0	1	0	1	0	1	0	1	Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	Add Level I PE for multi-meter. PE=Yes
2A. Measuring pipe-to-soil potential (Measuring and Interpreting Readings)	0	1	0	1	0	1	0	1	Medium	Low	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
2B. Measuring pipe-to-soil potential (Measuring Only)									Medium	Low	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
3. Conducting a soil resistivity survey	0	1	0	1	0	1	0	1	Medium	Low	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
4A. Conducting interference testing and remediation	0	1	0	1	0	1	0	1	High	Low	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level I	Not Required	
4B. Conducting interference testing									High	Low	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level I	Not Required	
5A. Electrically checking for proper performance of diodes and interference bonds, including testing for A/C mitigation	0	1	0	1	0	1	1	0	Low	Low	NO	YES	NO	NO	YES	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level I	Level I	
5B. Electrically checking for proper performance of diodes and interference bonds									Low	Low	NO	YES	NO	NO	YES	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level I	Level I	
6A. Inspecting for atmospheric corrosion, including evaluation and remediation	0	0	0	0	0	0	0	0	Medium	Low	NO	NO	NO	NO	YES	NO	YES	YES	NO	YES	NO	YES	Level I	Level I	Photos in lieu of PE, WE only, PE = No
6B. Inspecting for atmospheric corrosion									Medium	Low	NO	NO	NO	NO	YES	NO	YES	YES	NO	YES	NO	YES	Level I	Level I	Photos in lieu of PE, WE only, PE = No
7A.Installing, Replacing and Ensuring operation of a rectifier on a Pipeline (Installing, Replacing and Troubleshooting)	0	0	0	0	0	0	0	0	Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
7B. Installing, Replacing and Ensuring operation of a rectifier on a pipeline (Installing, and Replacing Only)									Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
8. Visually inspecting for internal corrosion	0	0	0	0	0	0	0	0	Medium	Medium	NO	NO	NO	NO	YES	NO	YES	YES	NO	YES	NO	YES	Level I	Level I	Photos in lieu of PE, WE only, PE = No
9. Removing coupons/sample gas or liquids for analysis and evaluation of internal corrosion	0	1	0	1	1	0	0	0	High	High	NO	YES	NO	NO					NO	YES	NO	YES	Level II	Level II	
10. Clear a shorted casing	0	1	0	1	0	1	0	1	Low	Low	NO	YES	NO	NO	NO	NO	YES	NO	NO	YES	YES	YES	Level I	Not Required	
11B. Pipe Coatings (Hot Applied Tape)	0	1	0	1	0	1	1	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
11C. Pipe Coatings (Heat Shrink Sleeve)			0	1	0	1	1	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
11D. Pipe Coatings (Wax Tape)			0	1	0	1	0	1	Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
11E. Pipe Coatings (Mastic)			0	1	0	1	0	1	Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
11F. Pipe Coatings (Cold Applied Tape)			0	1	0	1	1	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES SKILL	YES	YES	YES	Level I	Level I	
11G. Pipe Coatings (Two Part Epoxy)			0	1	0	1	1	0	Medium	Medium	NO	YES	YES	NO	YES	NO	YES	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
11H. Pipe Coatings (Paint)			0	1	0	1	0	1	Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
12B. Pipe Coatings (Hot Applied Tape)	0	1							Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
12C. Pipe Coatings (Heat Shrink Sleeve)									Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
12D. Pipe Coatings (Wax Tape)									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
12E. Pipe Coatings (Mastic)									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
12F. Pipe Coatings (Cold Applied Tape)									Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES SKILL	YES	YES	YES	Level I	Level I	
12G. Pipe Coatings (Two Part Epoxy)									Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
12H. Pipe Coatings (Paint)									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
13A. Installing, Replacing and Ensuring operation of a rectifier on a Pipeline (Installing, Replacing and Troubleshooting)	0	0	0	0	0	0	0	0	Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
13B. Installing, Replacing and Ensuring operation of a rectifier on a pipeline (Installing, and Replacing Only)									Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
14A. Installing or replacing an anode on a pipeline including exothermic welding	1	1	1	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	NO	NO	YES	YES	YES	Level II	Level II	
14B. Installing/replacing an anode on a pipeline									Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
15A. Installing, replacing, and testing electrical isolation couplings	0	1	0	1	0	1	0	1	Medium	Low	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
15B. Installing and replacing electrical isolation couplings									Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
16A. Installing/replacing a corrosion test station on a pipeline including exothermic welding	1	1							Medium	High	NO	YES	NO	NO	NO	NO	YES	NO	NO	YES	YES	YES	Level II	Level II	
16B. Installing/replacing a corrosion test station on a pipeline									Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
17B.Pipe Coatings (Hot Applied Tape)	0	1							Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
17C.Pipe Coatings (Heat Shrink Sleeve)									Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
17D.Pipe Coatings (Wax Tape)									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	NO	NO	YES	NO	YES	Level I	Not Required	
17E.Pipe Coatings (Mastic)									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
17F. Pipe Coatings (Cold Applied Tape)									Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES SKILL	YES	YES	YES	Level I	Level I	
17G.Pipe Coatings (Two Part Epoxy)									Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
17H.Pipe Coatings (Paint)									Medium	Medium	NO	YES	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES	Level I	Not Required	
18A. Conducting gas leakage surveys (mobile and walking surveys)	1	1	1	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	Walking leak survey PE
18B. Conducting gas leakage surveys (walking surveys only)									Medium	High	NO	YES	NO	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	Add Inside leak survey PE
19A. Patrolling and inspecting right of ways and pipeline markers , and exposed above-ground mains	0	0	0	0	0	0	0	0	Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
19B. Patrolling and inspecting right of ways and pipeline markers									Medium	Low	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
20A. Investigating leak/odor complaints (inside and outside)	0	1							Medium	High	NO	YES	YES	NO	YES	NO	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
20B. Investigating leak/odor complaints (outside investigation only)			1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	YES	NO	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
20C. Investigating leak/odor complaints (inside investigation only)			0	1	1	0	0	0	Medium	High	NO	YES	YES	NO	YES	NO	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	Common PE with 18 inside leak survey
20D Leak Classification			0	0	0	0	0	0	Medium	High	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	Scenario based WE
21. Line locating and mark out	1	1	1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	NO	NO	YES	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
22A.Inspecting 3rd party excavations for damage prevention, including root cause analysis	0	0	0	0	0	0	0	0	Medium	High	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
22B. Inspecting 3rd party excavations for damage prevention									Medium	High	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
23. Inspecting the condition of exposed pipe	0	0	0	0	0	0	0	0	Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
24. Inspecting pipe for damage	0	0	0	0	0	0	0	0	Low	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
25. Repairing a transmission pipe	0	1	0	1	1	0	0	0	High	High	NO	YES	NO	NO	NO	YES	NO	YES	YES KNOWLEDGE	YES	YES	YES	Level II	Level II	Task will require sub-tasks for various repair methods. Manufacturer certification in lieu of PE for certain applications.
26. Repairing and maintaining transmission line valves	0	1	0	1	1	0	0	0	Low	High	NO	YES	NO	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
27. Lubricating transmission line valves	0	1	0	1	0	1	0	1	Low	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
28. Uprating	0	0	0	0	0	0	0	0	High	High	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
29A. Repairing a plastic, steel and cast iron distribution leak	0	1							Medium	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
29B. Repairing a Plastic Distribution Leak			0	0	0	0	0	0	Medium	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
29C. Repairing a steel distribution leak			0	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	Use EF Tee PE
29D. Repairing Cast Iron Distribution Leak, Including Using Anaerobic Sealing									Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	

Exhibit B2
Print in color on 11x17

Covered Task	Does Task Currently have a PE? 0 = No 1 = Yes	Does Task have a Proposed PE? 0 = No 1 = Yes	# Existing Unique PE's 0 = No 1 = Yes	# Proposed Unique PE's 0 = No 1 = Yes	Proposed Level II PE's 0 = No 1 = Yes	Proposed Level I PE's 0 = No 1 = Yes	Proposed Level I PE's w/ Requals 0 = No 1 = Yes	Proposed Level I PE's w/o Requals 0 = No 1 = Yes	Complexity of Task	Risk / Consequence of Task	(a) Does this task require physical prowess or dexterity beyond what an average person has? If yes, skill required.	(b) Is any practice required to learn to perform the task? If yes, skill normally required.	(c) Does a person get better at this task with a lot of practice? If yes, skill normally required.	(d) If a person has not performed the task for some time, will he/she have trouble with the physical coordination required to perform the task? If yes, skill is normally required.	(e) Would a decrease in a person's ability to hear or see colors make him/her unable to perform the task? If yes, distinctive physical ability is likely required.	(k) If a person has not performed the task for some time, will he/she have trouble demonstrating the skill required to perform the task? If yes, skill evaluation normally required upon requalification.	(f) Could a person be successfully talked through performing the task if he/she has not performed it before? If yes, the task is mainly knowledge based.	(g) Could someone perform the task by following company/equipment policies/procedures who has not performed it before? If yes, the task is mainly knowledge based.	(h) Does it take long to learn how to perform the task? If no, a minimal amount of knowledge or skill is likely required, so evaluating knowledge should be sufficient.	(i) Skill Evaluation Required for Initial Qualification? Driven by (a) (b) (c) (d) (e)	(j) Skill Evaluation Required for Initial Qualification? Driven by (f) (g) (h)	Final Determination Skill Evaluation Required for Initial Qualification? More conservative of (i) (j)	Level I or Level II Skill Evaluation? Driven by Risk	Skill Evaluation Required for Requalification Driven by (k) and (e)	Exceptions/Comments
29E. Repairing Cast Iron Distribution, Not Including Using Anaerobic Sealing			0	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	
30A. Repairing a plastic, steel and cast iron distribution pipe	0	1							Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combine with 29
30B. Repairing a Plastic Distribution Pipe									Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combine with 29
30C. Repairing a steel distribution pipe									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	Combine with 29
30D. Repairing Cast Iron Distribution Pipe, Including Using Anaerobic Sealing									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	Combine with 29
30E. Repairing Cast Iron Distribution Pipe, Not Including Using Anaerobic Sealing									Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	Combine with 29
31B.Installation of Pipe: Install Pipe in a Ditch			0	0	0	0	0	0	Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
31C.Installation of Pipe: Installing Pipe by Horizontal Directional Drilling	0	1	0	1	0	1	1	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	
31D.Installation of Pipe: Installing Pipe by HorizontalBoring (Piercing Tools)			0	1	0	1	0	1	Medium	Medium	NO	YES	YES	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
31E Installation of Pipe: Installing Pipe by Dead Insertion			0	1	0	1	0	1	Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	Opt for more conservative approach with Level I PE for initial qualification. PE = Yes
31F. Installation of Pipe: Installing Pipe by Vabratory Plow			0	1	0	1	0	1	Medium	Medium	NO	YES	YES	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
32. Purging a pipeline into service	0	1	0	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	
33. Purging a pipeline out of service	0	1	0	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	
34. Performing pressure test on a pipeline	0	1	0	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	
35.1B Stopping gas flow (Mains and Services)	1	1	1	1	1	0	0	0	High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
35.1C Stopping gas flow(Services Only)									High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
35.2 Stopping gas flow(Bagging)			1	1	1	0	0	0	High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
35.3 Stopping gas flow (Mechanical)			1	1	1	0	0	0	High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
36. Abandonment of Facilities	0	0	0	0	0	0	0	0	Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
37A. Tapping Plastic Pipe with Specialized Equipment	1	1	1	1	1	0	0	0	High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
37B.Tapping Cast Iron Pipe with Specialized Equipment									High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
37C.Tapping Steel Pipe with Specialized Equipment			1	1	1	0	0	0	High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
38A. Starting up or shutting down any part of the pipeline that could cause MAOP to be exceeded, Including Turning Valves and Monitoring Flows and Pressure	0	1	0	0	0	0	0	0	High	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	Use prerequisite for valves and regulator tasks as needed including PE's. Cover knowledge with scenarios in WE.
38B.Starting up or shutting down any part of the pipeline that could cause MAOP to be exceeded, Including Turning Valves									High	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	Use prerequisite for valves and regulator tasks as needed including PE's. Cover knowledge with scenarios in WE.
39A . Removing service tee or fitting from steel and cast iron pipe	0	1	0	1	1	0	0	0	Low	High	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	Level II	Level II	
39B. Removing service tee or fitting from steel pipe									Low	High	NO	YES	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	Level II	Level II	
40. Install/Replace tracer wire	0	0	0	0	0	0	0	0	Low	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
41. Inspecting, lubricating, and operating distribution valves	0	1							Low	High	NO	YES	NO	NO	NO	NO	YES	NO	NO	YES	YES	YES	Level II	Level II	combine with 26&27
42. Repairing distribution line valves	0	1							Medium	High	NO	YES	NO	NO	NO	NO	NO	YES	YES BOTH K&S	YES	YES	YES	Level II	Level II	combine with 26&27
44. Repairing Inline Welds	1	1	1	1	1	0	0	0	Medium	High	NO	YES	YES	YES	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
45. Restore service	0	1	0	0	0	0	0	0	Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	Use prerequisites for valves, purging and pressure test including PE's. Cover knowledge with WE only. Clarify intended use to restore service to main/service vs. customer piping.
47. Abandoning a gas service line	0	0	0	0	0	0	0	0	Low	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	Clarify task description, pieces of this covered task under other tasks like purging.
49.1/49.2 Mechanical joining of pipe other than plastic (threaded and flange)	0	0	0	0	0	0	0	0	Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
49.3. Mechanical joining of pipe other than plastic (compression)	1	1	1	1	0	1	1	0	Medium	Medium	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Level I	
50F. Joining Plastic Pipe-Saddle Fusion	1	1	1	1	1	0	0	0	Medium	High	NO	YES	YES	YES	NO	NO	YES	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
50B. Joining Plastic Pipe-Bolted (Bolt On) Fitting-Mechanical Couplings			1	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	
50C. Joining Plastic Pipe- Coupling Electrofusion			1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
50D. Joining Plastic Pipe-Hydraulic Butt Fusion			1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
50E. Joining Plastic Pipe-Manual Butt Fusion			1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
50G. Joining Plastic Pipe-Socket Fusion			1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
51C. Install Tapping Tee on Plastic Pipe-Saddle Electro Fusion	1	1	1	1	1	0	0	0	High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
51F.Install Tapping Tee on Joining Plastic Pipe-Saddle Fusion									High	High	NO	YES	YES	YES	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
51B.06.Install Tapping Tee on Plastic Pipe-Bolted (Bolt On) Fitting-Mechanical Couplings									High	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	
51D. Tapping Using Plastic and Steel Self Tapping Tees			1	1	1	0	0	0	High	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	
52.C.04 Inspecting Plastic Pipe Joint -Saddle Electro Fusion	0	0	0	0	0	0	0	0	Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52.C.05 Inspecting Plastic Pipe Joint- Coupling Electrofusion									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52.D.Inspecting Plastic Pipe Joint-Hydraulic Butt Fusion									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52.F Inspecting Plastic PipeJoint-Saddle Electro Fusion									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52.E. Inspecting Plastic Pipe Joint-Manual Butt Fusion									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52.G Inspecting Plastic Pipe Joint -Socket Fusion									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52H.B Inspect Plastic Pipe Fusion Joint (Field Inspector only-Butt Fusion)									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52H.D Inspect Plastic Pipe Fusion Joint (Field Inspector only- saddled fusion)									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52H.E Inspect Plastic Pipe Fusion Joint (Field Inspector only- electrofusion)									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
52H.F Inspect Plastic Pipe Fusion Joint (Field Inspector only- socket fusion)									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	

Exhibit B2
Print in color on 11x17

Covered Task	Does Task Currently have a PE? 0 = No 1 = Yes	Does Task have a Proposed PE? 0 = No 1 = Yes	# Existing Unique PE's 0 = No 1 = Yes	# Proposed Unique PE's 0 = No 1 = Yes	Proposed Level II PE's 0 = No 1 = Yes	Proposed Level I PE's 0 = No 1 = Yes	Proposed Level I PE's w/ Requals 0 = No 1 = Yes	Proposed Level I PE's w/o Requals 0 = No 1 = Yes	Complexity of Task	Risk / Consequence of Task	(a) Does this task require physical prowess or dexterity beyond what an average person has? If yes, skill required.	(b) Is any practice required to learn to perform the task? If yes, skill normally required.	(c) Does a person get better at this task with a lot of practice? If yes, skill normally required.	(d) If a person has not performed the task for some time, will he/she have trouble with the physical coordination required to perform the task? If yes, skill is normally required.	(e) Would a decrease in a person's ability to hear or see colors make him/her unable to perform the task? If yes, distinctive physical ability is likely required.	(k) If a person has not performed the task for some time, will he/she have trouble demonstrating the skill required to perform the task? If yes, skill evaluation normally required upon requalification.	(f) Could a person be successfully talked through performing the task if he/she has not performed it before? If yes, the task is mainly knowledge based.	(g) Could someone perform the task by following company/equipment policies/procedures who has not performed it before? If yes, the task is mainly knowledge based.	(h) Does it take long to learn how to perform the task? If no, a minimal amount of knowledge or skill is likely required, so evaluating knowledge should be sufficient.	(i) Skill Evaluation Required for Initial Qualification? Driven by (a) (b) (c) (d) (e)	(j) Skill Evaluation Required for Initial Qualification? Driven by (f) (g) (h)	Final Determination Skill Evaluation Required for Initial Qualification? More conservative of (i) (j)	Level I or Level II Skill Evaluation? Driven by Risk	Skill Evaluation Required for Requalification Driven by (k) and (e)	Exceptions/Comments
53. Non=destructive testing of welds	1	1	1	1	0	1	1	0		Medium	NO	YES	YES	NO	YES	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	NDE Certification
54. Welding on a pipeline	1	1	1	1	1	0	0	0	High	High	NO	YES	YES	YES	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
55.1 Maintain a pipeline compressor station	1	1	1	1	1	0	0	0	High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	Combined knowledge & skill evaluation requires Level II PE.
55.2 Maintain a pipeline compressor station (ESD only)									High	High	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	Combined knowledge & skill evaluation requires Level II PE.
56. Operate a pipeline compressor station	1	1	1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	NO	YES	YES	YES	YES BOTH K&S	YES	YES	YES	Level II	Level II	Combined knowledge & skill evaluation requires Level II PE.
57. Repair a compressor	1	1	1	1	1	0	0	0	High	Low	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
58. Maintaining gas detection systems and alarms in compressor stations	1	1	1	1	1	0	0	0	Medium	Medium	NO	YES	NO	NO	NO	YES	YES	YES	NO	YES	NO	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
59. Controlling and monitoring gas pressures and flows	0	0	0	0	0	0	0	0	High	High	NO	NO	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	NO	NO	NO	N/A	N/A	
60. Operating remote control valves	0	0	0	0	0	0	0	0	Medium	High	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
61. Inspecting a pressure recording gauge	0	1	0	1	0	1	0	1	Medium	Low	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level I	Not Required	
62A. Inspect and Test Pressure Regulatioin Station, including heating equipment	1	1	1	1	1	0	0	0	High	High	NO	YES	NO	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
62B. Inspect and Test Pressure Regulatioin Station, Not including heating equipment									High	High	NO	YES	NO	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
63. Inspecting and Testing Overpressure protection at a Regulation Station	1	1	1	1	1	0	0	0	High	High	NO	YES	NO	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
64. Inspecting telemetering equipment at a pressure limiting or regulating station	0	0	0	0	0	0	0	0	High	Low	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
65. Bypassing a regulator	1	1	1	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	
66A. Field interpretation of pressure recording charts and electronic devices	0	0	0	0	0	0	0	0	Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
66B. Field interpretation of pressure recording charts									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
66C. Field interpretation of pressure recording electronic devices									Medium	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
67. Inspecting a pressure regulator vault	0	0	0	0	0	0	0	0	Low	Medium	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
68. Operating an odorizer	0	1	0	1	1	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	
69. Monitoring natural gas odorization levels	1	1	1	1	1	0	0	0	Low	High	NO	YES	NO	NO	NO	NO	YES	YES	NO	YES	NO	YES	Level II	Level II	
71. Operator excavating and backfilling in the vicinity of a pipeline	0	0	0	0	0	0	0	0	Medium	High	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	Knowledge of damage prevention and service install requirements
72A.Installing and Turning off Residential, Small Commercial, Large Commercial, and Industrial Meters and Regulators	0	1	0	0	0	0	0	0	Low	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	Use prerequisites for tasks with applicable PEs. Cover knowledge with WE.
72B.Installing and Turning off Residential, Small Commercial Meters and Regulators									Low	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	Use prerequisites for tasks with applicable PEs. Cover knowledge with WE.
72C.Turning Off Meters Only									Low	High	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	N/A	N/A	
73. Inspecting and maintaining air compressors at LP=Air plants	1	1	1	1	1	0	0	0	Medium	Low	NO	YES	YES	NO	NO	YES	YES	YES	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
74. Inspecting and maintaining instrument air dryers at LP=Air plants	1	1	1	1	1	0	0	0	Medium	Low	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
75. Inspecting and maintaining emergency shutoff systems at LP=Air plants	1	1	1	1	1	0	0	0	High	Medium	NO	YES	YES	NO	YES	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
76. Maintaining fire protection systems at LP=Air plants	1	1	1	1	1	0	0	0	Medium	Medium	NO	YES	YES	NO	YES	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
77. Inspecting and maintaining storage tanks, piping, valves, and fittings at LP=Air plants	1	1	1	1	1	0	0	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
78. Inspecting and maintaining vapor compressors at LP=Air plants	1	1	1	1	1	0	0	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
79. Inspecting, operating, and maintaining vapor detection systems at LP=Air plants	1	1	1	1	1	0	0	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
80. Inspecting and maintaining propane vaporizers at LP=Air plants	1	1	1	1	1	0	0	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
81. Loading, unloading, and transferring liquid propane LP=Air plants	1	1	1	1	1	0	0	0	Medium	High	NO	YES	YES	NO	NO	YES	YES	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	Combined knowledge & skill evaluation requires Level II PE.
82. Inspecting and maintaining auxiliary power sources LP=Air plants	1	1	1	1	1	0	0	0	Low	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level I	Level I	Combined knowledge & skill evaluation requires Level II PE.
83. Operating a propane air plant	1	1	1	1	1	0	0	0	High	High	NO	YES	YES	NO	YES	YES	NO	NO	YES BOTH K&S	YES	YES	YES	Level II	Level II	Combined knowledge & skill evaluation requires Level II PE.
84. Bending of steel pipe	0	1	0	1	0	1	1	0	Medium	Medium	NO	YES	YES	NO	NO	YES	NO	NO	YES SKILL	YES	YES	YES	Level I	Level I	
86. Conducting interior jurisdictional piping safety inspections	1	1	1	1	1	0	0	0	Medium	High	NO	YES	NO	NO	YES	NO	NO	NO	YES KNOWLEDGE	YES	YES	YES	Level II	Level II	
87. Conducting interior jurisdictional piping and construction maintenance activities	0	1		0	0	0	0	0	Medium	High	NO	YES	NO	NO	NO	NO	YES	YES	YES KNOWLEDGE	YES	NO	YES	Level II	Level II	Combine 86/87 PE. Review new components of PE. Plumber apprentice as prerequisite.
Totals	**32**	**63**	**41**	**73**	**50**	**23**	**9**	**14**																	

	Current Tasks With PE's	Tasks With Proposed PE's
	32	63
Total # Covered Tasks	82	82
	39%	77%

Tasks with photos in lieue of PE = 2.
Tasks which use PE from prerequisite task(s) = 3.

Exhibit C1

Re-evaluation Interval Analysis
Draft for Review and Comment
January 7, 2019

Introduction: An OQ sub-committees was formed to review and modify, if necessary, NGA's OQ Program re-evaluation intervals. This effort was undertaken in parallel with the review of criteria for the determination of when an OQ skill/performance evaluation is required. The OQ sub-committee reviewed the current re-evaluation interval methodology, compared it to ASME B31Q Appendix G – DIF Analysis for Subsequent Qualification, and updated the NGA re-evaluation intervals.

The Sub-Committee concluded that the current methodology used is applicable and results are consistent with the ASME B31Q methodology. The Sub-Committee did however recommend formalizing the definitions and rating scale used in the SME evaluation process to ensure consistency across all covered tasks. The definitions and rating scale adopted by NGA are based on that of ASME B31Q Appendix G and outlined in the Definitions and Rating Scale section of this document.

Methodology: Three factors contribute to the determination of the appropriate re-evaluation interval;

1. Frequency task is performed by the operator;
2. Difficulty or Complexity of the task; and
3. Importance or Consequence of performing the task incorrectly.

Each of these factors is given a rating with a corresponding value (1, 2 or 3). The values for the three factors are multiplied providing an overall value for the task. Overall values of 5 or lower indicate a task requiring re-evaluation every 5 years. Overall values of 6 or greater indicate a task requiring re-evaluation every 3 years.

Three (3) years was determined to be the lowest re-evaluation interval required to ensure task qualification. This 3-year minimum industry standard is utilized within ASME B31Q along with most national OQ programs.

The accompanying spreadsheet provides a task-by-task re-evaluation interval analysis. The Sub-Committee notes that updated definitions and rating scales provided consistency in the analysis across all Covered Tasks. Accordingly, the updated rating scales resulted in changes to a number of re-evaluation intervals.

NGA's Operator Qualification Committee previously adopted the more conservative 3-year re-evaluation interval (versus 5 years) for all Covered Tasks. This was done to simplify the management of the requalification process. **The Sub-Committee recommends that the NGA Operator Qualification Program continue with the 3-year re-evaluation interval for all Covered Tasks.**

Exhibit C1

Definitions and Rating Scales:

Difficulty/Complexity

(a) Difficulty pertains to the complexity of the mental or motor skills entailed in performance of the task. Criteria for a difficulty analysis are expressed in the following terms:

- comprehension: an individual is able to translate and explain the requirements for performing a task.
- performance: an individual is able to demonstrate the knowledge, skills, and distinctive physical abilities required for performing a task.
- application: an individual is able to utilize the requirements and principles for performing a task under a variety of circumstances.
- analysis: an individual is able to divide a task into its parts and identify and select an appropriate solution.

(b) Difficulty Rating Scale:

(1) Rating "Low". A task that requires:

a) comprehension of basic procedures (e.g., explain the requirements for structure-to-soil readings)

b) performance of basic skills (e.g., operate a test instrument)

EXAMPLE: Measuring Pipe-to-Soil Potential

(2) Rating "Medium". A task that requires:

a) comprehension of intermediate procedures (e.g., explain the variables and requirements for repairing a gas leak)

b) performance of an intermediate skill(s) (e.g., safely install a leak clamp)

c) application of intermediate principles and requirements (e.g., determine the extent of the gas leak and the condition of the pipe)

d) analysis of routine job assignments (e.g., select the appropriate procedures and leak clamp to repair a gas leak)

EXAMPLE: Repairing Distribution Line Leaks

(3) Rating "High". A task that requires:

a) comprehension of advanced knowledge (e.g., explain the variables and requirements for selecting equipment and procedures for tapping pipelines under pressure)

b) performance of advanced skill(s) (e.g., safely tapping pipelines under pressure) or distinctive physical abilities

c) application of advanced knowledge (e.g., identify the steps to be taken should a problem arise during the tapping operation)

d) analysis of nonroutine and complex job assignments (e.g., tapping pipelines on high pressure systems)

EXAMPLE: Tapping Pipelines Under Pressure

Importance/Consequence

Importance is judged in terms of the consequences of inadequate performance. The critical or noncritical nature of the task is factored into the process through this rating.

Importance/Consequence rating scale:

(1) Rating "Low". Improper performance of the task may result in an abnormal operating condition:

a) that will be discovered by a required periodic inspection (e.g., pipe-to-soil readings, pipeline patrols)

b) that will cause a backup system to operate (e.g., relief valve operations due to improperly adjusting a regulating device).

Exhibit C1

(2) Rating "Medium". Improper performance of the task may result in an abnormal operating condition:

a) that will not be discovered during a required periodic inspection (e.g., internal corrosion, pipe settlement that results in a gas leak).
b) while the task is being performed.

(3) Rating "High". Improper performance of the task may result in an abnormal operating condition while the task is being performed that is a hazard to persons, property, or the environment or a reportable condition.

Frequency

Frequency is determined more objectively. A performance may be considered to be frequent if an individual performs it 12 or more times annually. It may be considered infrequent if it is required once every 5 yr.

Frequency rating scale:

(1) Rating "High". Task is performed 12 or more times per year.
(2) Rating "Medium". Task is performed 2 to 11 times per year.
(3) Rating "Low". Task is performed once a year or less often.

Sub-Committee Members:

Lauren Toczylowski, Con Edison, Chair OQ Committee
Robert Plewa, National Fuel, Vice-Chair OQ Committee
Walter Munro, Liberty Utilities, Chair Training & Qualification Committee
Joseph Morello, New Jersey Natural Gas, Vice-Chair Training & Qualification Committee
Edward Kleinke, Elecnor Hawkeye, Contractor Representative
Dr. Sherry Rubinstein, Professional Testing Expert
Robert Wilson, NGA Staff
Paul Armstrong, NGA Staff

Exhibit C2	2011 Analysis					2018 Analysis				
Covered Task	Frequency Performed: 0 - 6 months = 1 6 - 12 months = 2 >12 months = 3	Complexity/ Difficulty: Low = 1 Medium = 2 High = 3	Importance/Risk/ Consequence: Low = 1 Medium = 2 High = 3	Overall Value	Re-evaluation Interval (years)	Frequency Performed: High: ≥12 times/yr = 1 Medium: 2 - 11 times/yr = 2 Low: ≤1 time/yr = 3	Complexity/ Difficulty: Low = 1 Medium = 2 High = 3	Importance/Risk/ Consequence: Low = 1 Medium = 2 High = 3	Overall Value	Re-evaluation Interval (years)
1. Inspecting for shorted casings	1	2	1	2	5	2	1	1	2	5
2A. Measuring pipe-to-soil potential (Measuring and Interpreting Readings)	1	2	1	2	5	1	1	1	1	5
2B. Measuring pipe-to-soil potential (Measuring Only)										
3. Conducting a soil resistivity survey	2	2	2	8	3	2	2	1	4	5
4A. Conducting interference testing and remediation	1	3	3	9	3	2	2	1	4	5
4B. Conducting interference testing										
5A. Electrically checking for proper performance of diodes and interference bonds, including testing for A/C mitigation	1	1	3	3	5	2	2	1	4	5
5B. Electrically checking for proper performance of diodes and interference bonds										
6A. Inspecting for atmospheric corrosion, including evaluation and remediation	1	2	1	2	5	1	1	1	1	5
6B. Inspecting for atmospheric corrosion										
7A.Installing, Replacing and Ensuring operation of a rectifier on a Pipeline (Installing, Replacing and Troubleshooting)	1	2	3	6	3	2	2	1	4	5
7B. Installing, Replacing and Ensuring operation of a rectifier on a pipeline (Installing, and Replacing Only)										
8. Visually inspecting for internal corrosion	1	2	2	4	5	1	1	2	2	5
9. Removing coupons/sample gas or liquids for analysis and evaluation of internal corrosion	2	3	2	12	3	2	2	3	12	3
10. Clear a shorted casing	3	1	2	6	3	2	1	1	2	5
11B. Pipe Coatings (Hot Applied Tape)	1	2	2	4	5	1	2	2	4	5
11C. Pipe Coatings (Heat Shrink Sleeve)										
11D. Pipe Coatings (Wax Tape)										
11E. Pipe Coatings (Mastic)										
11F. Pipe Coatings (Cold Applied Tape)										
11G. Pipe Coatings (Two Part Epoxy)										
11H. Pipe Coatings (Paint)										
12B. Pipe Coatings (Hot Applied Tape)	1	2	2	4	5	1	2	2	4	5
12C. Pipe Coatings (Heat Shrink Sleeve)										
12D. Pipe Coatings (Wax Tape)										
12E. Pipe Coatings (Mastic)										
12F. Pipe Coatings (Cold Applied Tape)										

Exhibit C2	2011 Analysis					2018 Analysis				
Covered Task	**Frequency Performed:** 0 - 6 months = 1 6 - 12 months = 2 >12 months = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**	**Frequency Performed:** High: ≥12 times/yr = 1 Medium: 2 - 11 times/yr = 2 Low: ≤1 time/yr = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**
12G. Pipe Coatings (Two Part Epoxy)										
12H. Pipe Coatings (Paint)										
13A. Installing, Replacing and Ensuring operation of a rectifier on a Pipeline (Installing, Replacing and Troubleshooting)	2	2	3	12	3	2	2	1	4	5
13B. Installing, Replacing and Ensuring operation of a rectifier on a pipeline (Installing, and Replacing Only)										
14A. Installing or replacing an anode on a pipeline including exothermic welding	1	2	1	2	5	1	2	3	6	3
14B. Installing/replacing an anode on a pipeline						1	1	1	1	5
15A. Installing, replacing, and testing electrical isolation couplings	1	2	1	2	5	1	2	1	2	5
15B. Installing and replacing electrical isolation couplings										
16A. Installing/replacing a corrosion test station on a pipeline including exothermic welding	1	2	1	2	5	1	2	3	6	3
16B. Installing/replacing a corrosion test station on a pipeline						1	1	1	1	5
17B.Pipe Coatings (Hot Applied Tape)	1	2	2	4	5	1	2	2	4	5
17C.Pipe Coatings (Heat Shrink Sleeve)										
17D.Pipe Coatings (Wax Tape)										
17E.Pipe Coatings (Mastic)										
17F. Pipe Coatings (Cold Applied Tape)										
17G.Pipe Coatings (Two Part Epoxy)										
17H.Pipe Coatings (Paint)										
18A. Conducting gas leakage surveys (mobile and walking surveys)	1	2	3	6	3	1	2	3	6	3
18B. Conducting gas leakage surveys (walking surveys only)										
19A. Patrolling and inspecting right of ways and pipeline markers , and exposed above-ground mains	1	2	2	4	5	2	1	1	2	5
19B. Patrolling and inspecting right of ways and pipeline markers										
20A. Investigating leak/odor complaints (inside and outside)	1	2	3	6	3	1	3	3	9	3
20B. Investigating leak/odor complaints (outside investigation only)										

Exhibit C2	2011 Analysis					2018 Analysis				
Covered Task	**Frequency Performed:** 0 - 6 months = 1 6 - 12 months = 2 >12 months = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**	**Frequency Performed:** High: ≥12 times/yr = 1 Medium: 2 - 11 times/yr = 2 Low: ≤1 time/yr = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**
20C. Investigating leak/odor complaints (inside investigation only)										
20D Leak Classification										
21. Line locating and mark out	1	2	3	6	3	1	3	3	9	3
22A.Inspecting 3rd party excavations for damage prevention, including root cause analysis	1	2	3	6	3	1	2	3	6	3
22B. Inspecting 3rd party excavations for damage prevention										
23. Inspecting the condition of exposed pipe	1	2	3	6	3	1	1	2	2	5
24. Inspecting pipe for damage	1	1	1	1	5	1	1	2	2	5
25. Repairing a transmission pipe	3	3	3	27	3	3	3	3	27	3
26. Repairing and maintaining transmission line valves	2	1	3	6	3	2	2	3	12	3
27. Lubricating transmission line valves	2	1	2	4	5	2	1	2	4	5
28. Uprating	3	3	3	27	3	3	3	3	27	3
29A. Repairing a plastic, steel and cast iron distribution leak	1	2	3	6	3	1	2	3	6	3
29B. Repairing a Plastic Distribution Leak										
29C. Repairing a steel distribution leak										
29D. Repairing Cast Iron Distribution Leak, Including Using Anaerobic Sealing										
29E. Repairing Cast Iron Distribution, Not Including Using Anaerobic Sealing										
30A. Repairing a plastic, steel and cast iron distribution pipe	1	2	2	4	5	1	2	2	4	5
30B. Repairing a Plastic Distribution Pipe										
30C. Repairing a steel distribution pipe										
30D. Repairing Cast Iron Distribution Pipe, Including Using Anaerobic Sealing										
30E. Repairing Cast Iron Distribution Pipe, Not Including Using Anaerobic Sealing										
31B.Installation of Pipe: Install Pipe in a Ditch	1	2	3	6	3	1	2	2	4	5
31C.Installation of Pipe: Installing Pipe by Horizontal Directional Drilling										
31D.Installation of Pipe: Installing Pipe by HorizontalBoring (Piercing Tools)										
31E.Installation of Pipe: Installing Pipe by Dead Insertion										

Exhibit C2	2011 Analysis					2018 Analysis				
Covered Task	**Frequency Performed:** 0 - 6 months = 1 6 - 12 months = 2 >12 months = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**	**Frequency Performed:** High: ≥12 times/yr = 1 Medium: 2 - 11 times/yr = 2 Low: ≤1 time/yr = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**
31F. Installation of Pipe: Installing Pipe by Vabratory Plow										
32. Purging a pipeline into service	1	2	3	6	3	1	2	3	6	3
33. Purging a pipeline out of service	1	2	3	6	3	1	2	3	6	3
34. Performing pressure test on a pipeline	1	2	3	6	3	1	2	3	6	3
35.1B Stopping gas flow (Mains and Services)	1	3	3	9	3	1	3	3	9	3
35.1C Stopping gas flow(Services Only)										
35.2 Stopping gas flow(Bagging)										
35.3 Stopping gas flow (Mechanical)										
36. Abandonment of Facilities	1	2	3	6	3	1	2	2	4	5
37A. Tapping Plastic Pipe with Specialized Equipment	1	3	3	9	3	1	3	3	9	3
37B.Tapping Cast Iron Pipe with Specialized Equipment										
37C.Tapping Steel Pipe with Specialized Equipment										
38A. Starting up or shutting down any part of the pipeline that could cause MAOP to be exceeded, Including Turning Valves and Monitoring Flows and Pressure	1	3	3	9	3	1	2	3	6	3
38B.Starting up or shutting down any part of the pipeline that could cause MAOP to be exceeded, Including Turning Valves										
39A . Removing service tee or fitting from steel and cast iron pipe	1	1	2	2	5	1	2	3	6	3
39B. Removing service tee or fitting from steel pipe										
40. Install/Replace tracer wire	1	1	2	2	5	1	1	2	2	5
41. Inspecting, lubricating, and operating distribution valves	1	1	3	3	5	1	2	3	6	3
42. Repairing distribution line valves	1	2	3	6	3	1	2	3	6	3
44. Repairing Inline Welds	1	2	3	6	3	1	3	3	9	3
45. Restore service	1	2	2	4	5	1	2	2	4	5
47. Abandoning a gas service line	1	1	2	2	5	1	1	2	2	5
49.1/49.2 Mechanical joining of pipe other than plastic (threaded and flange)	1	2	3	6	3	1	2	2	4	5
49.3. Mechanical joining of pipe other than plastic (compression)										
50F. Joining Plastic Pipe-Saddle Fusion	1	2	3	6	3	1	3	3	9	3
50B. Joining Plastic Pipe-Bolted (Bolt On) Fitting-Mechanical Couplings										

Exhibit C2	2011 Analysis					2018 Analysis				
Covered Task	Frequency Performed: 0 - 6 months = 1 6 - 12 months = 2 >12 months = 3	Complexity/ Difficulty: Low = 1 Medium = 2 High = 3	Importance/Risk/ Consequence: Low = 1 Medium = 2 High = 3	Overall Value	Re-evaluation Interval (years)	Frequency Performed: High: ≥12 times/yr = 1 Medium: 2 - 11 times/yr = 2 Low: ≤1 time/yr = 3	Complexity/ Difficulty: Low = 1 Medium = 2 High = 3	Importance/Risk/ Consequence: Low = 1 Medium = 2 High = 3	Overall Value	Re-evaluation Interval (years)
50C. Joining Plastic Pipe- Coupling Electrofusion										
50D. Joining Plastic Pipe-Hydraulic Butt Fusion										
50E. Joining Plastic Pipe-Manual Butt Fusion										
50G. Joining Plastic Pipe-Socket Fusion										
51C. Install Tapping Tee on Plastic Pipe-Saddle Electro Fusion	1	3	3	9	3	1	3	3	9	3
51F.Install Tapping Tee on Joining Plastic Pipe-Saddle Fusion										
51B.06.Install Tapping Tee on Plastic Pipe-Bolted (Bolt On) Fitting-Mechanical Couplings										
51D. Tapping Using Plastic and Steel Self Tapping Tees						1	1	3	3	5
52.C.04 Inspecting Plastic Pipe Joint -Saddle Electro Fusion	1	2	3	6	3	1	2	2	4	5
52.C.05 Inspecting Plastic Pipe Joint- Coupling Electrofusion										
52.D.Inspecting Plastic Pipe Joint-Hydraulic Butt Fusion										
52.F Inspecting Plastic PipeJoint-Saddle Electro Fusion										
52.E. Inspecting Plastic Pipe Joint-Manual Butt Fusion										
52.G Inspecting Plastic Pipe Joint -Socket Fusion										
52H.B Inspect Plastic Pipe Fusion Joint (Field Inspector only-Butt Fusion)										
52H.D Inspect Plastic Pipe Fusion Joint (Field Inspector only- saddled fusion)										
52H.E Inspect Plastic Pipe Fusion Joint (Field Inspector only- electrofusion)										
52H.F Inspect Plastic Pipe Fusion Joint (Field Inspector only- socket fusion)										
53. Non=destructive testing of welds	1	2	3	6	3	1	3	2	6	3
54. Welding on a pipeline	1	3	3	9	3	1	3	3	9	3
55.1 Maintain a pipeline compressor station	2	3	3	18	3	1	2	3	6	3
55.2 Maintain a pipeline compressor station (ESD only)										
56. Operate a pipeline compressor station	1	2	3	6	3	1	3	3	9	3
57. Repair a compressor	2	3	3	18	3	2	3	1	6	3

Exhibit C2	2011 Analysis					2018 Analysis				
Covered Task	Frequency Performed: 0 - 6 months = 1 6 - 12 months = 2 >12 months = 3	Complexity/ Difficulty: Low = 1 Medium = 2 High = 3	Importance/Risk/ Consequence: Low = 1 Medium = 2 High = 3	Overall Value	Re-evaluation Interval (years)	Frequency Performed: High: ≥12 times/yr = 1 Medium: 2 - 11 times/yr = 2 Low: ≤1 time/yr = 3	Complexity/ Difficulty: Low = 1 Medium = 2 High = 3	Importance/Risk/ Consequence: Low = 1 Medium = 2 High = 3	Overall Value	Re-evaluation Interval (years)
58. Maintaining gas detection systems and alarms in compressor stations	1	2	3	6	3	1	2	2	4	5
59. Controlling and monitoring gas pressures and flows	1	3	3	9	3	1	3	3	9	3
60. Operating remote control valves	1	2	3	6	3	2	2	3	12	3
61. Inspecting a pressure recording gauge	1	2	2	4	5	1	2	1	2	5
62A. Inspect and Test Pressure Regulation Station, including heating equipment	1	3	3	9	3	1	3	3	9	3
62B. Inspect and Test Pressure Regulatioin Station, Not including heating equipment										
63. Inspecting and Testing Overpressure protection at a Regulation Station	1	3	3	9	3	1	3	3	9	3
64. Inspecting telemetering equipment at a pressure limiting or regulating station	1	3	3	9	3	1	3	1	3	5
65. Bypassing a regulator	1	2	3	6	3	1	2	3	6	3
66A. Field interpretation of pressure recording charts and electronic devices	1	2	3	6	3	1	2	2	4	5
66B. Field interpretation of pressure recording charts										
66C. Field interpretation of pressure recording electronic devices										
67. Inspecting a pressure regulator vault	1	1	2	2	5	1	1	2	2	5
68. Operating an odorizer	1	2	3	6	3	3	2	3	18	3
69. Monitoring natural gas odorization levels	1	1	3	3	5	1	2	3	6	3
70. Properties of Natural Gas and AOCs	2	3	3	18	3	1	3	3	9	3
70P. Properties of propane air and AOCs	2	2	3	12	3	1	3	3	9	3
71. Operator excavating and backfilling in the vicinity of a pipeline	1	2	3	6	3	1	2	3	6	3
72A.Installing and Turning off Residential, Small Commercial, Large Commercial, and Industrial Meters and Regulators	1	1	3	3	5	1	2	3	6	3
72B.Installing and Turning off Residential, Small Commercial Meters and Regulators										
72C.Turning Off Meters Only										
73. Inspecting and maintaining air compressors at LP=Air plants	1	2	1	2	5	1	3	1	3	5
74. Inspecting and maintaining instrument air dryers at LP=Air plants	1	2	1	2	5	1	2	1	2	5
75. Inspecting and maintaining emergency shutoff systems at LP=Air plants	1	3	3	9	3	1	2	2	4	5
76. Maintaining fire protection systems at LP=Air plants	1	2	3	6	3	1	2	2	4	5

Exhibit C2		2011 Analysis						2018 Analysis				
Covered Task		**Frequency Performed:** 0 - 6 months = 1 6 - 12 months = 2 >12 months = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**		**Frequency Performed:** High: ≥12 times/yr = 1 Medium: 2 - 11 times/yr = 2 Low: ≤1 time/yr = 3	**Complexity/ Difficulty:** Low = 1 Medium = 2 High = 3	**Importance/Risk/ Consequence:** Low = 1 Medium = 2 High = 3	**Overall Value**	**Re-evaluation Interval (years)**
77. Inspecting and maintaining storage tanks, piping, valves, and fittings at LP=Air plants		1	2	3	6	3		1	2	2	4	5
78. Inspecting and maintaining vapor compressors at LP=Air plants		1	2	2	4	5		1	3	2	6	3
79. Inspecting, operating, and maintaining vapor detection systems at LP=Air plants		1	2	3	6	3		1	2	2	4	5
80. Inspecting and maintaining propane vaporizers at LP=Air plants		3	2	2	12	3		1	2	2	4	5
81. Loading, unloading, and transferring liquid propane LP=Air plants		1	2	3	6	3		1	2	3	6	3
82. Inspecting and maintaining auxiliary power sources LP=Air plants		1	1	1	1	5		1	2	2	4	5
83. Operating a propane air plant		1	3	3	9	3		1	3	3	9	3
84. Bending of steel pipe		1	2	2	4	5		2	2	2	8	3
85. Indentifying and reacting to meter assembly AOCs		1	2	3	6	3		1	2	3	6	3
86. Conducting interior jurisdictional piping safety inspections		1	2	3	6	3		1	2	3	6	3
87. Conducting interior jurisdictional piping and construction maintenance activities		1	2	3	6	3		1	3	3	9	3

Note: This re-evaluation interval analysis results in either a 3-year or 5-year requalification interval on a task-by-task basis as indicated above.
NGA and its member-companies have opted to adopt a more conservative 3-year requalification intervalfor all tasks to simplify the management of the requalification process.

Exhibit D

Northeast Gas Association

Operator Qualification & Training Program Enhancements

White Paper - DRAFT

Facilitating a Positive Safety Culture by Adopting a Continuous Learning Environment

September 6, 2017

Exhibit D

Table of Contents

Exhibit D

Executive Summary

This White Paper is intended to stimulate thinking around one of the most important issues the industry faces today - *how to develop and embrace a sustainable continuous learning environment that supports a positive safety culture.* The paper builds on the success of what some operators have implemented and provides specific, practical recommendations for enhancements to the NGA OQ and Training Programs.

NGA is a regional trade association whose primary membership is comprised of Local Distribution Companies (LDCs), Interstate Pipeline Companies and LNG Companies. NGA is a member driven organization. It has a specific focus on operational support - including training and qualification programs, pipeline safety regulatory support, public awareness and research programs, among others. NGA programs and services are created, utilized, and updated continuously by member companies through a collaborative committee framework and structure that leverages the expertise of its membership.

Currently, there is a renewed focus - by NGA, operators and regulators - in further improving the overall effectiveness of the Operator Qualification (OQ) process. NGA, operators and regulators share a common goal: ensuring pipeline (and public) safety. Maintaining this goal will require enhancements to the training and qualification processes of pipeline operators.

The original intent of the federal Operator Qualification Rule was to provide a framework for the demonstration of an individual's knowledge and skill competency. Almost 20 years after the PHMSA OQ Rule was released, operators and regulators alike still struggle with interpreting the requirements of the rule. Some federal and state regulators across the country interpret and enforce the OQ rule differently. Some operators may place a greater emphasis on "qualification" while others promote a more process-based learning environment.

Recent breaches in online OQ testing programs – in the Northeast and elsewhere – are leading NGA, operators and regulators in the Northeast to re-evaluate and strengthen testing program design and deliverability. At the same time, with the recent release of the Pipeline Safety Management System (PSMS) approach (American Petroleum Institute Recommended Practice (API RP) 1173), there is an additional opportunity to embrace knowledge, skill and ability as integral and inter-related parts of an effective overall safety management system.

This White Paper calls for a re-emphasis on the "training" aspect of the rule, thereby providing guidance as to how the NGA program can advance this common industry goal. The many recent and forthcoming changes to the security protocols of NGA's online testing program demonstrate the commitment by NGA and its member operators to improving the quality of its OQ Program. These changes are only the first step.

Exhibit D

This paper identifies several recommended actions for Northeast operators to consider to strengthen program integrity and effectiveness. These actions include the enhancement of:

1. Core skills training;
2. Operator specific contractor on-boarding programs; and
3. Qualification assessments.

The proposed enhancements provide a consistent approach while ensuring company specific work practices are integrated into the overall process. Furthermore, an enhanced NGA program will provide the flexibility for a regional workforce to meet regulatory requirements, strengthen workforce training and qualification programs and, ultimately, enhance public safety.

Exhibit D

1. Pipeline Safety Operator Qualification (OQ): Understanding the Past to Build a Future

While natural gas transmission and distribution pipelines have a proven safety track record as one of the safest forms of transportation, investigations of pipeline accidents from 1975 through 1986[1] revealed human error as a contributing factor to failures. These incidents led the National Transportation Safety Board (NTSB) to make specific recommendations regarding the training, testing and qualification of pipeline employees. NTSB believed that the qualification of pipeline personnel had a direct correlation to failures caused by human error. As a result, in 1987 the United States DOT issued a notice inviting public comment on the need for additional regulation and a certification program for personnel who design, construct, operate and maintain gas or hazardous liquid pipelines. Congress subsequently passed the Pipeline Safety Act of 1992, which included language requiring that personnel responsible for the operation and maintenance of pipelines be tested for qualification and be certified to operate and maintain those pipelines.

DOT's rule making process was contentious and complex but ultimately led to a consensus-based final rule in August 1999, with 49 CFR 192 subpart N, Operator Qualification. The final rule included identification of essential elements of a qualification program and limited the scope of the rule with a four-part test for covered tasks. The rule also provided mandated timeframes for development and implementation of programs with the completion of initial qualification of pipeline personnel in 2002.

The final performance-based rule lacked specificity which made it difficult to consistently measure an operator's compliance to the rule. This led to the development of "protocols" to assist federal and state regulators in evaluating an operator's program. However, differences still existed between DOT and the pipeline industry regarding implementation and enforcement. Both groups worked together to develop a consensus code utilizing a recognized structured approach to standards development under the American Society of Mechanical Engineers International, (ASME B31Q, Pipeline Personnel Qualifications). While the standard development process helped to address many of the major differences, the standard was never adopted into the DOT code.

In summary, the intent of the rule and subsequent ASME Standard was to ensure that a framework existed establishing minimum criteria for operational ownership of the required knowledge, skills and abilities necessary to ensure the safety and reliability of gas systems.

[1] ASME B31Q-2014

Exhibit D

2. Industry Events that Influence the Need for Change

In recent years the natural gas industry has experienced unprecedented gas system expansion to meet product demand, along with technical and policy drivers to accelerate the replacement of the nation's aging gas system infrastructure. These two factors alone have resulted in significant workforce expansion for the natural gas industry. Furthermore, LDC's operate under the same constraints of any regulated business, ultimately seeking to balance the need to maximize safe, reliable and customer responsive service while also keeping rates low.

The confluence of high profile pipeline incidents over the past decade and the changing business operating environment compel a much broader policy focus by regulators and policymakers in targeting the need for a properly trained and qualified workforce. It's equally important to keep the need for *change* in perspective with operator and contractor training practices and competency demonstration programs of the past. Prior to the DOT OQ Rule, programs (typically) included comprehensive field training and skill development while on-the-job. These programs were designed to take a "journeyman" approach to personnel skill development. These programs were typically lengthy and somewhat subjective but worked well at the time when the natural gas industry growth was flat and the demand for new qualified resources was low.

Our training and competency culture has shifted over time, in part driven by the Operator Qualification Rule and the other business drivers discussed above. The Rule attempted to standardize minimum competency requirements rather than dictate comprehensive training programs which were, presumably, in place and long standing for most LDC's. This focus may have unintentionally overemphasized testing and deemphasized training. Couple this shift with a growing need for qualified technicians in today's workforce and it is not difficult to see why some new industry players might not fully gauge the intent of operator qualification rules. That said, given the inherent operational risk in any energy transmission and delivery system, our standards around training and qualification need to be best in class in order to perform work on these systems.

Exhibit D

3. Creating a *Continuous Learning* Environment

A repeated recommendation from NTSB to the United States DOT in their incident investigations concerns the development of an industry Safety Management System. In 2015, ANSI/API's Recommended Practice 1173 (RP 1173) Pipeline Safety Management Systems[2] (PSMS) was released.

Many of the core elements contained within RP 1173 have a training and qualification component and are specifically addressed in the contribution of *competency, awareness and training* in the creation of a continuous learning environment. More importantly, as part of adopting a pipeline safety management (PSM) culture, RP 1173 calls for management commitment, including leadership and oversight from top management necessary to meet the definition and intent of the term *qualified*.

For purposes of this discussion, the term *qualified* is defined as an individual that has demonstrated knowledge, skill and ability to perform or assist with assigned tasks while working on a gas pipeline system.

The term *training* is broadly used throughout the industry and in some cases used interchangeably with the word *qualified*. For purposes of this paper, *training* is defined as instructing individuals using materials or activities designed to convey the skills and knowledge necessary to perform a task. If properly constructed and executed, a training program should address the core process knowledge and required skills, in addition to any relevant specific company operations and maintenance procedures.

The most effective programs are those that are constructed as a *learning opportunity continuum*. These programs have the potential to substantially influence core safety values and support a sustainable cultural shift to continuous learning. However, the learning continuum is only effective and sustainable if program commitment, including necessary resources and focused, driven leadership, is provided. This learning environment considers every operational experience as a learning opportunity while supporting a culture of continuous improvement (another essential element of RP 1173). This approach brings focus and emphasis on developing the highest quality workforce to ensure system integrity as well as personnel and public safety.

Once an individual has received the proper training (classroom and on the job), he or she is then afforded the opportunity to demonstrate proficiency through the evaluation process where specific knowledge and/or skills are assessed and measured, including the individual's ability to recognize and react to abnormal operating conditions.

[2] Pipeline Safety Management Systems, ANSI/API Recommended Practice 1173 First Edition, July 2015.

Exhibit D

4. Transforming Today's Program to Meet Tomorrow's Needs

Starting in the late 1990s, NGA member operators developed and implemented an Operator Qualification and Training Program. The Program was developed and is maintained in a collaborative fashion via committees with subject matter expert input. Operators addressed areas such as task development, evaluations, re-evaluation intervals, recordkeeping and supporting training materials. The NGA program also includes qualification assessment methods including online knowledge tests and skill simulation tests.

Per PHMSA's OQ Protocols, the NGA Written Plan is considered an "off the shelf" program, even though it was developed in a collaborative environment by member operators. Unlike other "off the shelf" programs, the NGA program was designed and *built by operators for operators.* Member operators participating in the program are responsible for understanding and meeting the provisions of 49 CFR 192 subpart N as it applies to their operations and operating environment. For example, an operator must determine which covered tasks apply to their employees and contractors. Each operator and contractor must also determine the necessary training needed by their employees to successfully perform a covered task.

NGA's training program includes a series of online or hardcopy OQ focused technical review modules to support technician study and review needs prior to testing. These focused learning tools are not intended as initial training materials; rather, they are designed to supplement existing company provided training tools focused on core knowledge of operations and construction practices.

NGA's training program also offers a more comprehensive instructor led training program utilizing the Gas Technology Institute's (GTI) Field Skills Training Program and the NGA Plastic Pipe Joining Program. The GTI Training Program is designed for initial, in-depth learning and covers the core fundamental knowledge and skills development required to perform each process.

The NGA proficiency testing program has significantly evolved over the past decade. Once a written exam process with NGA sponsored or operator sponsored proctors as oversight, it has migrated to a technology supported computer based testing and recordkeeping program. Skill proficiency simulations, such as the plastic pipe joining program, are witnessed and conducted by NGA or operator approved subject matter experts.

The computer based exams provide significant improvements in efficiency, record keeping, and program integrity. However, there is room for additional improvements in overall program integrity, as demonstrated by recent testing breaches. The recent NGA Board-approved computerized testing approach is far advanced over previous methods and establishes an industry benchmark. The addition of a nationally recognized third-party testing partner ensures a consistent approach to maximizing exam security while providing the highest degree of integrity in the test-taking process.

Exhibit D

Looking beyond the recent NGA OQ Program enhancements, the collaborative approach NGA suggests here systematically retains and strengthens the importance of building a solid knowledge base of core fundamentals and processes. This includes layering on company specific requirements in a balanced, effective and efficient manner. This framework, built on core fundamentals supplemented with company specific policies, avoids duplicative training and testing of contractor personnel and enables flexibility in the contractor workforce to meet the growing workforce demands.

The recommendations highlighted below create a "layer of protection approach" to minimize incidents related to human factor impacts while encouraging operational ownership of training and qualifications as an integral part of an overall PSMS. The recommended approach ensures that minimum Knowledge, Skills and Ability are demonstrated prior to being officially qualified to perform work for a specific company:

- **Core Skills Training –** A comprehensive Core Skills Training Program will serve as the first step in the enhanced OQ process. Members may utilize an NGA approved program such as the GTI Program, or an in-house or other equivalent program, to provide the fundamental knowledge of a process/procedure. The Core Skills Training Program would be overseen by an NGA Committee[3] that will review and enhance the training as part of a continuous learning environment. Contractors could utilize the NGA approved Core Skills Program, such as the GTI Program or an equivalent operator approved program, as the basis for their in-house training programs and then a 'Contractor On-Boarding Program', as outlined below, as a requisite for working for any particular LDC. This, coupled with company specific OQ requirements, compliance and regulatory policies, on the job training, and a review of task focused company specific O&M procedures, will provide an overall industry knowledge perspective with company specific detail.

- **Contractor On-Boarding Program –** NGA member operators will collaboratively develop a framework for on-boarding contractors. This would include company specific OQ requirements, compliance and regulatory policies, and a review of task focused, company specific procedures. NGA will assist operators in their evaluation of company specific training requirements compared to the Core Skills Program to ensure consistency and equivalency. This evaluation will include content domains, recommended delivery methods and incorporation of company specific procedures, where required.

  Each operator will be able to tailor the components and requirements of their Contractor On-Boarding Program to meet the needs of their company. This Contractor On-Boarding component serves as a layer of protection to ensure understanding of company specific expectations and becomes an integral component of the overall OQ process. As part of the

[3] NGA is evaluating existing Committee roles and responsibilities and will make a recommendation to the NGA Operations Management Committee as appropriate.

program, NGA will work with operators to develop an audit process to ensure companies can effectively and consistently demonstrate successful completion of the Contractor On-Boarding Program as an integral component of the qualification process.

- **Qualification –** Technicians would be granted Task Qualification Approval based on documented completion of:

    1. **Core Skills Training** – NGA approved Core Skills Training Program or equivalent.
    2. **Operator Specific On-Boarding Program** – Content and delivery meeting operator defined requirements including items such as training to the operator's policies and procedures (where they differ from the core skills training), knowledge evaluations, demonstration of skills proficiency, challenge tests, etc., as deemed appropriate by the operator. Contractor delivered programs will be subject to audits to ensure minimum requirements are met.
    3. **Qualification Assessment** – NGA online knowledge and skill simulation exams.

    NOTE: NGA will re-evaluate skill simulation demonstrations as part of the overall competency assessment process.

Exhibit D

5. Conclusion & Next Steps

The original intent of the federal Operator Qualification Rule was to provide a consistent framework for the demonstration of an individual's knowledge and skill competency. Almost 20 years after the PHMSA OQ Rule was released, operators and regulators alike still struggle with interpreting the requirements of the rule.

One thing is still clear: the goal of the OQ rule is to influence behaviors and to eliminate human error when performing tasks on a pipeline facility. This was the intent of the original rule and remains the ultimate goal of the rule today. By working collaboratively (vs. independently), NGA, operators and regulators *can* make these necessary changes and achieve the highest likelihood of success in accomplishing this goal.

Our purpose in this White Paper is to address how we as an industry can move most effectively towards achieving our common goal. NGA and member operators have taken initial steps to transform the overall program. Additional steps are needed to support the paradigm shift required to migrate to a continuous learning environment. These include:

1. Evaluation of the need for additional skill evaluations by covered task by NGA and member operators;
2. Release of an NGA approved Core Skills Training Program to the Northeast member operators and contractors (license agreement currently under negotiation);
3. Establishment of record keeping and auditing processes to ensure core skills training is provided and delivered effectively;
4. Development of a framework for the On-Boarding of contractor personnel by NGA and member operators, including the delivery of necessary training of contractors to specific operator O&M procedures, which differ from the core processes, using the equipment contractors utilize in the field; and
5. Establishment of record keeping and auditing processes to ensure contractor on-boarding processes are provided and delivered effectively.

The recommended enhancements provide the framework necessary to ensure consistent use of the program. More specifically, these recommendations provide specificity around tactical deployment, integration of essential training elements, incorporation of incremental company specific O&M content, and a consistent approach to contractor on-boarding.

The recommendations outlined in this Paper are designed to create a continuous learning environment and foster operational ownership of the OQ process – while preserving the benefits of workforce flexibility and cost effectiveness inherent with the use of the NGA OQ Program.

The current time is the right time for the industry in the region to collectively recalibrate its approach to ensure a successful and sustaining OQ training and qualification program.