

the Energy to Lead

A Training Program Specifically Designed for Contractors

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Contractor Training Program (Background)

- > Expansion of infrastructure replacement programs due to aging infrastructure
- > Increase in system expansion opportunities due to the low cost of natural gas has led to an incremental use of contractors by natural gas utilities

Contractor Training Program (Driver)

- > Rapid growth in the contractor workforce has created the need to ensure that new and existing employees are properly trained to ensure the integrity and safety of the natural gas system (infrastructure)



Contractor Training Program (Purpose)

- > Implementation of a hands-on training program to ensure that the contractor workforce:
 - Receives the proper training (i.e., that they truly understand the activities they are being asked to perform)
 - Develops the skills and abilities to perform these tasks professionally and safely in compliance with federal, state, and company requirements

Contractor Training Program (Short Term Goal)

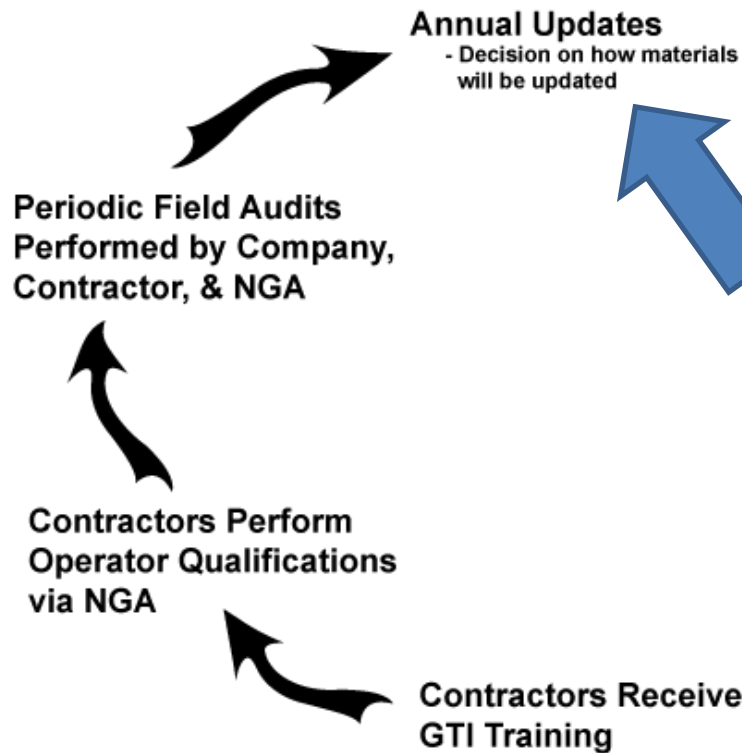
- > Provide ready access (in the field) to support the training and the work performed through tablet devices:
 - Operating procedures (work methods)
 - Construction Standards
 - Videos
 - Bulletins
 - Tip cards
 - Processes related to work done in Keyholes!

Contractor Training Program (Long Term Goal)

- > Collaboration with natural gas utilities
- > NGA and GTI create standard work practices and develop a training program for the region



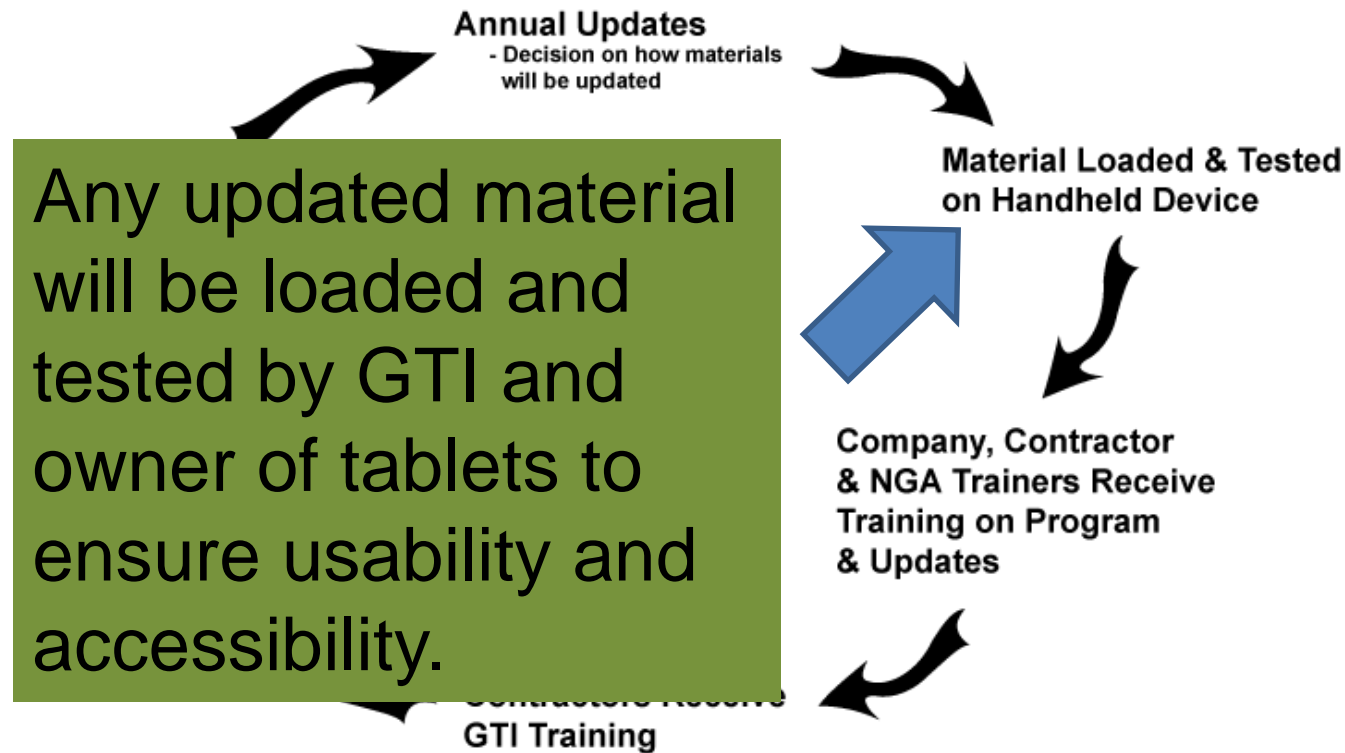
Annual Updates



National Grid Construction Standards and Work Procedures that are updated annually will also be reviewed and updated in the training and on the tablets.

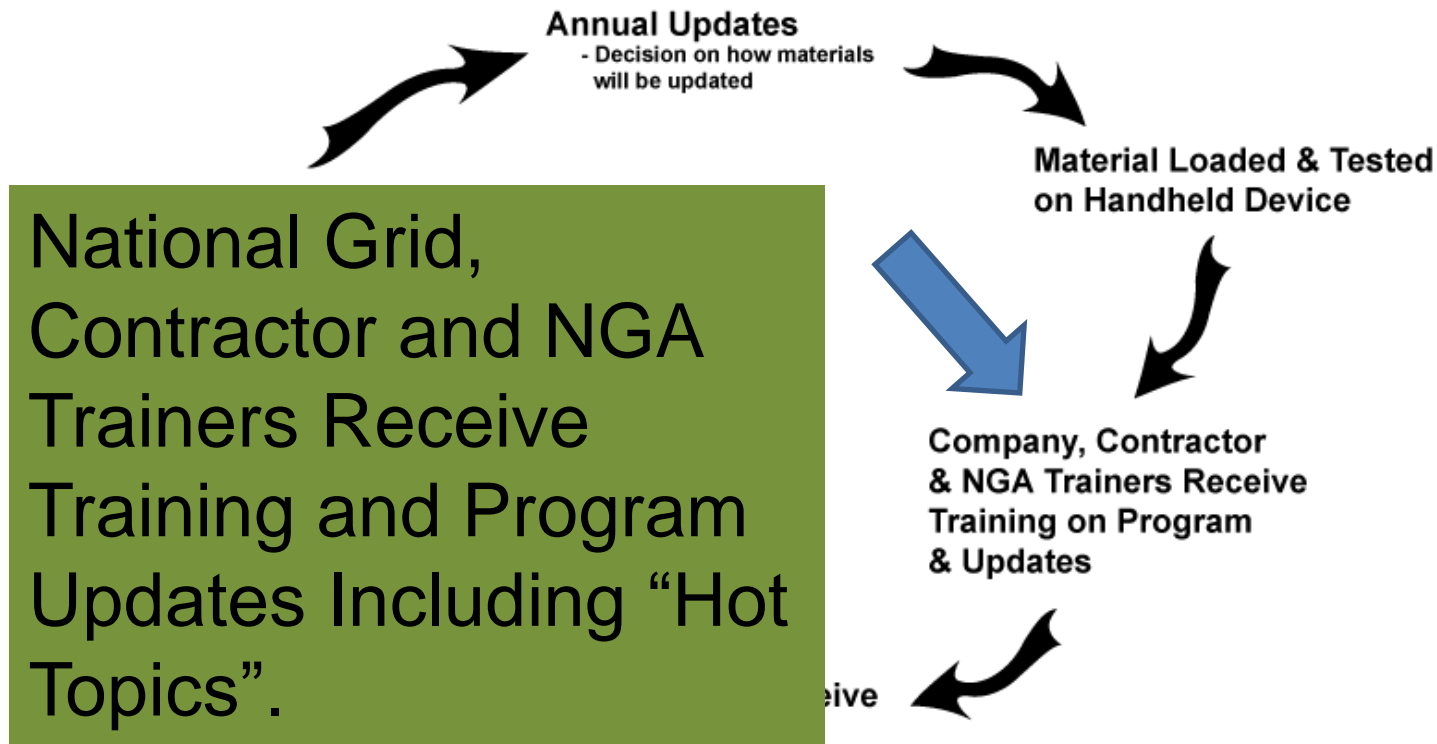
GTI/National Grid Training Flow

Material Loaded & Tested on Tablets



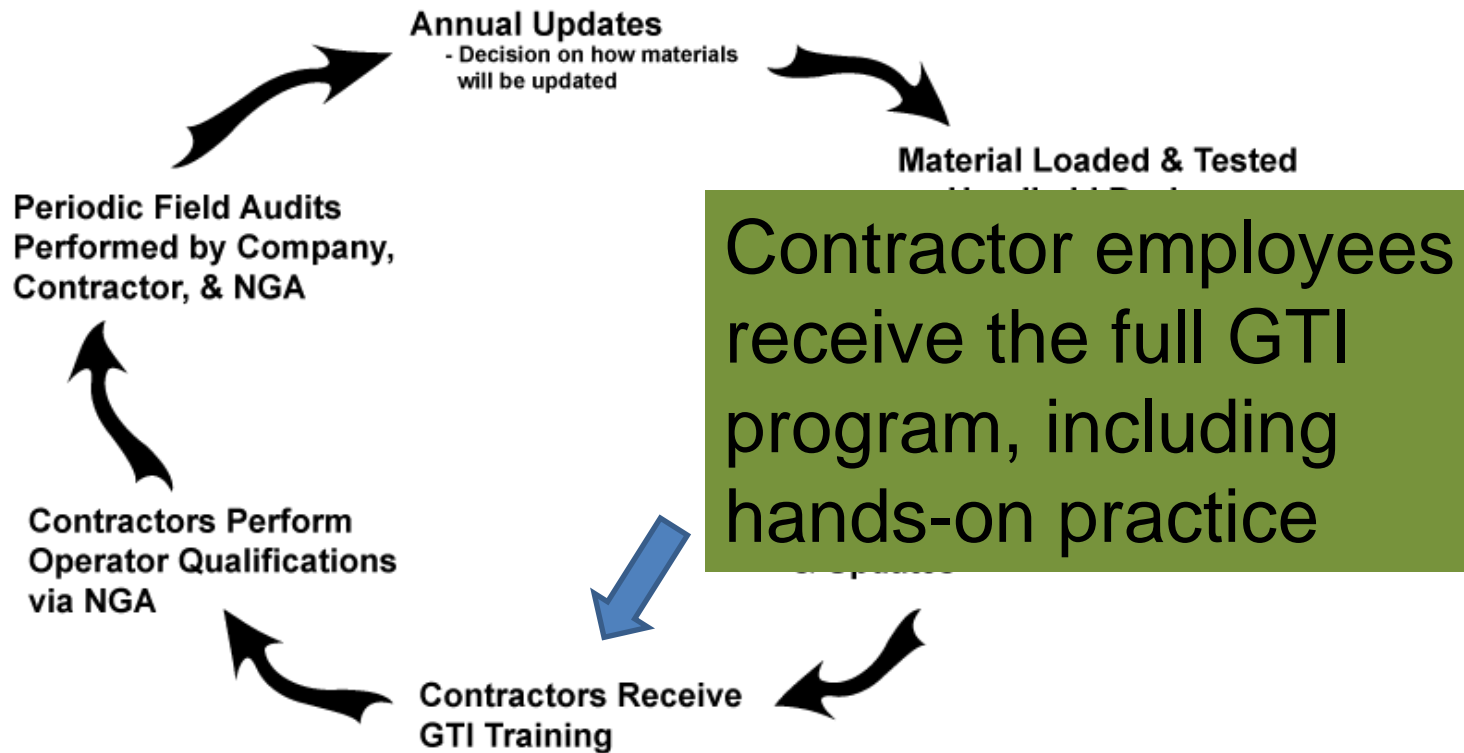
GTI/National Grid Training Flow

Training-the-Trainers



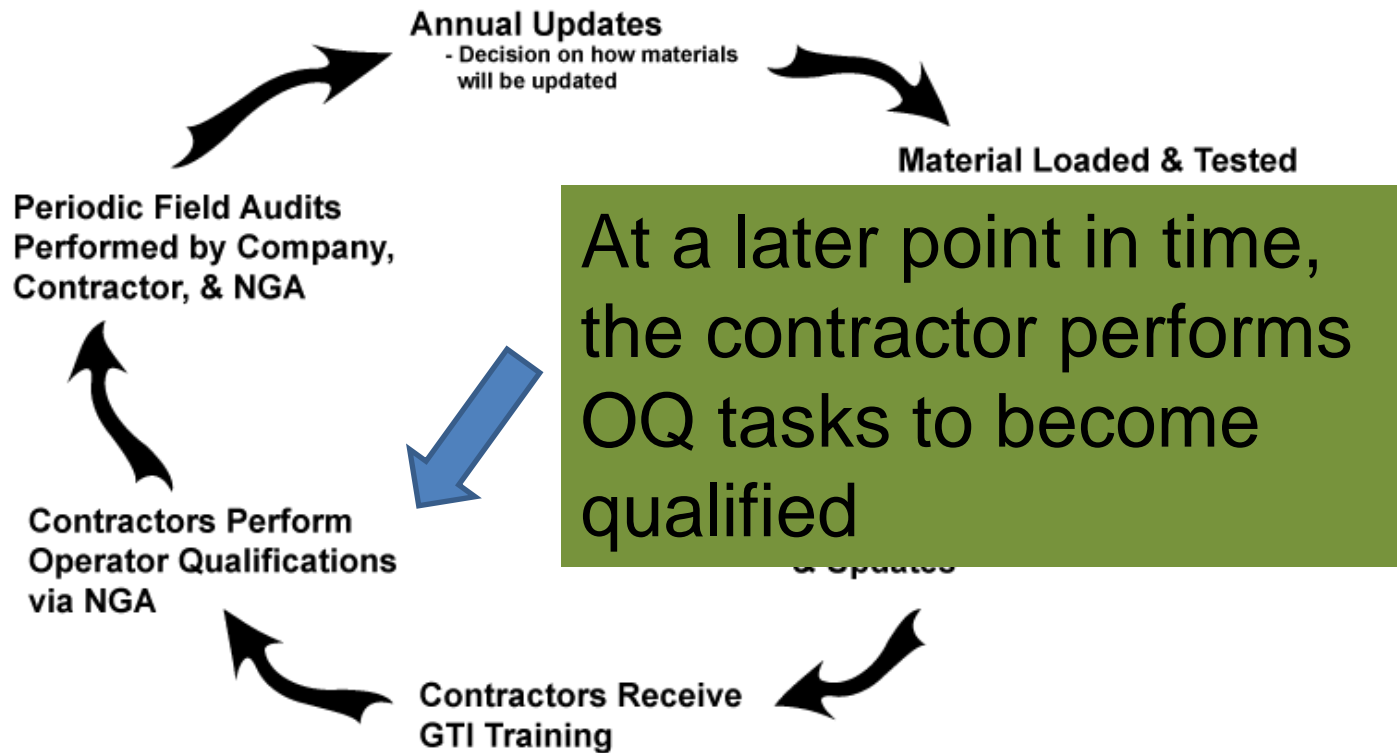
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Training Delivered to Contractors



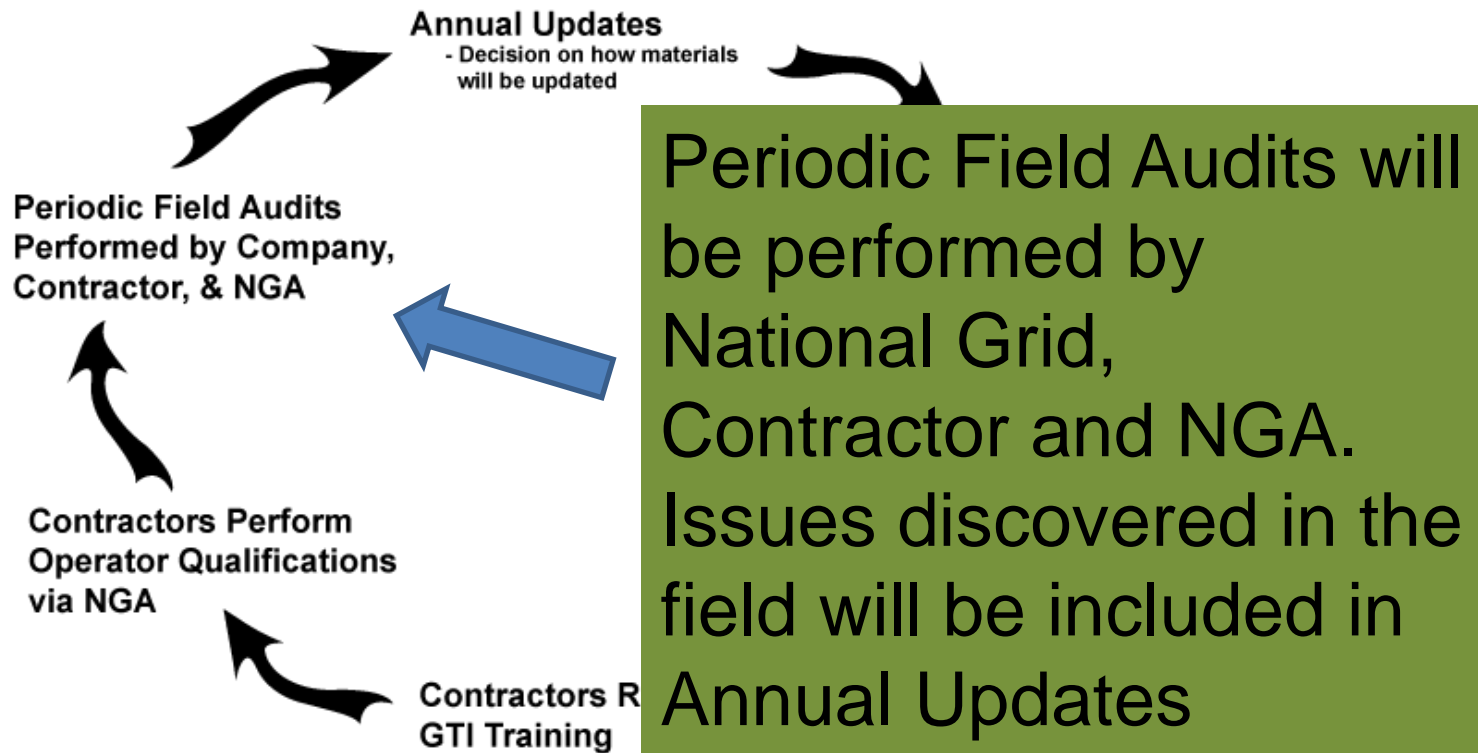
GTI/National Grid Training Flow

Contractor Performs Operator Qualifications Via NGA



GTI/National Grid Training Flow

Periodic Field Audits Throughout Construction Season



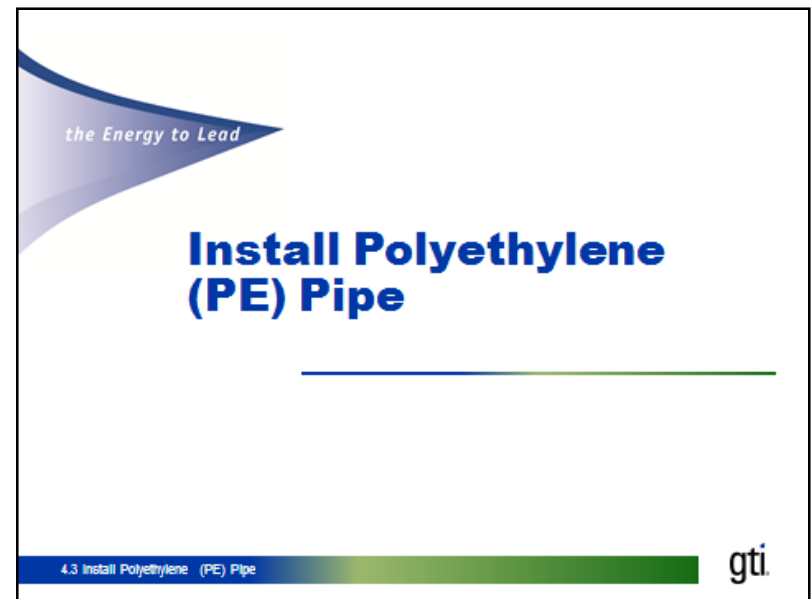
GTI/National Grid Training Flow

Contractor Field Audience

- > This program was designed and developed specifically with the needs of the contractor field audience in mind: **providing the WHAT, WHERE and HOW**

Program Content and Delivery

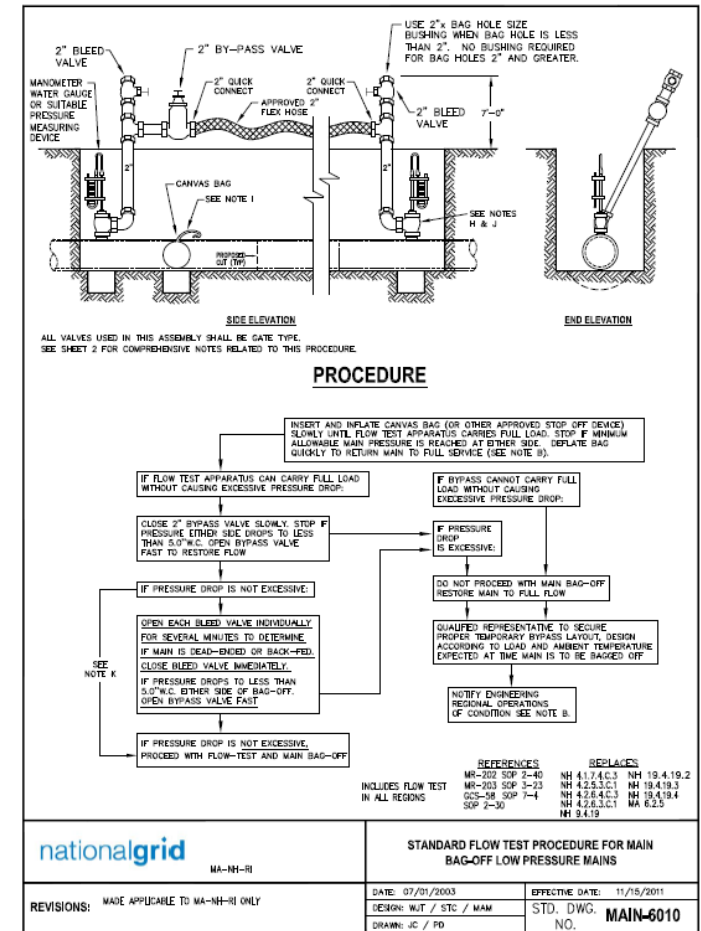
- > "Natural Gas Field Skills" training modules
- > Use of training module components
 - Leader Guides
 - Participant Guides
 - Classroom activities
 - Hands-on activities
 - Knowledge checks



Program Content and Delivery (Cont'd)


> National Grid requirements

- Inclusion of work procedural methods, policies, construction standards within the training program
- Supplemental materials



NGA Operator Qualification (OQ)

- > OQ Process requirements of NGA
 - Separate entity from Contractor Training Program

|  | | |
|---|---|----------|
| COVERED TASKS | | |
| | Covered Task | Interval |
| 1. | Inspecting for shorted casings | 5 Years |
| 2. | Measuring pipe-to-soil potential | 5 Years |
| 3. | Conduct a soil resistivity survey | 3 Years |
| 4. | Conducting interference testing | 3 Years |
| 5. | Electrically checking for proper performance reverse current switches, diodes, and interference bonds | 5 Years |
| 6. | Inspecting for atmospheric corrosion | 5 Years |
| 7. | Ensure operation of a rectifier | 3 Years |
| 8. | Visually inspecting for internal corrosion | 5 Years |
| 9. | Remove coupons/sample gas or liquids for analysis and evaluation | 3 Years |
| 10. | Clear a shorted casing | 3 Years |
| 11. | Applying pipe coating in the field | 5 Years |
| 12. | Cleaning and either coating or jacketing pipe for atmospheric corrosion | 5 Years |
| 13. | Installing/replacing a rectifier on pipeline | 3 Years |
| 14. | Installing/replacing an anode on a pipeline | 5 Years |
| 15. | Installing/replacing and testing electrical isolation couplings on pipeline | 5 Years |
| 16. | Install/replace a corrosion test station on pipeline | 5 Years |
| 17. | Repair coating on a steel pipelines | 5 Years |
| 18. | Conducting gas leakage surveys | 3 Years |
| 19. | Patrolling and inspecting pipelines | 5 Years |
| 20. | Investigating leak/odor complaints | 3 Years |
| 21. | Line locating and mark out | 3 Years |
| 22. | Inspection of 3 rd party excavations for damage prevention/cast iron encroachment | 3 Years |
| 23. | Inspecting the condition of exposed metallic pipe or pipe coating | 3 Years |
| 24. | Inspect pipe for damage | 5 Years |
| 25. | Repair transmission line leaks | 3 Years |
| 26. | Repair and maintain transmission line valves | 3 Years |
| 27. | Lubricate transmission line valves | 5 Years |
| 28. | Upgrading | 3 Years |
| 29. | Repair distribution line leaks | 3 Years |
| 30. | Repair a non-leaking pipe | 5 Years |
| 31. | Installation of pipe | 3 Years |
| 32. | Purging a pipeline into service | 3 Years |
| 33. | Purging a pipeline out of service | 3 Years |
| 34. | Performing pressure test on a pipeline | 3 Years |
| 35. | Stopping gas flow | 3 Years |
| 36. | Abandonment or deactivation of facilities | 3 Years |
| 37. | Tapping pipelines under pressure | 3 Years |
| 38. | Starting up or shutting down any part of a pipeline that could cause the MAOP to be | 3 Years |

| | | |
|-----|--|---------|
| 39. | exceeded | 5 Years |
| 40. | Remove service tee or fitting from steel or cast iron mains | 5 Years |
| 41. | Install/Replace tracer wire | 5 Years |
| 42. | Inspect and operate valves | 5 Years |
| 43. | Repair and maintain distribution line valves | 3 Years |
| 44. | Lubricate distribution line valves | 5 Years |
| 45. | Repair inline welds | 1 Year |
| 46. | Restore service | 5 Years |
| 47. | Abandon a gas service line | 5 Years |
| 48. | Mechanical joining of pipe other than plastic | 1 Year |
| 49. | Joining plastic pipe | 1 Year |
| 50. | Install tapping tee on plastic pipe | 1 Year |
| 51. | Inspect plastic pipe fusion joint | 1 Year |
| 52. | Non-destructive testing of welds | 1 Year |
| 53. | Welding on a pipeline | 1 Year |
| 54. | Maintain a pipeline compressor station | 3 Years |
| 55. | Operate a pipeline compressor station | 3 Years |
| 56. | Repair a compressor | 3 Years |
| 57. | Maintaining gas detection systems and alarms in compressor stations | 3 Years |
| 58. | Controlling and monitoring gas pressures and flows | 3 Years |
| 59. | Operation of remote control valves | 3 Years |
| 60. | Inspect recording gauge | 5 Years |
| 61. | Inspect and test pressure regulator station | 3 Years |
| 62. | Install and test overpressure protection | 3 Years |
| 63. | Inspect telemetering equipment at a pressure limiting or regulating station | 3 Years |
| 64. | Bypass a regulator | 3 Years |
| 65. | Field interpretation of pressure recording charts | 3 Years |
| 66. | Inspecting a pressure regulator vault | 5 Years |
| 67. | Operating an odorizer | 3 Years |
| 68. | Monitor natural gas odorization levels | 5 Years |
| 69. | Operator Excavation and Backfilling in the Vicinity of a Pipeline | 5 Years |
| 70. | Installation of Customer Meters and Regulators | 5 Years |
| 71. | Inspecting and maintaining air compressors at LP-Air plants | 5 Years |
| 72. | Inspecting and Maintaining Instrument Air Dryers at LP-Air Plants | 5 Years |
| 73. | Inspecting and Maintaining Emergency Shutoff Systems at LP-Air Plants | 3 Years |
| 74. | Maintaining Fire Protection Systems at LP-Air Plants | 3 Years |
| 75. | Inspecting and maintaining storage tanks, piping, valves and fittings at LP-Air plants | 3 Years |
| 76. | Inspecting and Maintaining Vapor Compressors at LP-Air Plants | 5 Years |
| 77. | Inspecting, Operating, and Maintaining Vapor Detection Systems at LP-Air Plants | 3 Years |
| 78. | Inspecting and Maintaining Propane Vaporizers at LP-Air Plants | 3 Years |
| 79. | Load, Unload, and Transfer Liquid Propane at LP-Air Plants | 3 Years |
| 80. | Inspecting and Maintaining Auxiliary Power Sources at LP-Air Plants | 5 Years |
| 81. | Operating a Propane Air Plant | 3 Years |
| 82. | Bending of Steel Pipe | 5 Years |

LIST OF COVERED TASKS Evaluation Breakdown

| | | |
|------|---|---------|
| 70. | Properties of natural gas and abnormal operating conditions | 3 Years |
| 70P. | Properties of propane air and abnormal operating conditions | 3 Years |

Key Themes/Messages (Overview)

- > National Grid safe work practices
- > Emphasis on ensuring a competent and capable workforce to perform the work
- > Ensuring the integrity of the training process
 - Effective and proficient trainers
 - Importance of recognizing and reacting to abnormal operating conditions
 - Quality assurance and quality control (QA/QC) audit protocol

GTI Trainer Expectations

- > GTI “Certified” trainers are expected to:
 - Follow the training program
 - Allocate the proper time to each segment
 - Engage the students through presentations, discussion, shared experiences, and classroom/hands-on activities
 - Conduct testing to ensure focus and understanding on training content



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Training Program Content

Contractor Training Program (Day 1)

- > Introduction to Program
- > Handheld Tablet
- > Abnormal Operating Conditions (Module 10.2)
- > Properties of Natural Gas (Module 10.1)
- > Maps and Records (New Module)
- > Environmental
- > Line Locating and Mark Out/Excavation (Module 2.2)
- > Pipe Inspection (Modules 3.8 and 3.10)

Contractor Training Program (Day 2)

- > Stop Flow (Modules 6.11 and 6.14)
- > Tapping and Stopping (Module 6.11)
- > LP Bags and Stoppers (Module 6.11)
- > Abandonment of Main/Service (Module 6.3)
- > Purging (Module 6.23)

Contractor Training Program (Day 3)

- > Installation of Pipe (Modules 4.2 and 4.3)
- > Bolt-on Fittings (Module 5.2)
- > Stab Fittings (Module 5.1)
- > Compression Fittings (Module 5.2)
- > Threaded Fittings
- > Pipe Coating (Module 6.7)
- > Anode and Test Station (Modules 3.4 and 3.6)
- > Insulators (Module 3.2)

Contractor Training Program (Day 4)

- > Butt Fusion (Modules 5.3 and 5.4)
- > Electrofusion (Module 5.6)
- > PE Fusion Joint Inspection (Module 5.8)
- > Tracer Wire (Module 4.4)

Contractor Training Program (Day 5)

- > Main and Service Pipe Tie-in (Module 6.12)
- > Pressure Testing (Module 6.2)
- > Restore Service
- > Soil Compaction/Backfilling (Module 2.2)

Overview of Modules

- > Now we will provide overviews of each module
- > Any questions?