API RP 1169 – Pipeline Construction Inspector Certification Program.

Southwest Gas Corporation
Mike Childers
Specialist
(Operations Staff/Corporate Engineering)
• History – Operations Technical Committee (OTC) initiated discussion of a Certification program for Pipeline Inspectors in 2009.

• API (RP) 1169 — The First Edition of the RP was released July 2013

• API (RP) 1169 Certification Program — Our Certification Committee first met October 2013 at Phillips 66 Global HQ Building in Houston, and we completed writing the Certification test June 2014 at the Enbridge Building in Houston.

• U.S. Federal Regulation — (PHMSA) Both the RP and the Certification are closely aligned with U.S. (192, 195) and Canadian requirements.
API RP 1169
Linepipe Inspector Certification Program

Background
- OTC (Operations Technical Committee) initiated discussion of a certification program for Pipeline Inspectors (2009)
- Preliminary work done in 2009-2010
- Review of the industry available documents – gap assessment
- Need for an inspection document

Reasons to have a certification program
- Availability of Experienced and Qualified in-house inspection personnel is limited
- Many contractors are performing inspection work without direct owner/operator supervision and oversight
- Uncertainty and difficulty regarding contractor/inspector qualifications
- Pipeline Inspectors represent the industry and are expected to make significant decisions
- Public safety frequently rides on their decisions
- Currently there are no uniform requirements to determine the knowledge and skills required to perform inspection activities
- API’s 3rd party certification process would be unbiased and uniform in nature
API RP 1169
Linepipe Inspector Certification Program

Potential Benefits

• Provides industry with a method for centralized, independent, unbiased, legally-defensible certification
• Provides industry with a readily-accessible program to identify qualified inspectors
• Professional credential is industry-designed and industry-accepted
• Demonstrates industry support for minimum inspector competence
• Promotes industry safety, personnel and process management, and environmentally-sound performance
• Reduces the time and resources necessary for industry to qualify inspectors in-house or to screen/pre-qualify contractors
• Demonstrates to authorities a proactive approach to training/qualifying industry personnel and directly addresses recent concerns regarding new construction inspections.
API RP 1169

Linepipe Inspector Certification Program

Task Force Charter

• Created in 2010
• Tasked with:
  • Creating an inspection document - API 1169 - Recommended Practice for Basic Inspection Requirements - New Pipeline Construction
  • Developing a Certification Process

Current status

• API RP 1169 completed and released July 2013
• Scope of the program – inspection of new construction
• Exam specification/exam databank work began in October 2013 and finished July 2014
• Launch date – July 21st, 2014
API RP 1169
Linepipe Inspector Certification Program

API’s Expertise in Certification

• Running certification programs since 1989
• 11 different certification programs (basic and supplemental)
• Paper-based exams, online quizzes and performance demonstrations are offered
• Over 15,000 clients all over the world
• Certified individuals in 75 countries
• 8000 applicants tested in 2012

Website: www.api.org/icp
Minimum Qualification Requirements

• The qualification requirements for API 1169 are based on a combination of the number of years of experience acquired within the last 10 years, plus education, and in some cases, other certifications.

• Your experience and education should match at least one of the combinations in any one of the grids below:

• Inspection Experience
  Non-Inspection Pipeline Experience
  General Oil & Gas Industry Experience
  Other Heavy Industry Experience
# Inspection Experience

## Pipeline Inspection

<table>
<thead>
<tr>
<th>Description of Experience Required</th>
<th>Minimum Years of Experience Required</th>
<th>Plus: Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience acquired in areas such as Utility inspection, Pressure/Leak Testing, Welding Inspection, Coating Inspection</td>
<td>3 years</td>
<td>Any</td>
</tr>
</tbody>
</table>

## General Oil & Gas Inspection

<table>
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<tr>
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<th>Minimum Years of Experience Required</th>
<th>Plus: Education</th>
</tr>
</thead>
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<tr>
<td>Experience acquired in areas such as: Equipment Inspection, NDT, In-service Inspection, Visual Inspection, Welding Inspection, Pressure/Leak Testing, Inspection of Aboveground Storage Tanks, Piping or Pressure Vessels, Manufacturing/Source Inspection</td>
<td>3 years, 4 years, 5 years</td>
<td>BS or 2-year AA degree in a technical discipline, engineering or technology, High School, GED, No Formal Education</td>
</tr>
</tbody>
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# Non-Inspection Pipeline Experience

<table>
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<tr>
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<th>Minimum Years of Experience Required</th>
<th>Plus: Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience acquired in areas such as: Pipeline Construction, Pipeline Operation, Welding, Fitting, Coating, Operation of Heavy Equipment</td>
<td>4 years, 5 years, 7 years</td>
<td>BS or 2-year AA degree in a technical discipline, engineering or technology, High School, GED, No Formal Education</td>
</tr>
</tbody>
</table>
### General Oil & Gas Industry Experience

<table>
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</thead>
<tbody>
<tr>
<td>Experience acquired at any petrochemical facility, such as refinery or petrochemical plants. Experience may relate to: Operation, Construction and repair of petrochemical equipment.</td>
<td>4 years of General Oil &amp; Gas experience and 1 year of Pipeline Specific experience</td>
<td>High School, GED or Higher</td>
<td>Any certification, Level II or greater, from any of the following: • AWS/CWI • NACE • API • ASNT</td>
</tr>
<tr>
<td></td>
<td>7 years</td>
<td>High School, GED or Higher</td>
<td>Any certification, Level II or greater, from any of the following: • AWS/CWI • NACE • API • ASNT</td>
</tr>
</tbody>
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### Other Heavy Industry Experience

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<th>Minimum Years of Experience Required</th>
<th>Plus: Education</th>
<th>Plus: Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience acquired in industries or areas such as: Road Building, Civil Construction, Mining, Logging, Heavy Equipment Operating, Blasting</td>
<td>10 years</td>
<td>High School or GED</td>
<td>Any certification, Level II or greater, from any of the following: • AWS/CWI • NACE • API • ASNT</td>
</tr>
<tr>
<td></td>
<td>10 years</td>
<td>BS or 2-year AA degree in a technical discipline, engineering or technology</td>
<td>N/A</td>
</tr>
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</table>
API 1169 Pipeline Inspector Program – Exam Information

• 1. Questions on the API 1169 examination are derived from the publications listed in the Publications Effectivity Sheet.

• 2. Refer to the Body of Knowledge for specific topics included on the exam.

• 3. Relevant government-issued publications will be available on your computer monitor during the exam. See the Publications Effectivity Sheet and Body of Knowledge for a list of those reference documents.

• 4. There are 100 questions on the exam, and the exam is 3 hours long.

• 5. The exam will be administered via computer at a Prometric computer testing center.

• 6. Papers and books may not be brought into the computer testing centers.

• 7. There will be a brief tutorial on the computer-based testing experience before you begin your exam. This tutorial is now available for you to preview.
Examination Policies & Notifications

1. API gives each candidate 12 consecutive months to pass an exam. This 12-month period begins with the first scheduled exam date.

2. If a candidate does not pass the examination on the first attempt, the exam may be rescheduled within the allowable 12-month period. Reschedule fees apply.

3. If the candidate is unsuccessful within the allotted 12 months, a new application must be submitted along with a new application fee.

4. Examination scores and results are sent by Prometric to each applicant via e-mail approximately eight (8) weeks after the exam.

5. If a candidate passes the exam and has no deficiencies in their application, they will be certified.

6. A paper certificate and wallet card will be mailed out approximately 2-4 weeks after the results have been received.

7. The term of certification is 3 years.
API RP 1169

Registration and Testing

• API-1169 Pipeline Inspector Certification Program Registration for the First Class ends August 22\textsuperscript{nd}.

• Exam window is October 31 - November 14, 2014.

• This basic program will test applicant’s core knowledge in relevant codes and standards to perform inspection activities during construction of new onshore pipelines. It is open to qualified applicants who are seeking to become certified inspectors in API-1169: Recommended Practice for Basic Inspection Requirements – New Pipeline Construction.

• Application deadline is August 22\textsuperscript{nd}. Applicants will be able to test at any one of Prometric’s 650 Computer-Based Testing Centers worldwide.
API RP 1169 Certification Test Referenced Publications

API 1169, Basic Inspection Requirements – New Pipeline Construction

- All of API 1169 is applicable to the examination

API 1104, Welding of Pipeline and Related Facilities

ATTN: Test questions will be based on the following portions of the document only:
Section 3, Terms, Definitions, Acronyms, and Abbreviations
Section 4, Specifications
Section 5, Qualifications of Welding Procedures with Filler Metal Additions
Section 6, Qualification of Welders
Section 7, Design and Preparation of a Joint for Production Welding
Section 8, Inspection and Testing of Production Welds
Section 9, Acceptance Standards for NDT
Section 10, Repair and Removal of Weld Defects
Section 11, Procedures for Nondestructive Testing (NDT)
API RP 1169

**API 1110, Pressure Testing of Steel Pipelines –**

- Entire document is subject to testing with exception of the appendices.

**API Q1, Specification for Quality Programs**

ATTN: Test questions will be based on the following portions of the document only:

- Section 3: Terms, Definitions and Abbreviations
- Section 4: Quality Management System Requirements
- Section 5: Product Realization

**ANSI Z49.1, Safety in Welding, Cutting, and Allied Processes**

ATTN: Test questions will be based on the following portions of the document only:

- Chapter 4: Protection of Personnel and the General Area
- Chapter 5: Ventilation
- Chapter 6: Fire Prevention and Protection
- Chapter 8: Public Exhibitions and Demonstrations
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**ASME B31.4, Pipeline Transportation Systems for Liquids and Slurries**

ATTN: Test questions will be based on the following portions of the document only:
- Chapter I, Scope and Definitions
- Chapter II, Design
- Chapter III, Materials
- Chapter V, Construction, Welding, and Assembly
- Chapter VI, Inspection and Testing

**ASME B31.8, Gas Transmission and Distribution Piping Systems**

ATTN: Test questions will be based on the following portions of the document only:
- General Provisions and Definitions
- Chapter I, Materials and Equipment
- Chapter II, Welding
- Chapter III, Piping System Components and Fabrication Details
- Chapter IV, Design, Installation and Testing
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**CGA (Common Ground Alliance) Best Practices**

- Entire document is subject to testing

**INGAA, Construction Safety Guidelines**

- *Natural Gas Pipeline Crossing Guidelines*  
  (http://www.ingaa.org/File.aspx?id=20405)  
  Section II - Definitions

- *CS-S-9 Pressure Testing (Hydrostatic/Pneumatic) Safety Guidelines*  
  (http://www.ingaa.org/File.aspx?id=18981)  
  Entire document is subject to testing

**ISO 9000 Quality Management Systems – Fundamentals and Vocabulary**

ATTN: Test questions will be based upon the Definitions Only
### API RP 1169

*Pipeline Construction by Max Hosmanek, © The University of Texas Austin*

- Entire document is subject to testing

### U.S. Federal Regulations

- **ATTN**: The references below will be available to applicants on their computer monitors during the exam. Only those articles and sections specifically listed will be available to applicants.

### 29 CFR 1910, Occupational Safety and Health Standards

- Subpart H – Hazardous Materials
- Article 119
- Subpart I – Personal Protective Equipment
- The entirety of Subpart I (Excluding Subpart I Appendices)
- Subpart J – General Environmental Controls
- Articles 145-147 (Excluding Appendices)
API RP 1169

29 CFR 1926, Safety and Health Regulations for Construction:

- Subpart C- General Safety and Health Provisions
- Articles 20-29 and Articles 32-35
- Subpart D- Occupational Health and Environmental Controls
- Article 62 (Excluding Appendices)
- Subpart F – Fire Protection and Prevention
- Article 152
- Subpart H- Materials Handling, Storage, Use and Disposal
- Articles 250 and 251
- Subpart J – Welding and Cutting
- Articles 351-354
- Subpart L – Scaffolds
- Article 451
- Subpart M – Fall Protection
- Articles 500-501
- Subpart O- Motor Vehicles, Mechanized Equipment and Marine Operations
- Article 600
- Subpart P – Excavations
- The entirety of Subpart P Including Appendices
- Subpart U- Blasting and the Use of Explosives
- Articles 900-902 & 914
- Subpart CC – Cranes & Derricks in Construction
- Article 1417
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40 CFR 112, *Oil Pollution Prevention*
- Subpart A – Applicability, Definitions and General Requirements for All Facilities and All Types of Oils

40 CFR 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*
- System
- Subpart A – Definitions and General Program Requirements

49 CFR 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards:*
- Subpart G – General Construction Requirements for Transmission Lines and Mains
- Subpart J – Test Requirements
- Subpart N – Qualifications of Pipeline Personnel

49 CFR 195, *Transportation of Hazardous Liquids by Pipeline*
- Subpart D - Construction
- Subpart E – Pressure Testing

*Environmental Protection Agency (EPA), National Pollutant Discharge Elimination System*
- General Permit for Discharges from Construction Activities 2012
- (http://www.epa.gov/npdes/pubs/cgp2012_finalpermit.pdf)
- Entire document is subject to testing
EXAMINATION CONTENT BASED ON SPECIFIC AREAS OF KNOWLEDGE AND PROFICIENCIES

• The inspector should be knowledgeable of general inspection responsibilities, requirements, and expectations for pipeline construction that enable him/her to effectively carry out their duties.

• The following is a list of specific topics that an applicant should be familiar with and expect to be tested during the API-1169 Pipeline Construction Inspection exam. The following categories describe the minimum necessary knowledge and skills:
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1. General Quality Principles
   a. Basic inspection principles, such as:
      o Management of Change
      o Personnel testing and qualification verification
      o Project requirements enforcement
      o Inspection roles and responsibilities
   b. Records management, including
      o Legibility
      o Traceability
      o Retrievability
      o Records Retention
   c. Document Control
      o Revision Status
d. Non-Conformance handling
   - Control of nonconforming conditions
   - Reporting
   - Disposition
   - Corrective and Preventive Actions
   - Closing

e. Root Cause Analysis (RCA)
   - Purpose of RCA
   - Defining root cause

f. Calibration – Monitoring and Measurement Equipment Control
   - Equipment calibration status
   - Calibration methods

g. Material Preservation and Handling
   - Quarantine, tagging, and identification
   - Standard requirements
2. Pipeline Construction Inspection

• a. Clearing and Grading
  o Alignment sheets (e.g., extra work space, PI locations, special conditions)
  o Specifications (e.g., width, right of way, grubbing, top soil segregation)
  o Permits (e.g., road crossing, road access, railroad, encroachment)
  o Special landowner requirements (e.g., line list)
  o Written and/or electronic reporting

• b. Ditching
  o Base-bottom contour matching pipe
  o Depth of cover specifications (e.g., CFR 49, part 192, part 195)
  o Specifications (e.g., measurements)
  o Landowner restrictions (e.g., ditch skip, cattle crossing, dust control)
  o Monitoring and measuring devices
  o Written and/or electronic reporting

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c. Stringing
   o Materials identification (e.g., pipe grade, wall thickness, coating, heat and pipe number)
   o Materials defects / condition
   o Handling requirements (e.g., lifting, loading and unloading, equipment, stacking, securing)
   o Pipe tally / pipe placement (e.g., placed per alignment drawings, seam locations)
   o Specifications (e.g., minimum equipment requirements)
   o Written electronic reporting (e.g., stringing distances and skips, number of joints)

• d. Pipe Bending
   o Pipe ovality and wrinkles (e.g., ASME B.31.4, B.31.8, CFR192)
   o Proper bending equipment (e.g., liners, mandrels, shoes, angle measurement)
   o Specifications (e.g., bending requirements, tangents, maximum angles, seam alignments, coating or metal damage)
   o Written electronic reporting (e.g., bend location, as built)
API RP 1169

- e. Coating Basics
  - Specifications, qualified procedures, qualified personnel, documentation, material/consumable control, testing (equipment and products)
- f. Welding Basics
  - Specifications, qualified procedures, qualified personnel, documentation, material/consumable control, testing (equipment and products)
- g. Lowering In
  - Proper equipment (e.g., lifting, cradles, slings)
  - Specifications (e.g., spacing, location in ditch, depth, ditch preparation, sand bag placement, benching)
  - Lifting plans (e.g., boom spacing, lift height, boom size, number of booms)
  - Written / electronic Reporting (e.g., amount, damage, holiday detection)
- h. Backfill
  - Proper equipment (e.g., type, padding requirements, rock shield, erosion control, weights)
  - Padding pipe (e.g., depth, material size, compaction, foam)
  - Specifications (e.g., padding amount, material size, bench spacing, compaction, crown)
  - Written / electronic reporting (e.g., quantity and location)
  - Buoyancy control (e.g., types, installation, spacing, documentation)
• i. Tie-in’s
  o Specifications (e.g., alignment, OQ)
  o Written / electronic reporting (e.g., location, amount)
  o Material identification (e.g., pipe number, heat number, cutoff length)
  o Material Placement (e.g., transition, pipe support)

• j. Pressure Testing
  o Specifications (e.g., pipeline elevation/profile, pressure range, time, temperature correction)
  o DOT requirements (e.g., CFR192, CFR195)
  o Pressure testing equipment (e.g., type and size, test heads, pipe/hose)
  o Calibration certification of pressure testing equipment
  o Notifications (e.g., first responder, regulators)
  o Uptake (e.g., source requirements, withdraw rate, filtration)
  o Dewatering (e.g., special requirements, pigging, filtration and testing)
  o Pipeline cleaning/drying requirements (e.g., dew point calibration)
  o Written / electronic reporting (e.g., charts, records, calibration, pressure test logs, test distance)
  o Leak identification and repairs
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- **k. Cathodic Protection**
  - Alignment sheets (e.g., location, type, length)
  - Specifications (e.g., connection, wire size, anode ground beds, size, length, location)
  - Written / electronic reporting (e.g., location, amount, as built, type)

- **l. Clean-Up**
  - Alignment sheets (e.g., special conditions, mile marker placement, re-vegetation, bank stabilization)
  - Landowner requirements (e.g., damages, special conditions, fences, restoration)
  - Equipment (e.g., LGP, de-compaction, seeding)
• m. As-Builts
  o Redline drawings, alignment sheets showing final as built conditions, dimensions, and characteristics of the pipeline (e.g., weld maps/logs, NDE maps/logs, PI/POT locations, depth of cover, test leads, material and coating information)

• n. HDD Basics
  o Horizontal drilling process, drilling fluids, drill path/profile, geotechnical studies, pull force, radius of curvature, entry/exit points, entry/exit angles)
  o Testing, gauge plate inspections, deformation
  o Bores, road crossing, foreign utility crossings
  o Specifications, clearances, type of bores, voids, crossing agreements/permits, cased vs. uncased crossings, pipe condition
3. Pipeline Construction Safety

• a. Overall/Basic Safety
  
o OSHA regulation 1910
o Permit definitions (e.g., hot work, excavation, confined space, safe work)
o Rigging protocol (e.g., lifting devices)
o Job Safety Analysis (JSA) (e.g., purpose, hazards)
o Hazard recognition (e.g., changing conditions)
o SDS (MSDS) - Location, basic features
o HAZCOM (types of hazards such as fire, toxicity, corrosion, explosive; hazardous materials such as fuels, paints, NORMS, inhibitors)
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- Site Conditions (e.g., terrain, environmental, temperature extremes)
- Emergency response protocol (e.g., first responder contacts)
- Stop work authority (e.g., immediate danger life, health, environment)
- OQ requirements per 192, 195
- Security protocol
- PPE (e.g., hearing, foot, hand, head, eye, breathing, fire)
- Specialized inspectors (e.g., coating, welding, excavation competent person)
- LOTO protocol (OSHA)
- Reporting protocol (e.g., dirt report, incident/near miss)
- Hot line tie-ins
- Appropriate use, storage and inspection of tools, equipment and materials
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• b. Confined Space
  o Confined space definitions (e.g., back welding, inside pipes)
  o Entry permits
  o Required personnel
  o Entry log
  o Fire watch requirements
  o Respiratory requirements (e.g., types of respirators)
  o Rescue requirements and equipment
  o Gas detectors
  o Air monitoring
  o Venation requirements
  o Toxic atmosphere (e.g., PEL, IDLH) Permissible Exposure Limits,
    Immediately Dangerous to Life or Health.
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• c. Elevated Work Surface
  o Fall arrest/protection
  o Ladder safety
  o Toe board
  o Hand rails
  o Scaffold erection and tagging

• d. Excavation
  o CGA / foreign line excavation (e.g., locating requirements, line sweep, uniform color code, daylighting requirements, third party representation)
  o INGAA Crossing Guidelines
  o Safe digging practices (e.g., potholing, safe approach limits, operator qualifications)
  o Spoil pile placement
  o Soil classification (e.g., sloping, benching, type)
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- Shoring (e.g., trench box, sheet pile)
- Access and egress for excavation and confined space
- One call
- Electrical hazards (e.g., underground, induced currents, overhead)
- Excavation barriers (e.g., snow fencing, radiography, road crossing covers, exclusion)
- Traffic control (e.g., signs, flagmen, lighting)
- Atmospheric testing requirements (e.g., oxygen levels, safety levels)
• e. Pressure Testing
  o Minimum distance from test (e.g., personnel, public, structures, limited access)
  o Hazards associated with rupture
  o Test equipment failure
  o Notification (e.g., public safety, first responder, nonessential personnel)
  o Pressurizing and depressurizing
  o Running drying pigs (use)

• f. Welding
  o Arc flashes, working in area of grinding, fire hazards, propane hazards, moving equipment

• g. Coating
  o Flammable materials, respiratory concerns (fumes, dust)

• h. NDE
  o Radiation hazards
4. Pipeline Construction Environmental Protection

- Environmental protection plan - project specific drawings, specs (e.g., local, county, state, federal, landowner; land disturbance, fueling area, spill kits, emergency response, pollution prevention and control)
- Water intake, use and discharge requirements (e.g., hydrostatic test water, dust control)
- Waste handling (e.g., asbestos, impacted soil, sand blast, drilling fluids)
- Erosion controls (e.g., silt fencing)
- Soil handling / ROW (e.g., top soil segregation, multi lift handling)
- Documentation requirements (e.g., reading drawings, filling out forms, reviewing permits)
- Environmental hazards (e.g., contaminated soil, NORM)
- Groundwater handling (e.g., filters, hay bales, well points, dewatering)
- Stormwater handling
- Notification requirements (e.g., spill, incident, landowner interaction, agency interaction, notification protocols)
- Upland and wetland requirements (e.g., delineation, identification)
- HDD (e.g., frac out, drilling mud, containment and disposal)
- Bank stabilization techniques
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AMERICAN PETROLEUM INSTITUTE
Special Thank you to API’s Tina Briskin and Holly Decker

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Questions?

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