

QUESTAR[®]
*Southern Trails
Pipeline*

Special Open Meeting of the
Arizona Corporation
Commission
Winter Preparedness Meeting

Pipeline Safety

Doug Brunt

Lead Engineer Integrity Mgt.

Damage Prevention

Rick Aragon

District Supervisor

Phoenix, AZ

November 1-2, 2011



**Little Colorado River Pipeline Crossing
Cameron, AZ**

Pipeline Safety

Doug Brunt
Lead Engineer Integrity Management

Pipeline Safety

Transmission Integrity Management Program

- HCA Determination
- Risk Assessment and Identified Threats
- Integrity Management – Prescriptive Approach
- Baseline Assessment Schedule
- Preventive and Mitigative Measures

Benefits of Transmission Integrity Management
Implications of Recent Incidents (San Bruno)

High Consequence Areas



High Consequence Areas

<u>HCA</u>	<u>Miles</u>
Dennehotso	1.15
Kayenta	0.64
Cameron	0.99
Blake Ranch Road	0.41
Cimmeron Blvd & Puma Rd.	0.17
King Street & Green Valley Drive	<u>0.24</u>
Total HCA Miles	3.60

	<u>Pipeline Miles</u>	<u>HCA Miles</u>	
New Mexico	78	0	
Utah	5	0	
Arizona	367	3.60	
California	<u>37</u>	<u>0</u>	
Total	487	3.60	= 0.7%

Risk Assessment

ASME B31.8s

Time-Dependent Threats

- External corrosion
- Internal corrosion
- Stress corrosion cracking

Stable Threats

- Manufacturing related defects
- Welding / fabrication related
- Equipment

Time Independent Threats

- Third party / mechanical damage
- Incorrect operations
- Weather related and outside force

Consequences

- Life and Property
- Throughput
- Environmental

Risk = (Threat Probability of Failure) x (Consequence of Failure)

Applicable Threats

Time-Dependent Threats

- External corrosion
- Internal corrosion
- Stress corrosion cracking

Threat of Concern

Yes
Yes
No

Primary Assessment

In-Line Inspection – MFL
In-Line Inspection – MFL
Does not meet criteria in HCA

Stable Threats

- Manufacturing related defects
- Welding / fabrication related
- Equipment

No
No
No

Hydro Test in 2002 to
1.25 x MAOP, 1.5 x MAOP
Does not meet criteria in HCA

Time Independent Threats

- Third party / mechanical damage
- Incorrect operations
- Weather related and outside force

Yes
Yes
Yes

ILI – MFL / Caliper
OQ, O&M and P&M Measures
Patrols , ILI – XYZ mapping

Integrity Management – Prescriptive Approach

Post-Construction Pressure Test

- Completed in 2002
- In accordance with 49 CFR Part 192, Subpart J
- 1.25 x MAOP in Class 1, 1.5 x MAOP in Class 3
- New pipe installed in several locations

Routine In-Line Inspection

- Combination MFL, Caliper, and XYZ mapping

Cathodic Protection

- Enhanced Remote Monitoring and Control

Damage Prevention Program

- Public Outreach / Public Awareness Meetings
- Emergency Response
- Participation in One Call
- INGAA Parallel Construction Guidelines
- Pipeline Patrols

Assessment Schedule

Baseline Assessments

149 miles, Red Mesa to Cameron - Completed 2008

- In Line Inspection, Caliper, MFL, XYZ Mapping
- Scheduled for reassessment in 2015

196 miles, Cameron to Mohave - Scheduled 2012

- In Line Inspection, Caliper, MFL, XYZ Mapping

42 miles, Mohave to Essex- Scheduled 2012

- In Line Inspection, Caliper, MFL, XYZ Mapping

Baseline Assessments



Additional Preventive and Mitigative Measures

Cathodic Protection Enhancements

- Installation of Remote Monitors
- 46 cathodic stations in NM, UT, AZ, CA
- Currently in year 2 of a 3 year implementation
- Improved Awareness
- Improved Response Time
- Capability to easily perform on/off surveys
- Facilitates more effective interference testing

Adopted INGAA guidelines for parallel construction

- Involves close cooperation between parties to ensure lines are accurately located and protected during construction activities.

Cathodic Protection



Benefits of Transmission Integrity Management

- Studied, technical basis for Integrity Management
- Questar program is based on In-line Inspection
 - ✓ “Smart pigging” at 7 year intervals
- Adoption of risk-reducing additional P&M measures
 - ✓ Remote monitoring and control of cathodic protection
- Provides foundation for incident avoidance
- Helps maintain system reliability and safety

Implications of Recent Incidents

San Bruno, CA Issues (29 NTSB recommendations)

- Untested defective pipe at San Bruno
 - ✓ Pressure testing in 2002 conversion to service / new pipe installation (1.25 and 1.5 times MAOP)
 - ✓ No “grandfathered” pipe (MAOP substantiated by test)
- Line not configured to allow Inline Inspection
 - ✓ Questar Southern Trails is ILI configured
 - ✓ Questar IMP uses ILI as the assessment method
- New legislative / regulatory requirements forthcoming
 - ✓ Monitor new technological developments

Damage Prevention
Emergency Response
Public Awareness Meetings

Rick Aragon
District Supervisor

2011 Damage Prevention
Emergency Response
Public Awareness Meetings
Coordinated with Arizona Blue Stake
and local utility and transmission
companies



2011 Meetings Attended

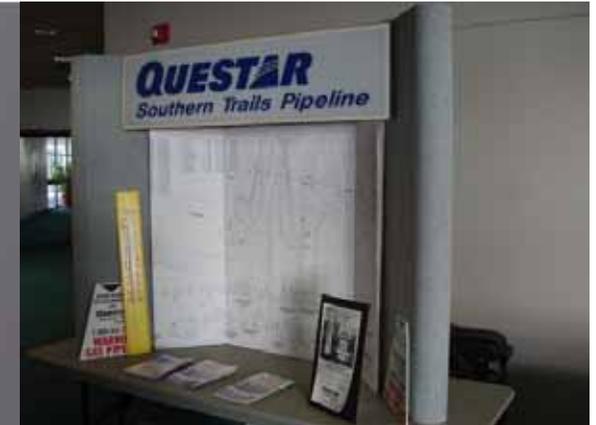


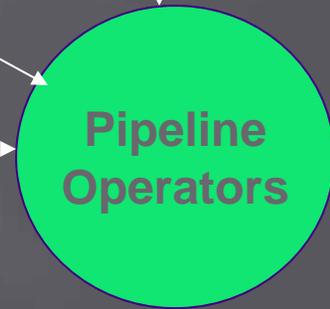
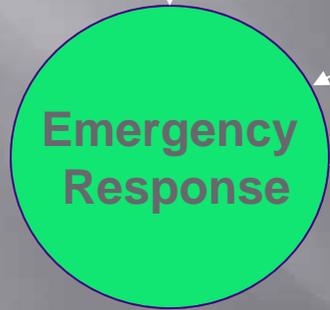
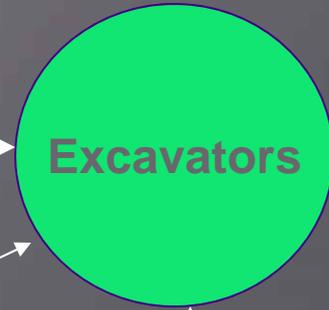
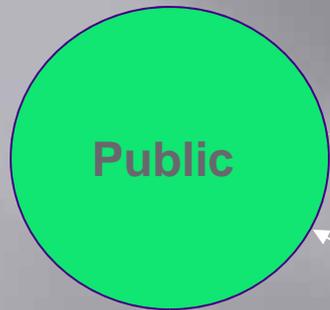
- Mohave County – Blue Stake Excavator Awareness Meeting
- Kingman AZ – City of Kingman, Emergency Response, & Blue Stake Excavator Awareness Meeting
- Flagstaff AZ – City of Flagstaff, Emergency Response, & Blue Stake Excavator Awareness Meeting
- Prescott AZ – Emergency Response & Blue Stake Excavator awareness meeting
- Window Rock AZ – Navajo Nation Emergency Response & Blue Stake Excavator Awareness Meeting



Purpose Of Meetings

- Inform public and cities of pipelines in their areas
- Train excavators on Blue Stake laws, excavation safety, and safe marking practices
- Make emergency responders aware of pipelines and high consequence areas in their response zones
- Train emergency responders on leak recognition and response
- Product hazards and characteristics
- Line pressure hazards
- Share pipeline emergency numbers and introduce local operators
- Pipeline response basics
- Planning partners - pipeline operators, police, fire, ambulance hospitals, LEPC, and public officials





Everyone is needed for Safety

Questions?