From Turnaround to Teardown
The Balzac Gas Plant
Plant History

- 1961 – Plant startup - Petrogas Processing (28 owners) – Jefferson Lake Petrochemicals
- 1965 – Liquefied Petroleum Gas (LPG) unit added
- 1967 – Additional Gas Treating and Sulphur Recovery added
- 1974 – Inlet Compression (250 mmscfd raw gas capacity) added
- 1975 – Sulphreen Unit added to meet regulatory requirements
- 1987 – Areas Decommissioned – South Treating Train, West Sulphur Plant (125 mmscfd)
- 2001 – 2002 – Addition of Balzac Power Plant
- 2007 – 2008 – Two stage compression, Major Sulphur Plant work
- 2009 – South Sulphur Plant Mothballing, Parkway Drilling
- 2011 – Plant Closure, Shutdown and Decommissioning Begin
Plant History

Plant Production

- Plant has processed 2.4 TCF of raw gas since start-up 50 years ago
- Inlet volumes peaked in 1977 at 325 mmcf/d and had declined to 44 mmcf/d
Balzac Gas Plant Abandonment & Reclamation Program

- Ending the legacy of the Balzac Gas Plant in a responsible, safe and cost-effective manner
- Shutdown, Decommissioning, Demolition, Rerouting Projects, Base Pad Sale ....
- Additional Environmental Assessments will not begin at plant until 2013, remediation to follow
- Need to coordinate and liaise with multiple regulators
- Diverse activities on Balzac site and complex history to manage
Stakeholder Complexity

- Area Residents
- Land-Owners
- Developers
- Adjacent Industry (agriculture, power stations, industrial parks, etc.)
- Regulators
- Utilities
- Contractors (present & future)
- NGOs
- Area Sulphur Producers
Program Challenges

Partner Alignment

- Nexen is the operator and represents a number of partners
  - Nexen owns <50%
  - There are 13 working interest owners, including Nexen
    - 5 areas sharing various ownership
  - Increased complexity associated with decision making (need for mail ballots, the influence of multiple corporate cultures)
Regulatory Complexity

- ERCB
- Alberta Environment
- City of Calgary
- County of Rockyview
- Alberta Infrastructure
- Transport Canada
- Alberta Health Region
Program Challenges

ROW Conflicts

- Multiple ownership stakes involved BGS, BPS, pipeline units, third party piping & utilities
- Requires the severing and/or re-routing of some infrastructure
- Requires the renegotiation and approval of several agreements
- Impacts timing, potential land use and options available for project execution
Program Strategy

• Detailed Planning
• Shutdown / Decommissioning
• Decommissioning and Land Reclamation Amendment
• Asbestos Abatement
• Demolition Program
• Environmental Assessment
• Remediation / Reclamation
Program Timeline

- **Shutdown/Decommissioning**
  - Plan
  - Execute
  - Turnover

- **Salvage**
  - Turnover
  - Execute

- **Abatement**
  - Plan
  - Execute
  - Closeout

- **DLR**
  - Plan
  - Execute
  - Closeout

- **Demolition**
  - Plan
  - Execute
  - Closeout

- **Remediation**
  - Identify
  - Select
  - Define
  - Execute

- **Reclamation**
  - Identify
  - Select

**Represents Current Stage in Program**
Shutdown and Decommissioning Program

PROJECT SCOPE

Shutdown

• Shut in raw feeds and product outputs to / from plant

• Isolating, depressurizing, draining, cleaning and opening process systems

Decommissioning

• Isolation from all sources (gas, power, water, etc.)

• Catalog and selective removal of hazardous wastes

• Protecting equipment for salvage

• Bring all systems to zero energy state
Shutdown and Decommissioning Program
Shutdown and Decommissioning Program
Shutdown and Decommissioning Program
Shutdown and Decommissioning Program
Shutdown and Decommissioning

Equipment Salvage

• Salvage coordinator at the Balzac Gas Plant coordinating sale of equipment

• Very little interest in most items where there was perceived value

• To date, only major transaction is for the sale of LPG Bullets
Decommissioning and Land Reclamation Plan

DETAILS

• Our existing approval requires an amendment application to be submitted to Alberta Environment no later than 6 months following plant closure

• Ongoing regulatory engagement critical to timely receipt

• Full-Scale demolition activities restricted until approval amendment is approved

• Nexen is working with Alberta Environment to separate demolition from the remediation and reclamation activities
Asbestos Abatement Program

PROJECT SCOPE

• Abatement of all Asbestos and Synthetic Vitreous Fiber Insulation
  • Estimated 5000 m³ of Asbestos waste
  • Out of scope: internals of process equipment, towers or any other portion of the facility that requires demolition for access
• Transportation of materials to an approved landfill facility
• 3rd Party Environmental Contractor to monitor exposure, site waste management and work practices

Expected Start Date: 2013
Asbestos Abatement Program

MAJOR CONTRACT DEVELOPMENT

• Selected 3rd Party Environmental Consultants to complete survey of hazardous materials / insulation in plant and develop job specification

• Plot plans provided to ensure Contractor will be aware of what utilities are available and where they are located on site

• Comprehensive Lump Sum
  • Contractor Temporary Facilities
  • Asbestos Removal
  • Hazardous Waste Management
  • Transportation to Landfill
Plant Demolition

PROJECT SCOPE

• Structural removal of all buildings, vessels, piping, equipment, etc.
• Removal of any remaining HazMat
• Scrap Metal Recycling
• Proper disposal of waste materials
• Out of Scope: Foundations, Buried Pipe and Vessels, Power Station Equipment

Expected Start Date: 2013
PROJECT SCOPE

• A Detailed site assessment will be completed following the demolition of the gas plant
  • Characterize known waste streams
  • Develop efficient waste strategy
• Potential to combine contaminated soil volumes from field
• Pre-Shutdown remediation activities will be aligned with an overall site remediation and waste management strategy
Sulphur & sulphates

Acidification, soluble metals and salts in groundwater

Salts from produced water & fluids

Heavy metals (catalysts)? Asbestos? Glycol? Amines? PCBs?

Hydrocarbons (condensate, lean oil, engine oil, solvents)

Landfill with construction & operating wastes

Wagon Wheel Industrial Park

Walton
Plant Remediation and Reclamation

SULPHUR BASEPAD REMOVAL

Estimated 90,000 tonnes of marketable off-spec sulphur

Off-Spec material to be bagged

Higher purity material (99%+) to be bagged or sent for re-melt

Goal: To Minimize Volumes that have to be sent to landfill
Balzac Gas Plant ..... Next Steps

• Completion of Decommissioning and project handover
• Tender Evaluation and Award for Abatement Program
• Continued Scope Development for Demolition Program