Beaverlodge – Mine Closure
Current Challenges and Opportunities

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Agenda

- Location/history
- Original decommissioning plan
- Transition phase
- Institutional control program
- Cameco’s Beaverlodge – management framework
- Conclusions
Beaverlodge

- Uranium City est. 1953 to support mining in the area
- Uranium City is about 825 km NW of Saskatoon
- Beaverlodge mill located about 8 km from Uranium City
Beaverlodge History

- Mining and milling
  - 1952 mill construction
  - Low-grade ore (by today’s standard)
  - 20 million kg of yellowcake
  - Mill closure in 1982

- Environment
  - No effluent treatment until mid-1970s
  - Tailings disposed into small lakes without treatment
Beaverlodge History

- Decommissioning and reclamation
  - 1982 to 1985
  - Approved by regulators of the day
Beaverlodge History

- Transition phase monitoring
  - 1985 to present
- Cameco management
  - 1988 to present
- Institutional control program
Beaverlodge Decommissioning Plan

- First uranium operation with approved decommissioning plan
- Developed with regulatory agencies
- Focus of activities was ensuring public and environmental safety
- Based on good engineering practice
Beaverlodge Decommissioning Plan

- Close-out requirements and objectives established
  - Radiation doses to humans to follow ALARA principle
  - Contaminant loadings less than during operation
  - Environmental objectives applied at four stations
- Radiation objectives met
- Loading requirement met
- Long-term environmental recovery predicted
Beaverlodge Transition Phase

- Currently in 29th year
- Originally expected to last for 10 years
- Challenge maintaining knowledge base
- No formal “exit agreement” built into original plan
Beaverlodge Transition Phase

- Changing criteria
  - Lower levels of U
  - Addition of Se as COPC
- Expanded expectations
Beaverlodge
Institutional Control Development

- Saskatchewan IC program
  - 2007 implemented Act & Regulations
- Provides financial assurance
- Ensures long-term monitoring
- Provides clarity of expectations
- Cameco tests program
  - 5 satellite properties transferred
Beaverlodge Management Framework

1. Assess Information Base
2. Information satisfactory?
3. Studies
4. Assess current risk
5. Risk acceptable?
6. Identify and assess reasonable engineered mitigation options
7. Benefit/cost assessment?
8. Implement and monitor
9. Achieved performance objectives?
10. Administrative risk mitigation options
11. Application for site specific release - CNSC - Province
12. IC Program
Beaverlodge Summary

• Challenges
  – Transfer of knowledge
  – changing criteria
  – expanding government and stakeholder expectations

• Opportunities
  – Development of Management Framework
  – Development of Institutional Control Program
Beaverlodge Conclusions

- Plan developed and implemented in 1980s
- Original plan had no “exit agreement” in place
- 29 years of monitoring
- Must assess risk using current acceptability
- IC program has been developed (seen as the “exit agreement” that was missing in the plan 29 years ago)
- Beaverlodge management framework is the plan for getting properties assessed, remediated (if required), monitored then moved to IC.
• Thank you!