Round Table Discussion 1: Health and Safety

National Commission on Energy Policy
Coal Study Kickoff Meeting
Capitol Hill Hyatt
Washington, DC

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Different Roles

Scientists & engineers manipulate formula to match the real world

Policymakers manipulate the real world to match formula

*Therefore:*

- Great care required in formula generation
Developing the Formula

• Acknowledge that
  – Risk is inherent in all operations
  – Risk can be controlled

• Determine
  – What can go wrong?
  – What is the range of magnitude of adverse consequences?
  – What can be done and what it requires to reduce risk of unacceptable hazards?

• Define risk management approaches
Hazard vs. Risk

A condition with the potential to cause personal injury or death, property damage or operational degradation.

An expression of possible loss in terms of severity and probability.
Risk Assessment

<table>
<thead>
<tr>
<th>SEVERITY of HAZARD</th>
<th>LIKELIHOOD of OCCURRENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 LOW, 2 LOW, 3 MED</td>
</tr>
<tr>
<td>2</td>
<td>2 LOW, 4 MED, 6 HIGH</td>
</tr>
<tr>
<td>3</td>
<td>3 MED, 6 HIGH, 9 HIGH</td>
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</tbody>
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Sources of Risk

- Organizational Factors
- External Events, Acts of Nature
- Human Error
- Hardware

West Virginia has been climbing a rocky mountain for almost two years.

Increasing degree of complexity
View From the Mountaintop

• Everybody wanted to do something
  – Aids to escape
  – Emergency air
  – Communications & tracking
  – Shelters

• Next more thought about hazards & risks
  – Focus on prevention not reaction
  – Descriptive rather than prescriptive
  – Workable solutions
At the Load Out

- **Aids to escape**
  - Lifelines installed
  - Added maintenance in escapeways

- **Emergency air**
  - SCSR ordered and being installed
  - Added equipment tracking & inspections

- **Communication & tracking**
  - Additional equipment approvals & plans
  - Added equipment and maintenance
  - Productivity enhancement

- **Shelters**
  - Deliveries expected in Sept through mid 2008
  - Added equipment, maintenance and belt move work
On the Shuttle Car

- Seals
  - Potential operational changes
- Belt Air
  - Potential operational changes
- Lightening protection
  - Potential equipment & operational changes
- Mine rescue teams
  - Potential operational changes
At the Face

- Training
- Proximity Detection
- Roof Control
- Monitoring
- Fire detection and response
- Advanced mine rescue tools
- Dust monitoring and control
- Alternative emergency breathing options
- Seal inspection and monitoring
7 Deadly Risk Management Sins

- “We’re fine the way we are”
- Assuming it is someone else’s job
- Assessing risks too late
- Not doing your homework
- Getting bogged down with trivia
- Being dazzled by numbers
- Not translating into workable solutions