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H Canyon Improvement Initiatives

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SRS Citizens Advisory Board

Augusta, GA

H Canyon Performance

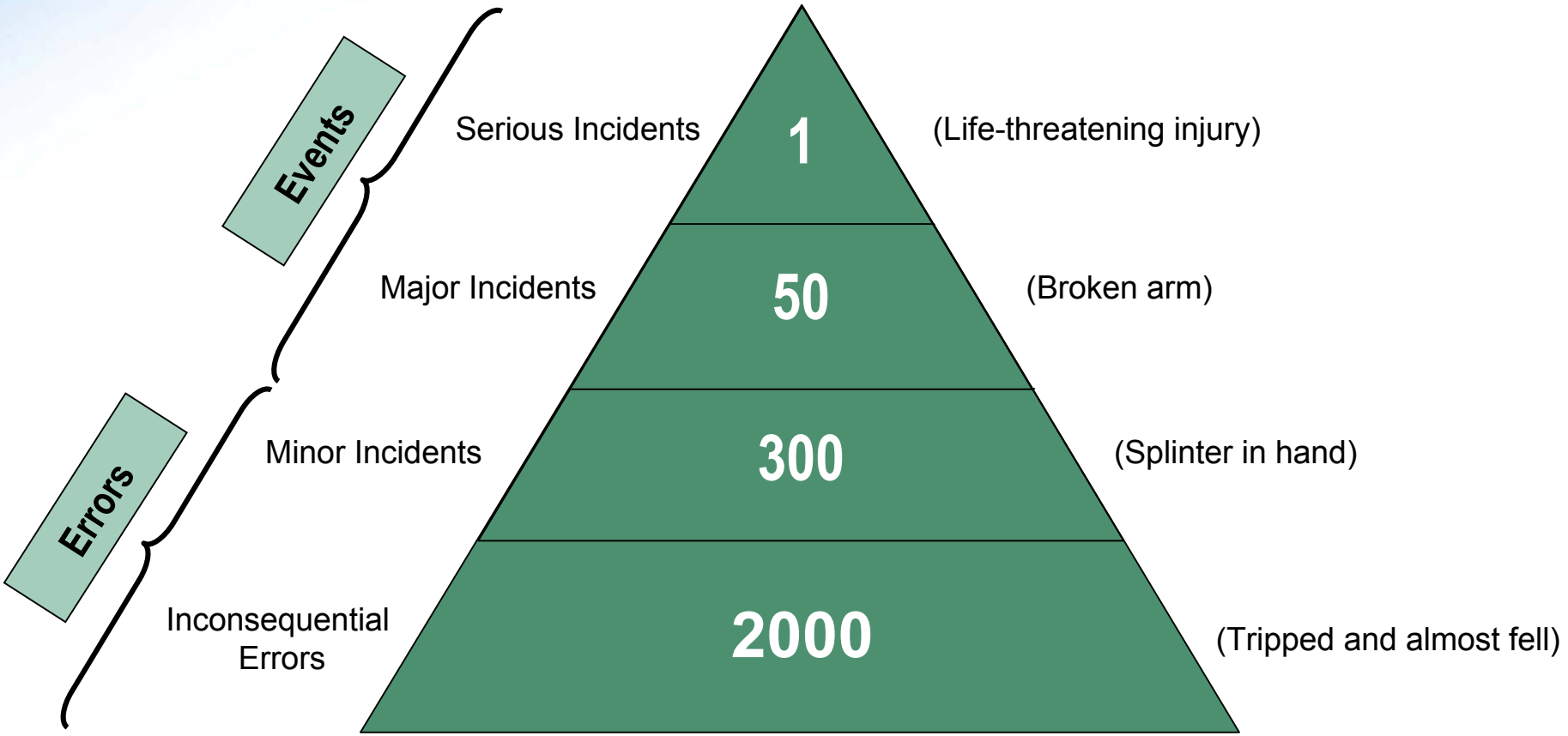
- **2009 operational events and errors**
  - Occurrence Reporting and Processing System (ORPS)
  - Error and event analysis
  - Path forward
- **The past six years…**
  - Safety / discipline in operations
  - Cost
  - Throughput
- **Conclusions**

Occurrence Reporting and Processing System

Events and errors

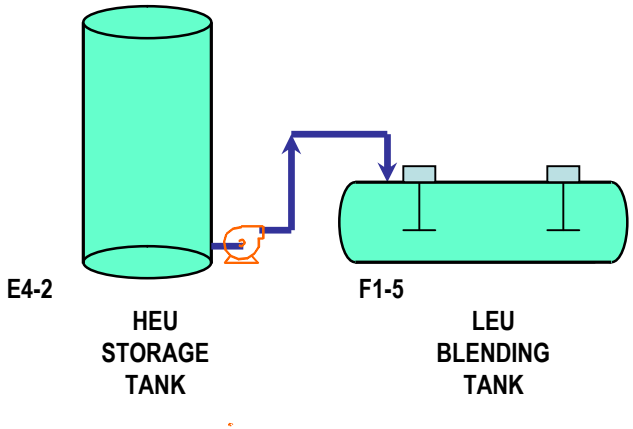
- **ORPS criteria: Our performance frame of reference**
  - Established by DOE - HQ
  - An actual unsafe condition or adverse affect on safety
  - Six abnormal operational issues this year
  - Conservative reporting of ORPS events
- **Events: Defined by ORPS criteria**
  - Require formal investigation and reporting
- **Errors: Lower tier problems**
  - Also investigated to learn from

Incident Severity Triangle – Performance Improvement



2009 H Canyon Events and Errors

- **February: Transfer of cold chemical to wrong tank**
  - Operators transferred nitrate to high activity waste tank
- **May: Rainwater transfer by misaligned valve**
  - Procedure not utilized to properly align discharge valves
- **June: Over-batch of blend tank**
  - Procedure did not promptly close block valve allowing gravity transfer once pump stopped



2009 H Canyon Events and Errors

- **June: Shoe contamination**
  - Found low level legacy contamination on auditor's shoe
- **August: Charge bundles disengaged from crane hook**
  - Guide caps had unacceptable protrusions due to less than adequate fabrication quality
- **September: Personnel contamination in truck well**
  - Construction worker traveled outside briefed work area
  - Radiological boundaries/postings violated

Common Cause Analysis

Event / Error	Engineered Controls		Human Performance			
	Procedure Quality	Equipment Problem	Procedure Compliance	Abnormal Event Response	Work Outside Defined Scope	Radiological
Transfer of chemical to wrong tank			X			
Rainwater transfer by misaligned valve			X			
Over-batch of blend tank	X					
Shoe contamination						X
Charge bundles disengaged from crane hook		X		X		
Personnel contamination in Truckwell					X	X

Response to Errors & Events

1. **Fact finding performed for each error/event to determine causes**
2. **Specific corrective actions implemented**
   - Improve systems and processes
   - Improve human performance
     - Error prevention tools
     - High level of personal accountability
3. **Errors/events reviewed for common causes**
4. **Long-term Conduct of Operations Improvement Plan**

ConOps Improvement Plan

- **Senior management field presence**
  1. Vacant positions filled
  2. Periodic Senior Supervisory Watch (SSW)
  3. Monthly senior management field observation
- **Shift management roles & responsibilities**
  1. Crew management rotated for “fresh eyes”
  2. Periodic feedback meetings with crew management
  3. Field observations performed by crew management
  4. Institute of Nuclear Power Operations (INPO) training for first line managers

ConOps Improvement Plan

- **Shift crew involvement & accountability**
  1. All-Hands Refocus sessions
  2. Field observations performed by work crews to identify opportunities for improvement
  3. Level of Knowledge exam for managers/workers
  4. Team training in simulator environment to reinforce fundamentals
  5. New hires to combat complacency
- **Improved verification techniques for critical tasks**
  1. Automated procedural calculation tools
  2. Automated download of sample data
  3. Benchmark verification techniques utilized by INPO

H Canyon ORPS Events

Equipment failure, legacy problems, personnel errors

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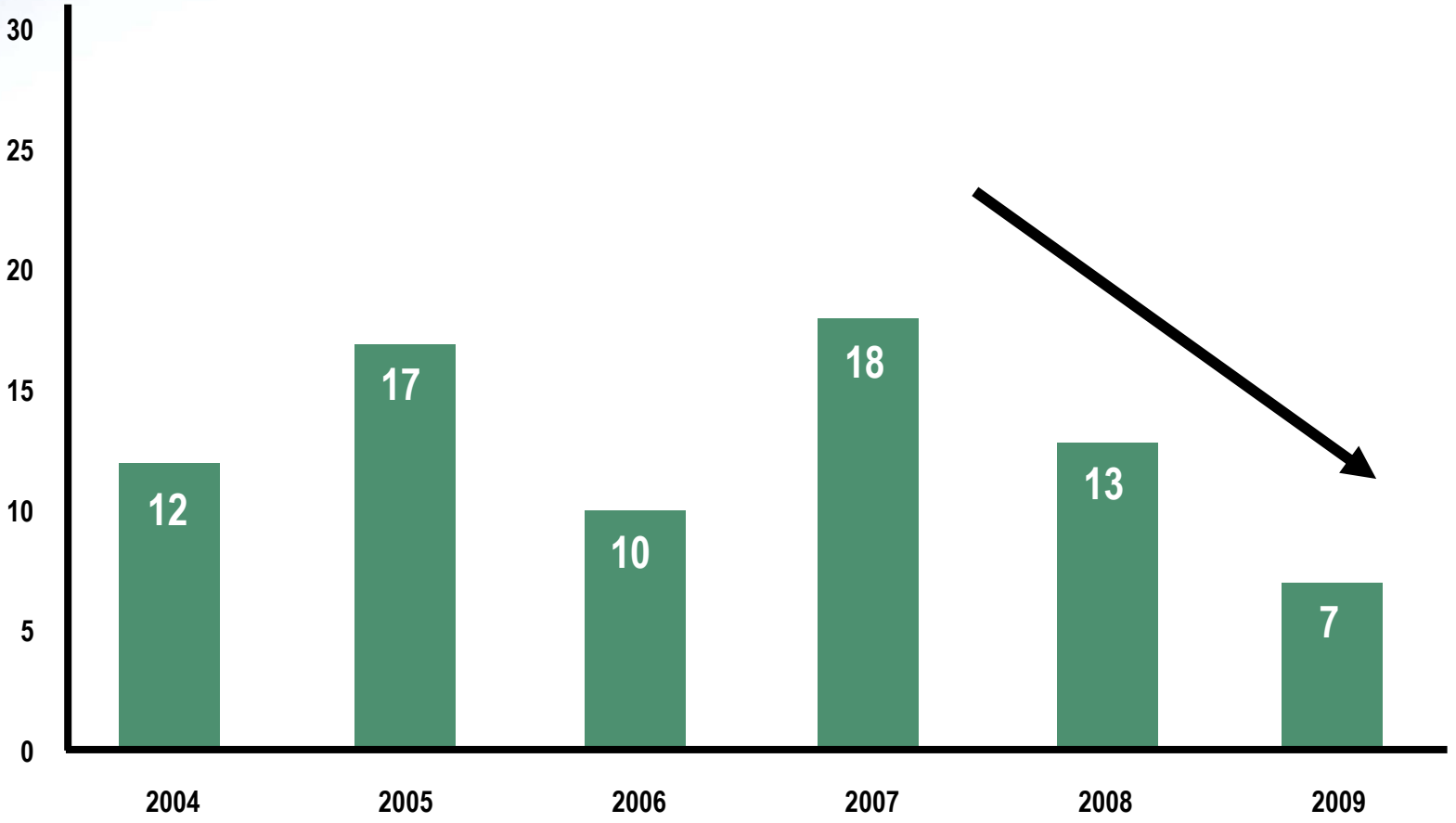
H Canyon ORPS Events

Legacy problems, personnel errors



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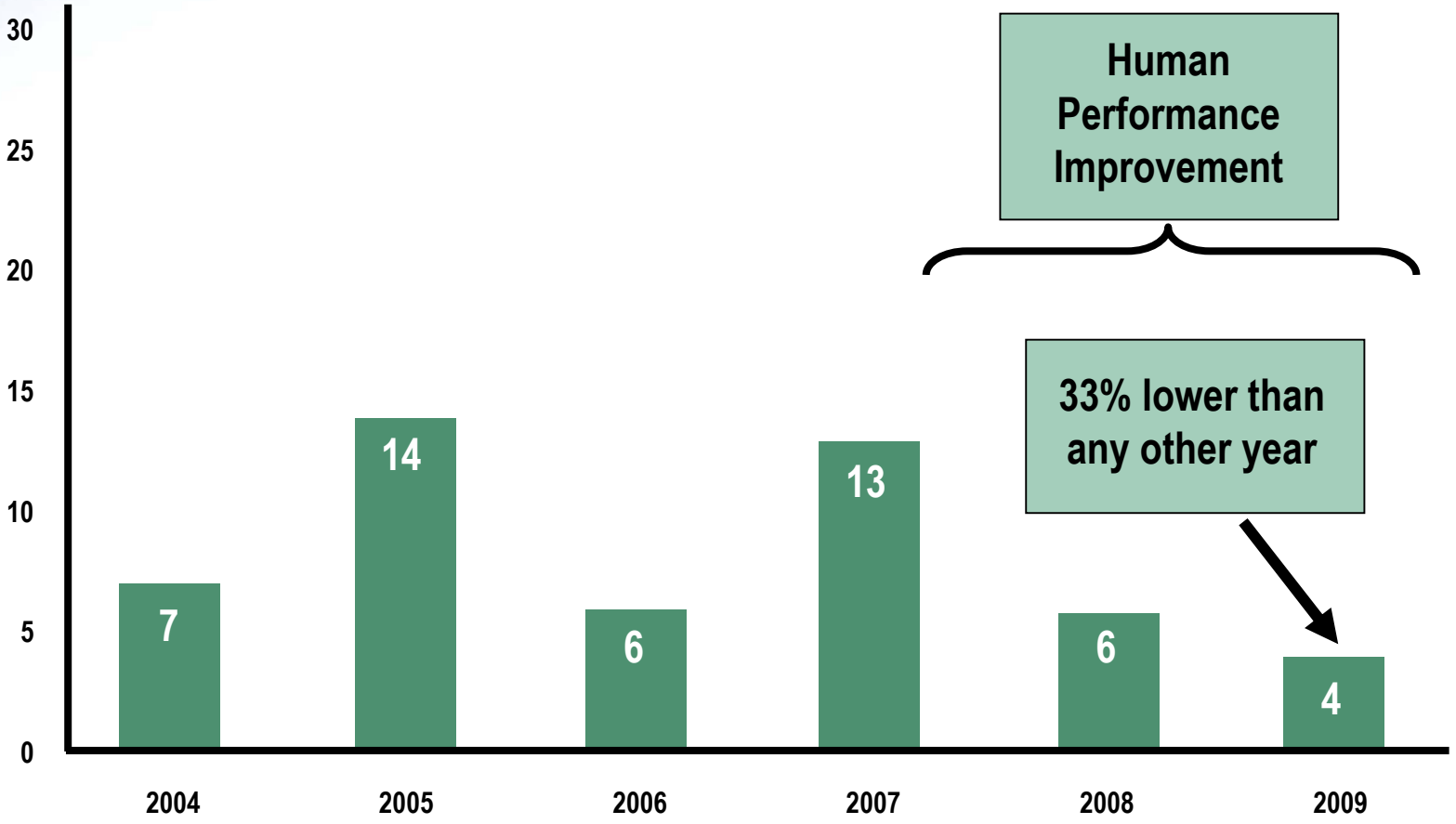
H Canyon ORPS Events

Personnel errors



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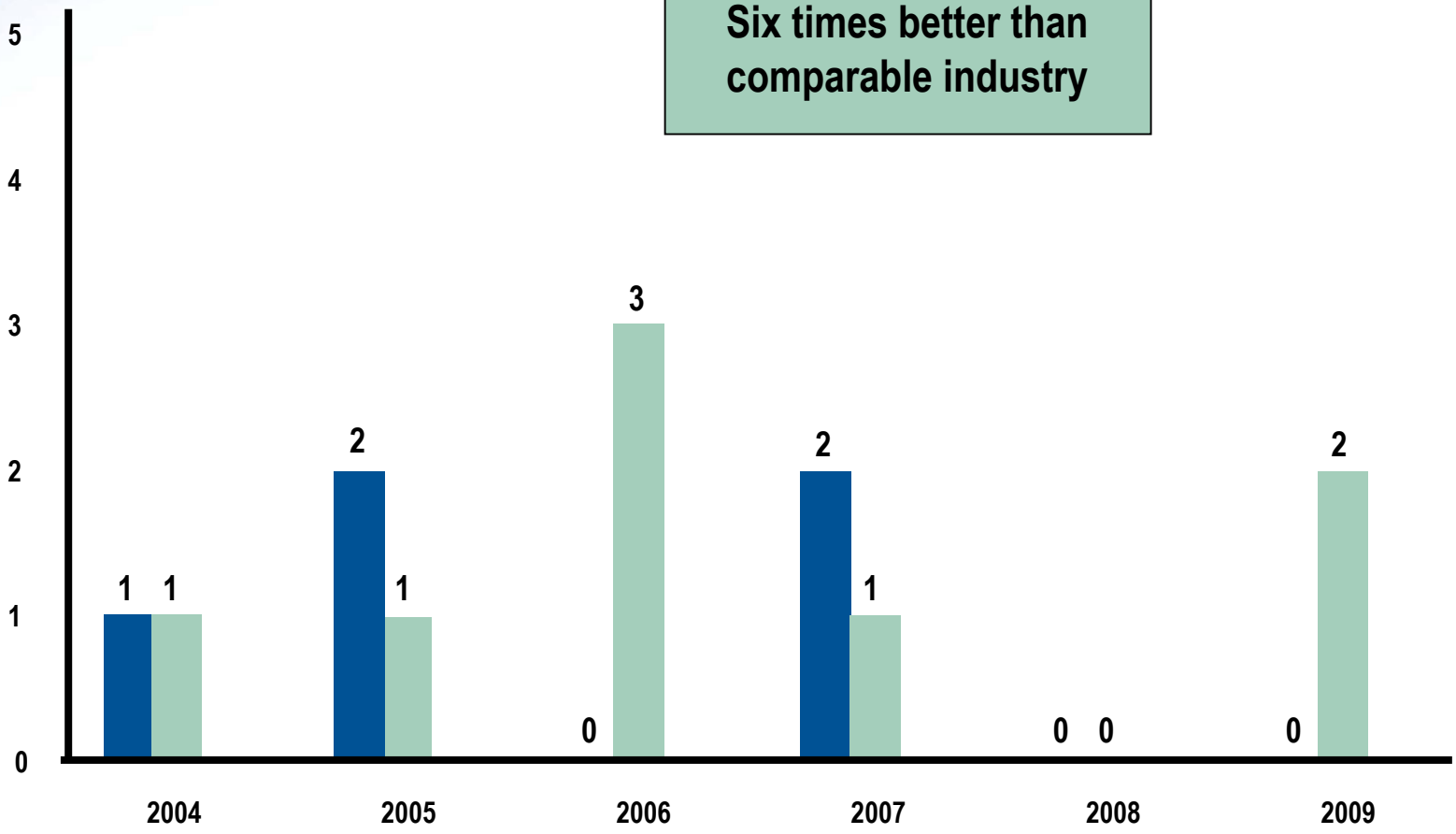
H Area Performance

Injuries per year

Six times better than comparable industry



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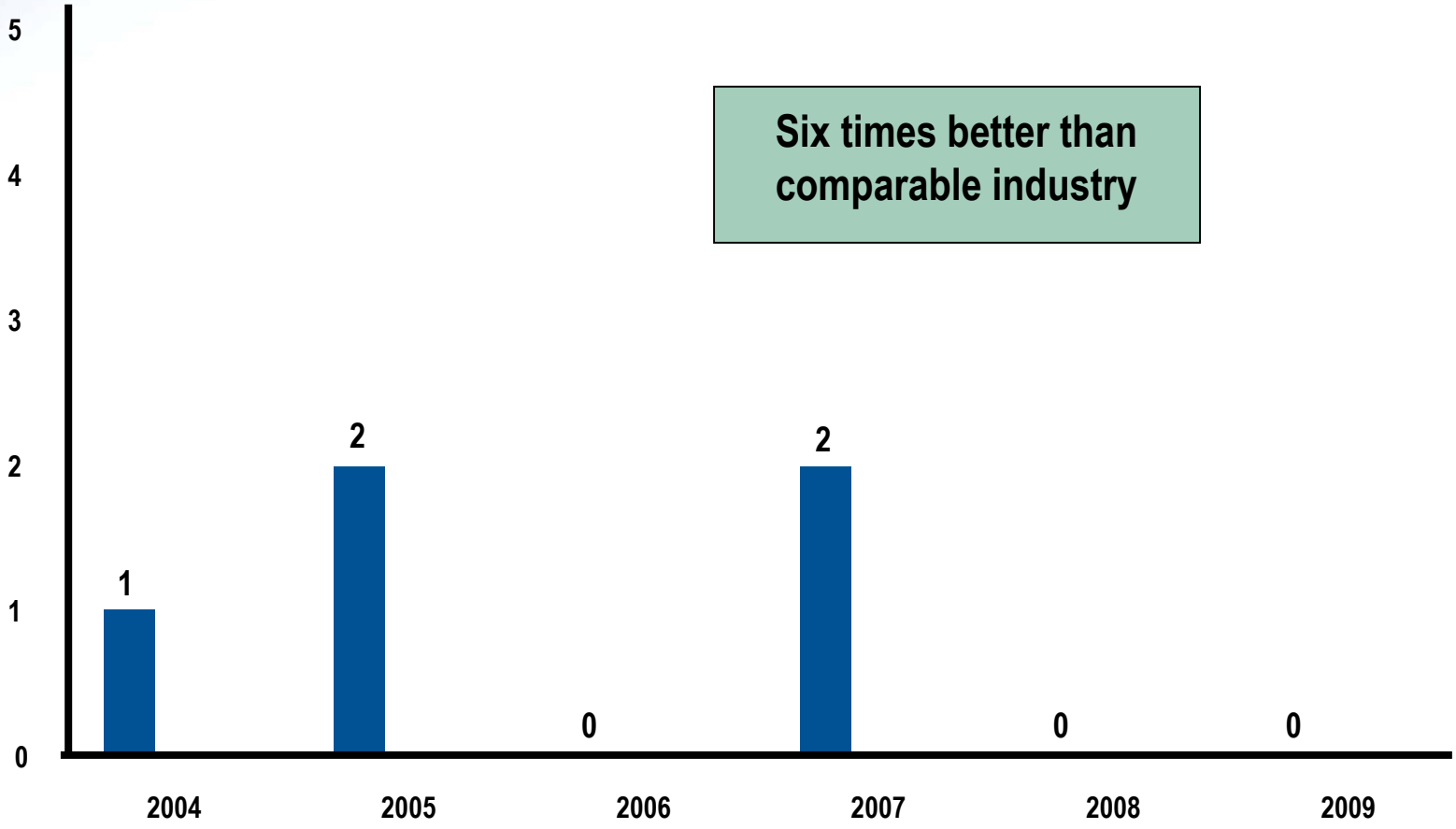
H Area Performance

Injuries per year



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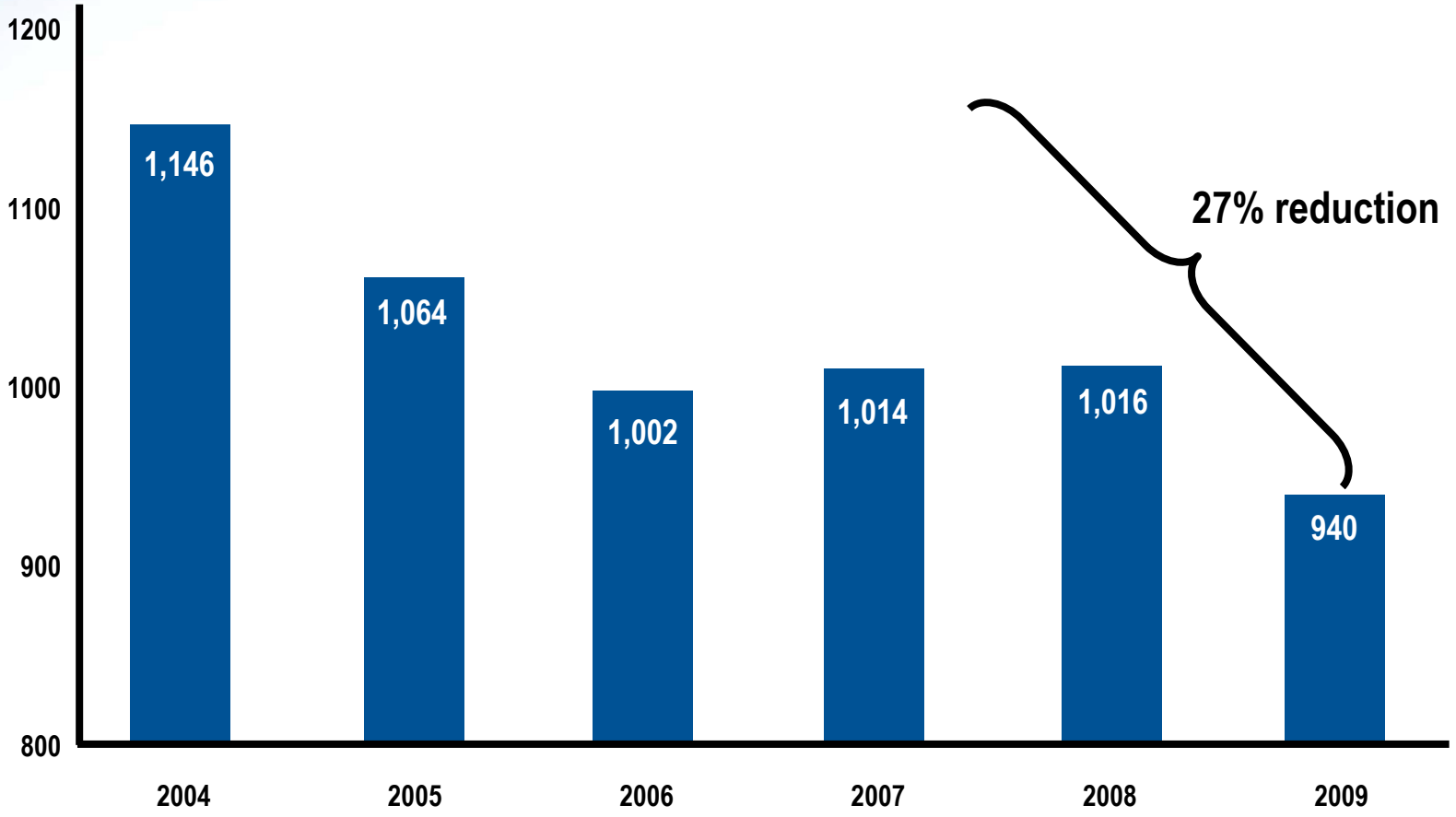
H Area Performance

Workforce levels - Costs



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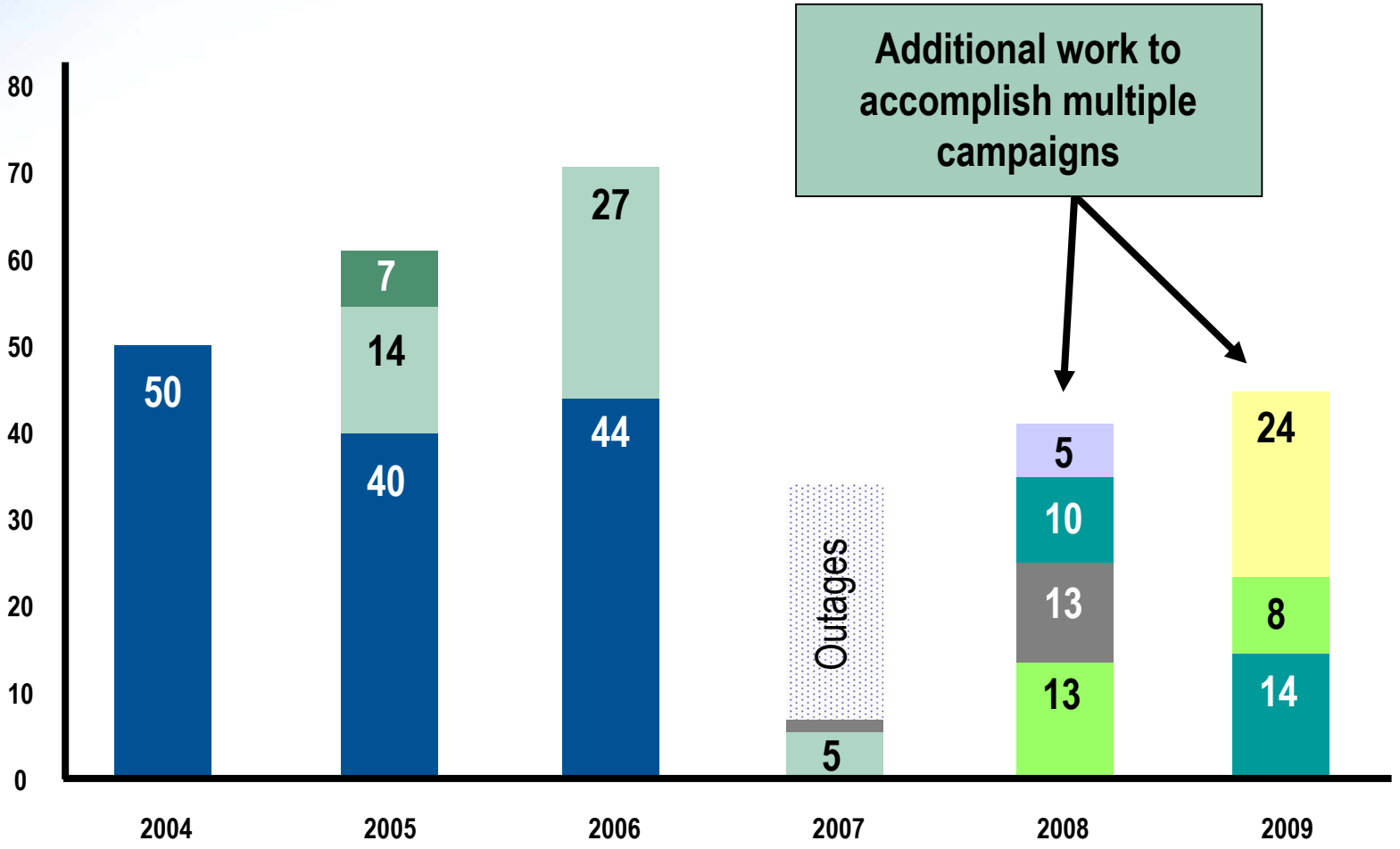
H Area Performance

Number of dissolutions



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H Canyon Improvement Initiatives

- **2009 – Moving in the right direction**
  - Improving safety / discipline in operations
  - Improving cost
  - Improving throughput
- **2010 – Further enhance safety culture through ISM**
  - Human Performance Improvement (HPI)
    - Process improvements (automation and benchmarking)
    - Personnel performance improvements (workers and managers)
  - High Reliability Organization (HRO)

Acronyms

ORPS: Occurrence Reporting and Processing System

SSW: Senior Supervisory Watch

INPO: Institute of Nuclear Power Operations

ISM: Integrated Safety Management

HPI: Human Performance Improvement

HRO: High Reliability Organization