



RIC 2010 The Future of the ROP

Double Down, Pivot and Blindside: The Dynamic Future of the ROP



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March 11, 2010



Discussion Topics

- **Double Down – Which parts of the ROP need reinforcement?** NRC Value: **Commitment** to, public health and safety, security and the environment... we are dedicated, diligent, **vigilant**...
- **Pivot – Are there points in the ROP where we need to make a turn?** NRC Value: **Excellence**...in our individual and collective actions ...we are high quality, **continuously improving, self-aware**...
- **Blindside – Are there features of the ROP that could lead to unexpected outcomes?** NRC Value: **Service** ...to the public, and others who are affected by our work...we are **responsive, accountable, proactive**...

Current State

- ROP is working – issues resolved satisfactorily
- Resolution of the Green issues is a question
 - Number of Green findings continues to increase (~500 in '01 to ~700 in '09)
 - Number of Green findings rooted in corrective action continues to increase (~175 in '01 to ~300 in '09)
 - High number of Green issues related to Mitigating System Performance (~425 in '09)
 - Increasing trend of “initiating event” findings (~50 in '01 to ~175 in '09)
- Most greater-than-Green Findings are identified through non-baseline inspections (~2x)

Current State (cont'd)

- Safety Culture issue remains uncertain
 - Most changes in the Action Matrix are not preceded by a Substantive Crosscutting finding (~3x)
 - Data does not support a direct correlation between Substantive Crosscutting Issues being identified before a performance decline occurs
 - Most White findings do not have an associated Crosscutting aspect (~2x)
 - Cross Cutting aspects are not weighted by cultural significance
 - Beyond a common terminology what are the roles and responsibilities of regulator and licensee?

Current State (cont'd)

- Human Performance has improved over the last 10 years – but errors remain¹ high
 - Work Factors remain the dominate root cause
- Most risk significant components have been inspected
- Safety System performance is strong
- Each change in a Performance Indicator has led to plant changes, e.g., creation of MSPI

¹ As measured by LER's and NRC Inspection Findings - ~7000 errors in '01 to ~3800 in '09-
~50% are work factors

Changing Environmental Conditions

- Longer operating cycles
- Hotter operating cycles (upgrades)
- Equipment obsolescence
- Changing Workforces
- Digital Equipment
- Cyber threats
- High Levels of Safety System performance
- NRC's Strategic Plan
- Unknown-Unknowns
- New Reactors

} Double Bathtub
Curve

Double Down

- Preoccupation with Safety
 - Non baseline inspections are identifying most of the risk significant findings – what are the implications?
 - Sensitivity to Operations – continued substantial number of low risk events each year

Double Down (cont'd)

- Transparency
 - Enhanced public observation?
 - Reactive Inspection Exits
 - Elements of the Assessment process
 - Corrective Actions related to public confidence issues
- Latent Conditions
 - Human Performance – Where is the improvement?
 - Green Findings – What are we learning?

“Green” Conditions are Unacceptable



Pivot

- Inspection Credit for Self-Assessment?
- Action Matrix
 - Communications engagement at earlier points to prevent crossing thresholds?
- Traditional Enforcement Considerations for Green corrective action findings?
- Safety Culture
 - Beyond a common terminology
 - Industry Initiatives
 - Relative ranking of safety culture aspects?

Pivot (cont'd)

- Performance Indicator changes?
- New & existing fleet: Site Specific Thresholds for findings based upon incremental CDF changes?
- Integrate the clues – is our assessment program working?
- Are we using OpE effectively to guide the inspection program?

Blindside

- Unknown-Unknowns
 - Non-modeled PRA events
 - Passive Features
 - Public Confidence issues
 - Insights from externals e.g., internationals, other industries
 - Long term plant health considerations?

Summary

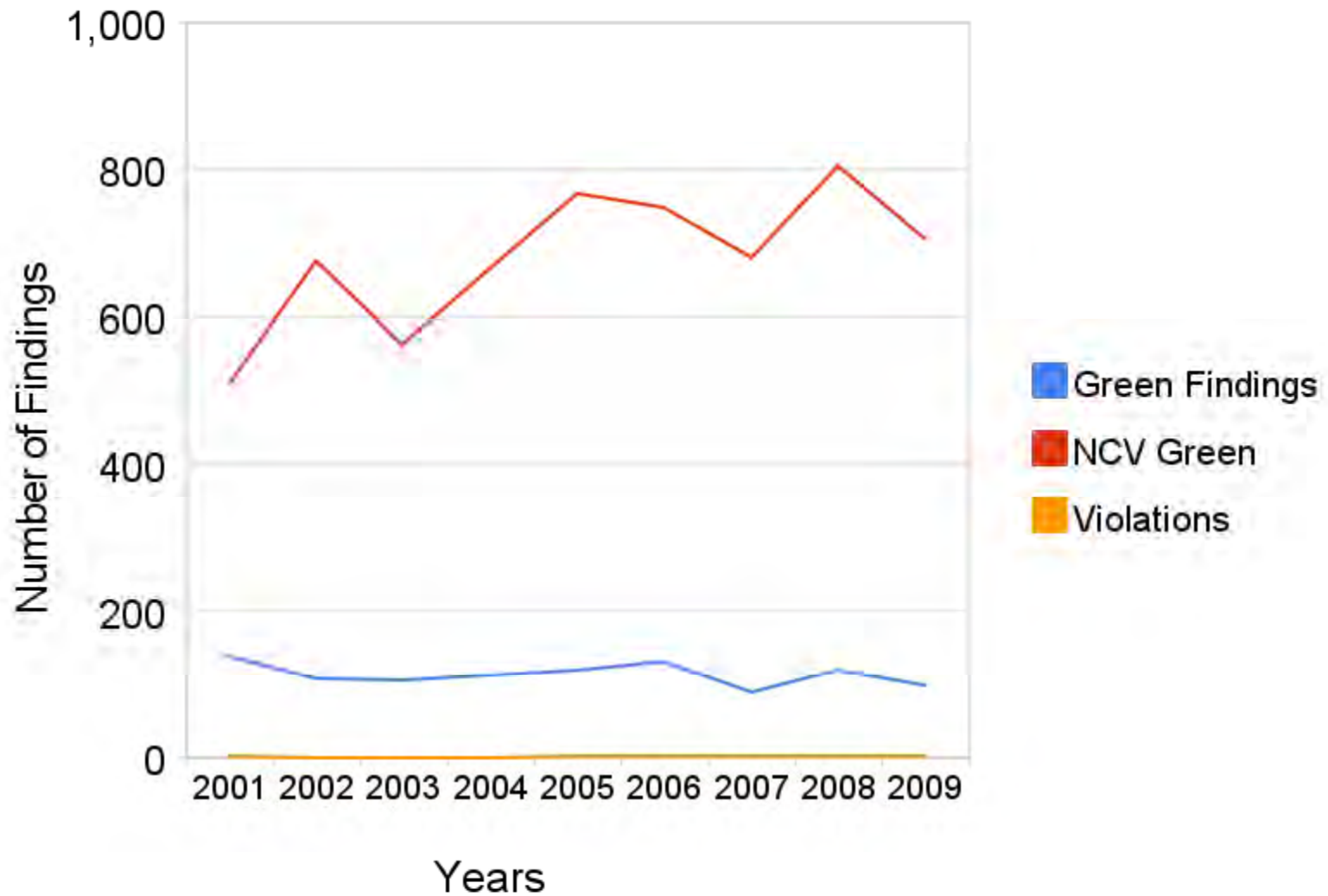
- The ROP is working – Safety & Operational Focus
- Gain clarity on the number of Green findings and underlying corrective action resolutions
- Understand the implication of Reactive v. Baseline inspections identifying risk significant issues
- Optimization of safety culture oversight
- Improve industry human performance
- Acknowledge changing environmental conditions

SUMMARY (cont'd)

- Enhance Transparency
- Reconsider Performance Indicators
- Accommodate new reactor oversight
- Consider self-assessment credit
- Confirm the best sequence of communications in the Action Matrix
- Scrutinize performance assessment (End/Mid Cycles)
- Look at The Dark Side of the Moon – unknown-unknowns

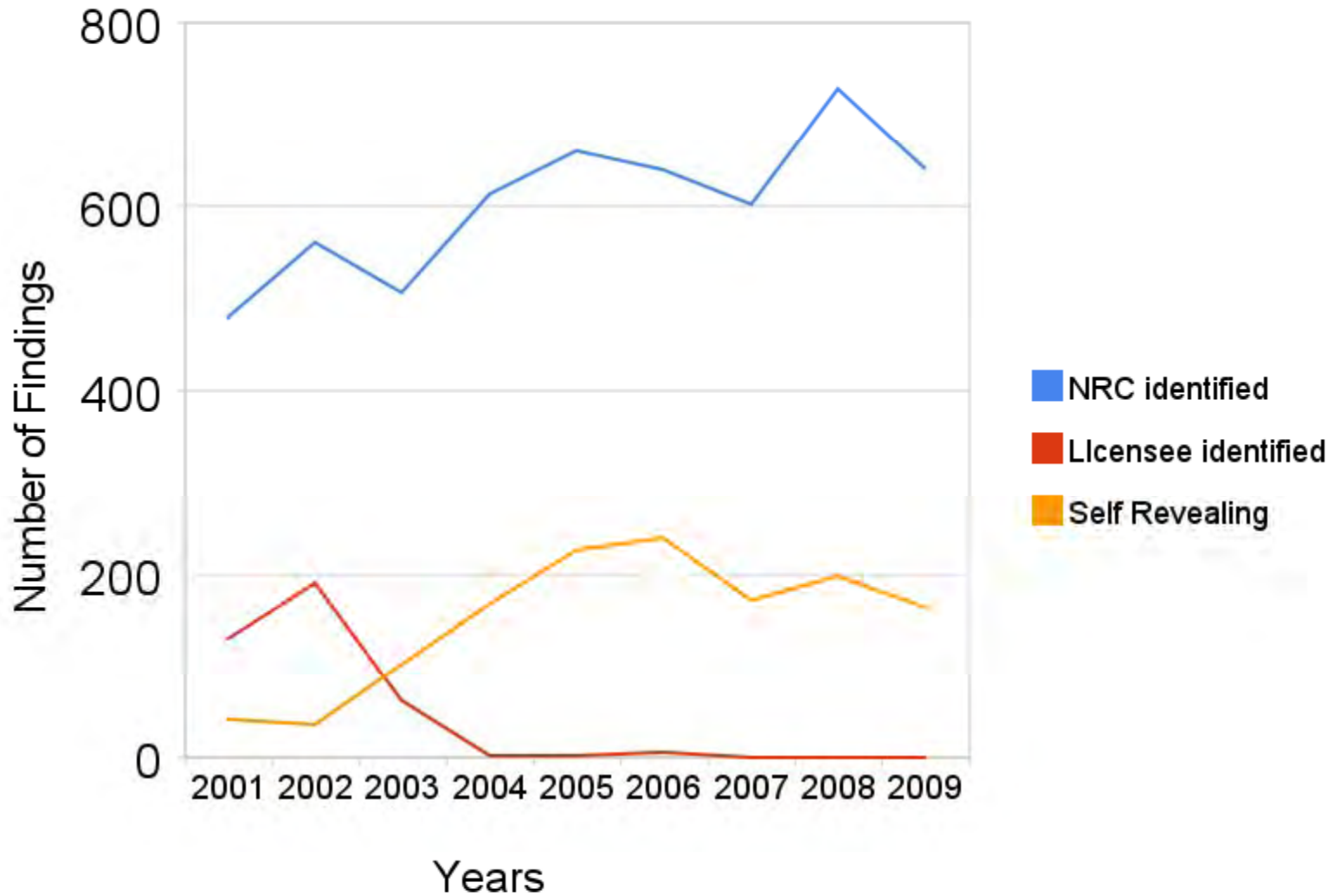
Backup Slides

Green NCV's/Findings



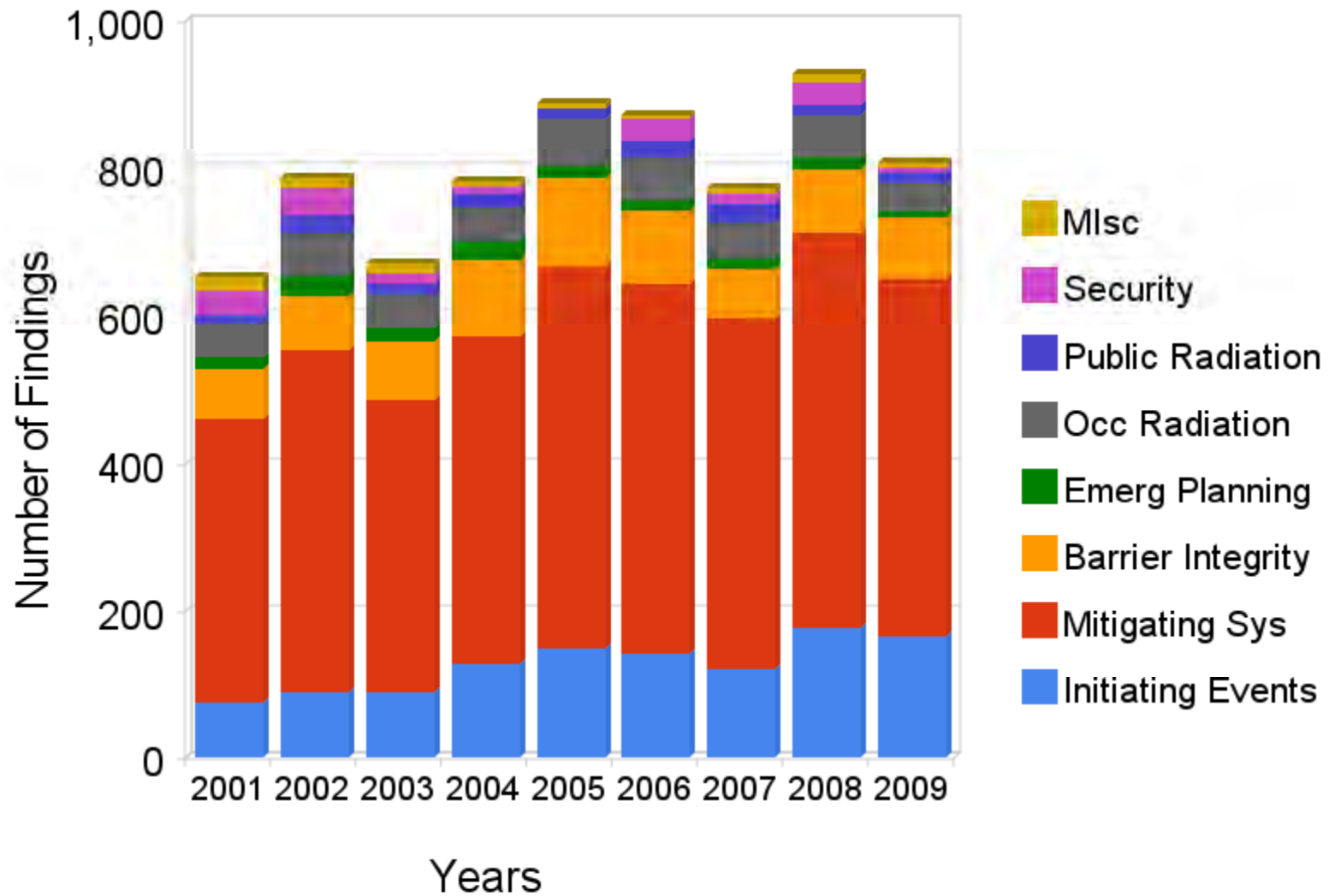
Source: NRC Dynamic Webpage

Green Findings/NCV's by Discovery



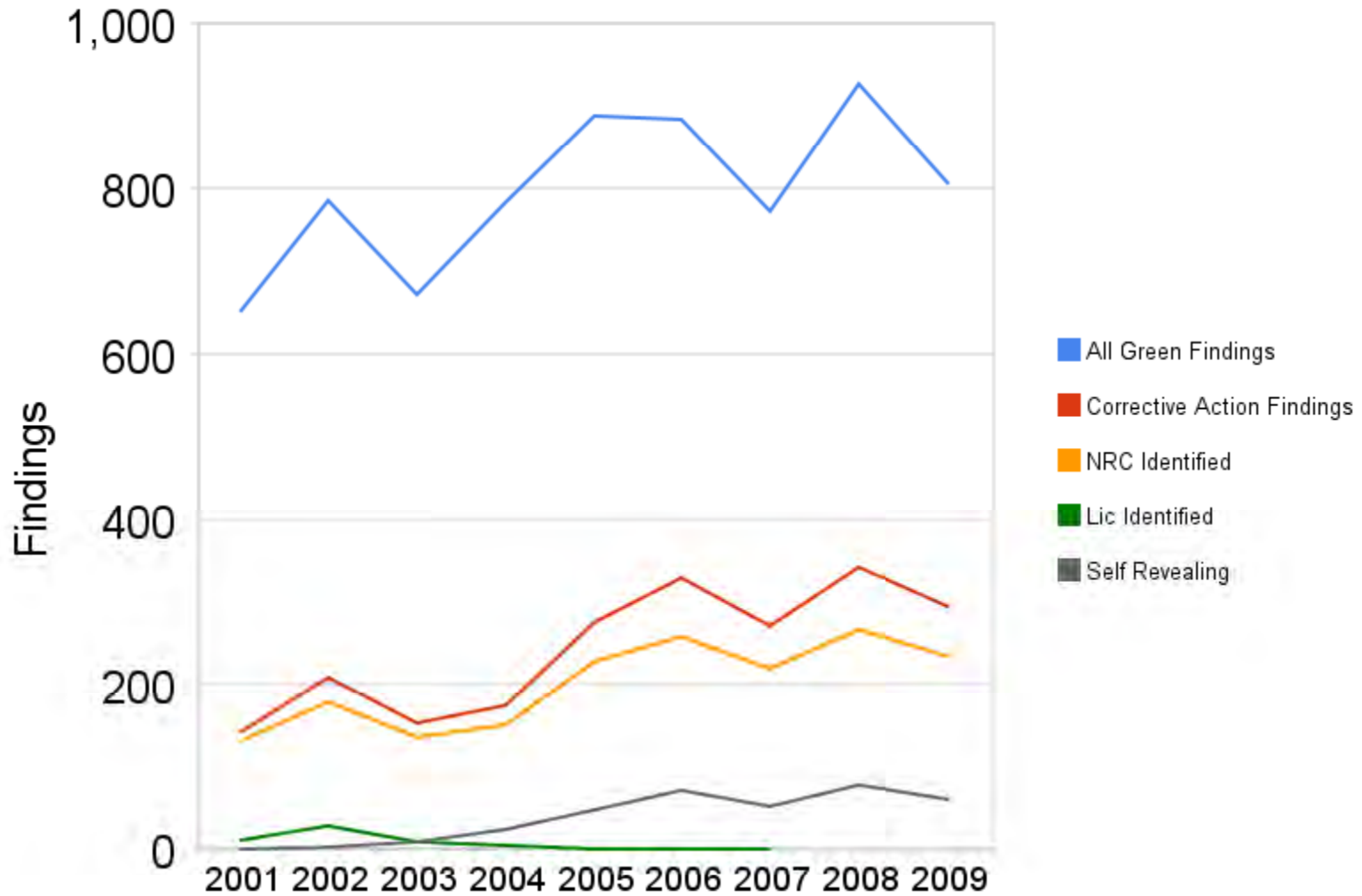
Source: NRC Dynamic Webpage

Green Findings/NCV's by Cornerstone



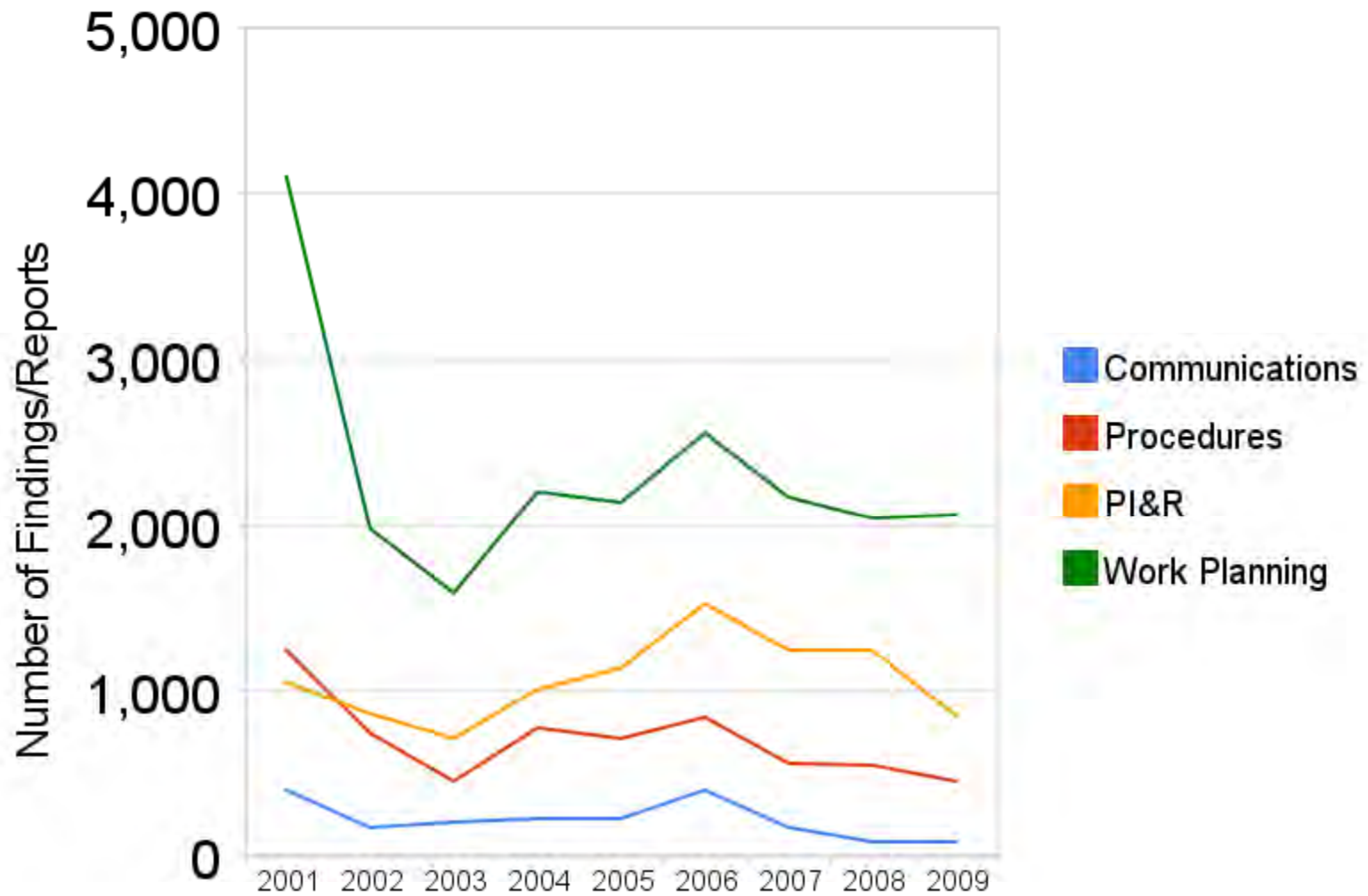
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Green Issues Involving Corrective Actions



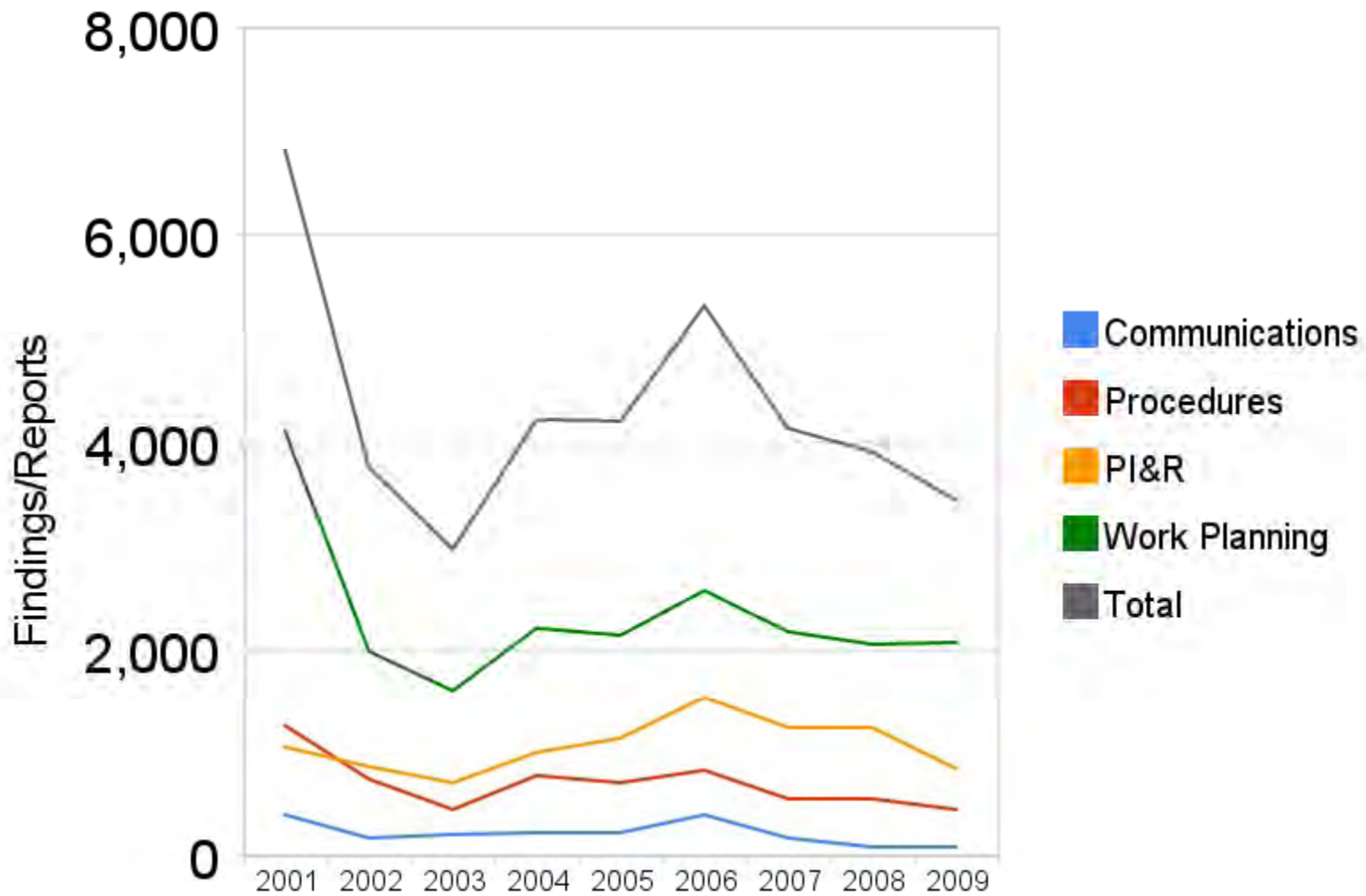
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Human Error Root Causes



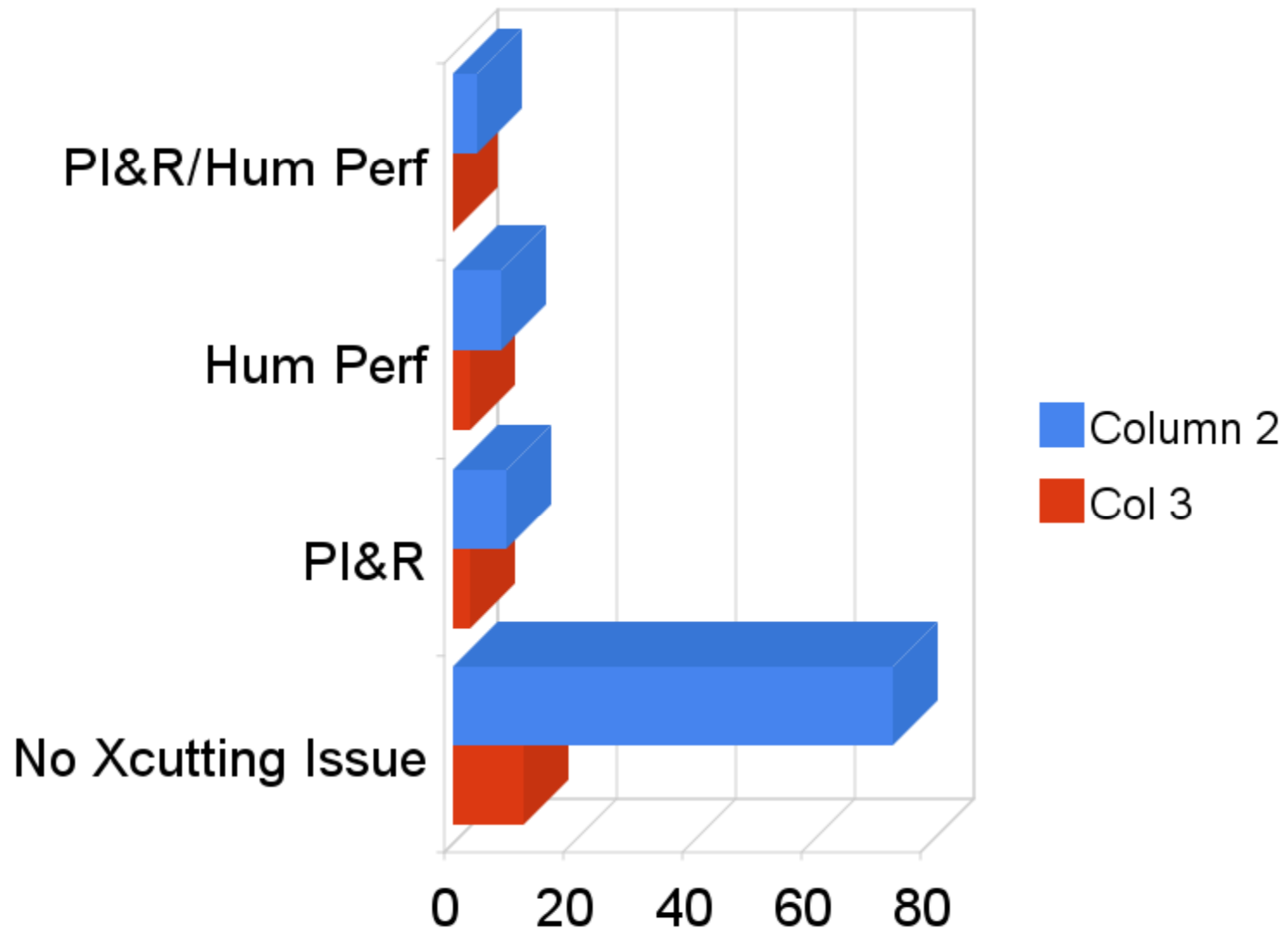
Source: NRC Human Factors Information System

Human Performance Root Causes



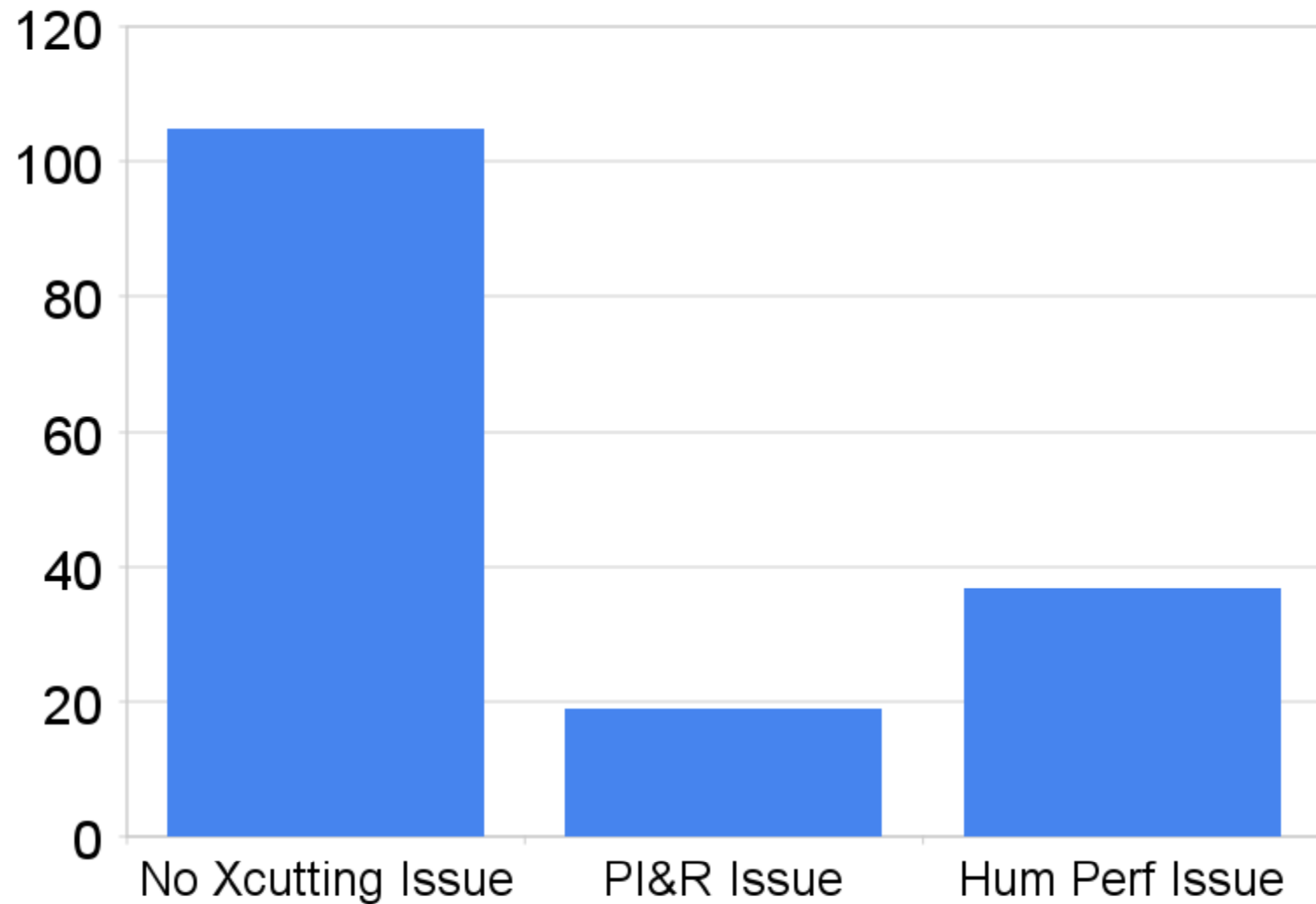
Source: NRC Human Factors Information System

Substantive Cross Cutting Issues Preceding Action Matrix Change



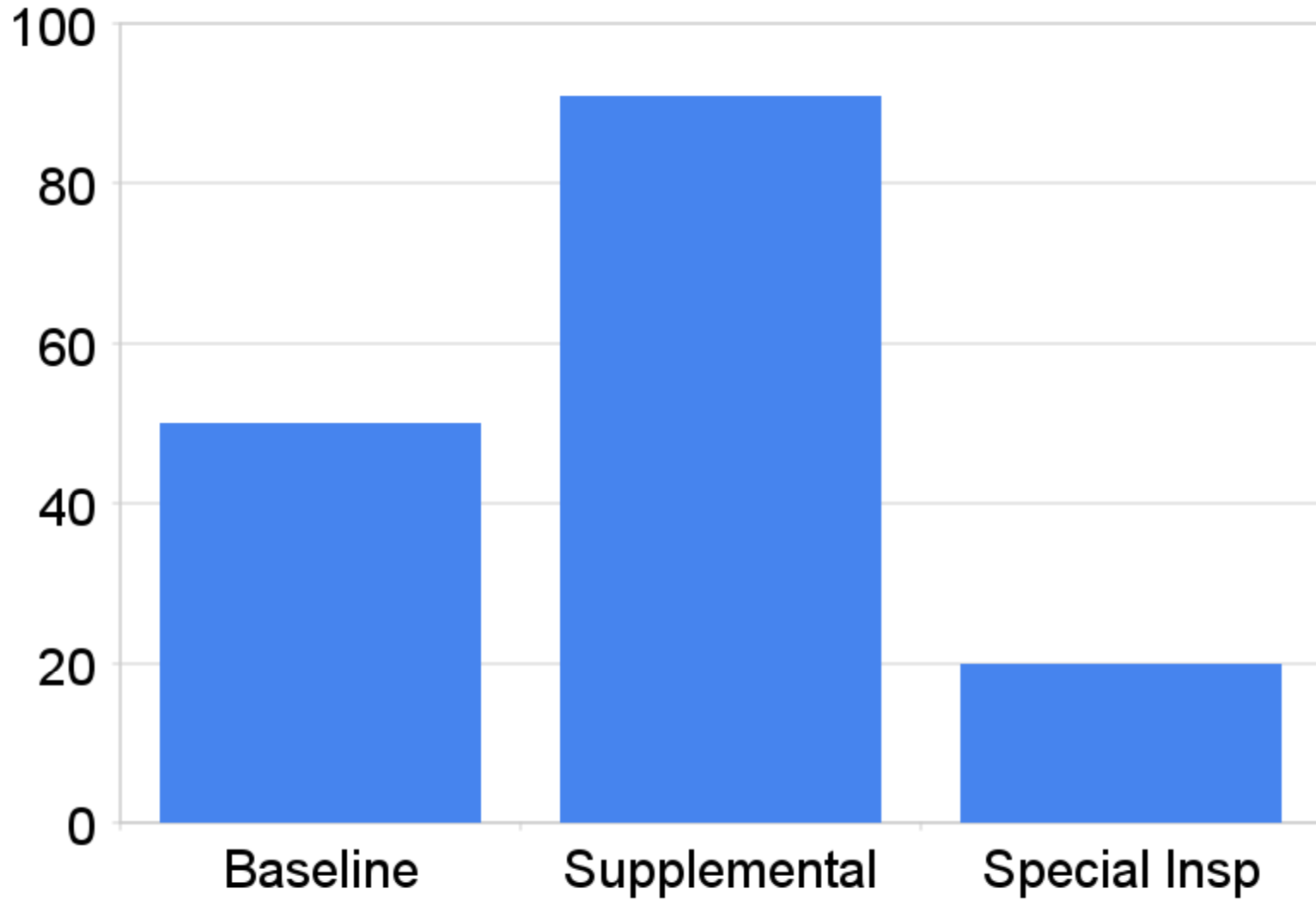
Source: NRC Dynamic Webpage

White Findings and Associated Crosscutting Issues



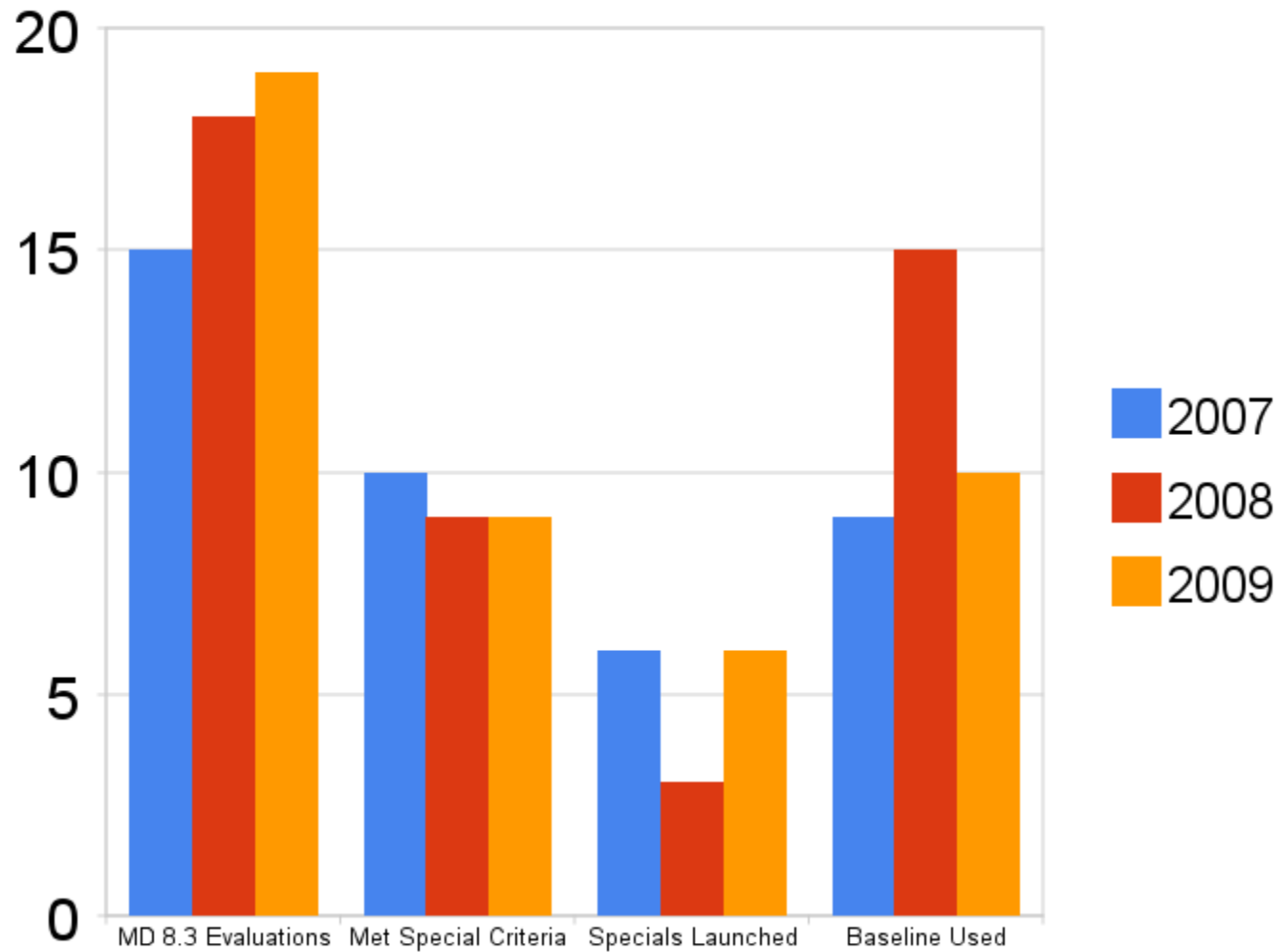
Source: NRC Dynamic Webpage

Inspection Source for White Findings



Source: NRC Dynamic Webpage

Special Inspections Region IV



Source: Region IV internal records