



We do the right thing.

Behavior-Based Safety

The Next Generation

Date

Frank Cannon – Operator, Co-Chair – Site BBS Users Forum

Hazel Darby – Operator, BBS Observer

Roger Staten, SRR BBS Process Lead

Event/Meeting Title

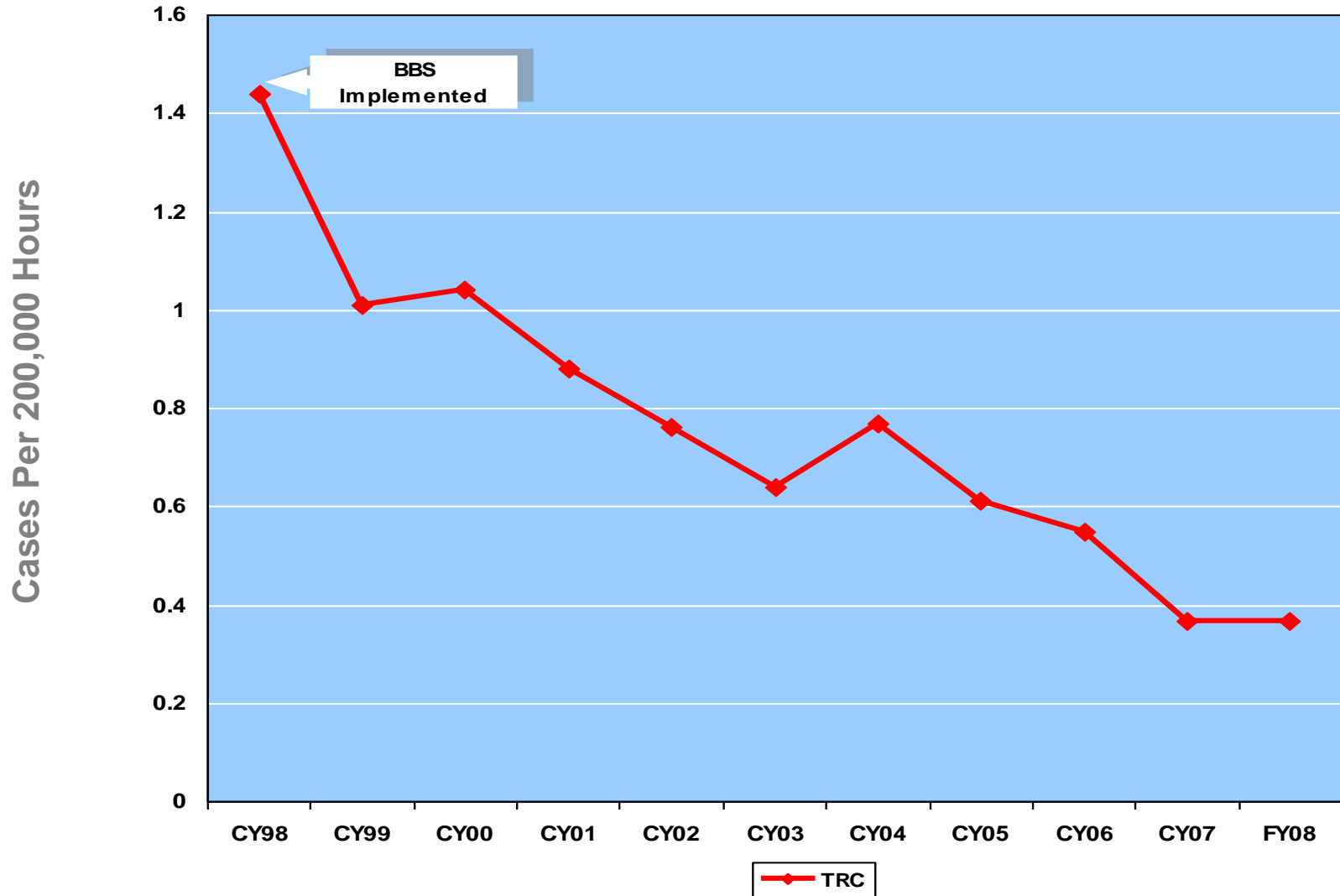
- Biographies:
 - Frank Cannon:
 - Operator, Savannah River Nuclear Solutions, 25 years
 - BBS Observer – 9 years,
 - BBS Local Safety Improvement Team (LSIT) Chair – 3 years
 - Site LSIT Forum Co-Chair 1 year
 - Hazel Darby:
 - Operator, Savannah River Remediation (SRR), XX years
 - BBS Observer – 5 years,
 - Member F Tank Facility (FTF) LSIT – 3 years
 - FTF Observer of the Year -
 - Roger Staten:
 - Principal Safety & Health Specialist, SRR, 20 years
 - B.S. Organizational Management
 - Certified Causal Analyst
 - BBS Observer – 11years, LSIT Facilitator 9 years, LWO BBS Advisor – 11 years, Site LSIT Forum Facilitator 6 years.
 - Site BBS Subject Matter Expert and Process Lead 5 years
 - HPI Trainer – 2 years

Why Continue With BBS

- BBS has a proven track record of injury reduction when used in an Integrated Safety Management System.
- BBS focuses on Employee ownership and engagement.
- BBS Observation is a Human Error Reduction Tool
- Observations will reinforce HPI Training

- The Voyage Begins – SRS A Historic Safety Culture
 - From and Through The DuPont years up to 1998
- The Voyage Continues - Employee Ownership and Pride
 - SRS has implemented several safety programs that has promoted employee involvement.
 - BBS became ours we manage it and take pride in our accomplishments

Lay In A Course



- What has worked:
 - Local leadership of the process
 - Site Steering Committee to provide general heading
 - Routine encouragement of Observers
 - Engaging co-workers in the work place
- Why we flat lined:
 - Concerns over economy
 - Concerns over new contracts
 - Long term involvement leads to Observer and LSIT Burnout
 - Long Term processes often need redesign

Core Redesign

- Employee Exploration:
 - Employee team was organized in anticipation of flat lining.
 - Visited Commercial sites using BBS:
 - Dow Chemical
 - ExxonMobile
 - CMC Steel
 - Research Consultants:
 - Safety Performance Solutions
 - ProAct Safety
 - BST
 - Identified potential changes to enhance our process and re-energize the core.

Changing The Core

- Enhancements to the process:
 - Implement Mini-TimeOut: All employees identify & correct At-risk behavior. Quick documentation.
 - Implement Scheduled Observations: Target 5% of all scheduled facility activities.
 - Implement Functional Area and Task Specific Checklists
 - Focus on fewer Critical Behaviors targeted by knowledgeable work teams.
 - Encourage more self and Extended Observations
 - Return to the Volunteer Observer concept.
 - Redesign Observer Training to include HPI components
 - Redesign Database for easier access, more analytical tools and HPI Components.

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- Species: Human
- Characteristics: Very intelligent, however are capable of making error and poor risk decision
- First Contact: BBS
- Continuing Mission: Human Performance Improvement

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- BBS and HPI:
 - Both involve human behavior
 - There are natural points of interaction
 - Implementing those points brings BBS to the Next Generation
- The Original Series:
 - Obstacles and Barriers To Safe Behavior
 - A less than adequate understanding of why the individual was at-risk

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- The Next Generation:
 - Implement Observation Process Changes for BBS
 - Replace list of 9 Obstacles with Short List of Error Precursors. Track all marked.
 - Identify error reduction tools used.
 - Train Observers to include HPI lines of inquiry during the Observation:
 - What error precursors could impact the task?
 - What error reduction tools are being used?
 - Use Error Precursor identification to increase our understanding.

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- The Next Generation will involve delta training for volunteer Observers.
- Data Collection Tool Redesign:

BBS FA/Task Observation: Operator		Activity:			
UserID:	Observation Date:	Observation Time:	Observee LSIT:	Error Precursors Task Demands ET01. Time pressure (in a hurry) ET02. High workload (high memory requirements) ET03. Simultaneous, multiple tasks ET04. Repetitive actions/monotony ET05. Irreversible acts ET06. Interpretation requirements ET07. Unclear goals, roles, or responsibilities ET08. Lack of or unclear standards Individual Capabilities EI01. Unfamiliarity with task/first time EI02. Lack of knowledge (mental model) EI03. New technique not used before EI04. Imprecise communication habits EI05. Lack of proficiency/inexperience EI06. Indistinct problem-solving skills EI07. "Unsafe" attitude for critical tasks EI09. Illness/fatigue	
Observation Type: STD _____ Mini-TO _____	Location of Observation: Area: _____ Bldg: _____	No. of People Observed:	Company:		
Index	Critical Behavior	Safe	At Risk	HPI Tools Used <input type="checkbox"/> Self Check <input type="checkbox"/> Peer Check <input type="checkbox"/> 3 way Comm <input type="checkbox"/> Proc Use/Adherence <input type="checkbox"/> Timeout <input type="checkbox"/> Q Attitude <input type="checkbox"/> Phonetic Alph <input type="checkbox"/> Pre-Job Brief <input type="checkbox"/> Place keeping	Work Environment EW01. Distractions/interruptions EW02. Changes/departure from routine EW03. Confusing displays/controls EW04. Workarounds/out-of-service instrumentation EW05. Hidden system response EW06. Unexpected equipment condition EW07. Lack of alternative indication EW08. Personality conflict Human Nature EH01. Stress EH02. Habit patterns EH03. Assumptions EH04. Complacency/overconfidence EH05. Mind-set EH06. Inaccurate risk perception EH07. Mental shortcuts (biases) EH08. Limited short-term memory
1.8	Eyes on Path / Walking				
1.9	Ascending / Descending				
3.4	Tool Use				
2.10	Correct PPE				
7.3	Misc				
MTO What:		Why:		Solution:	

- Learning Opportunity: Data Analysis

2.0 - Personal Protective Equipment

Index	Behavior	No Observations	Safe	Risk	TOTAL	% Safe
2-1	Head Protection	193	375	0	375	100%
2-2	Eye and Face Protection	537	896	10	906	98.9%
2-3	Hand Protection	617	1015	18	1033	98.3%
2-4	Foot Protection	390	693	3	696	99.6%
2-5	Fall Protection	41	67	1	68	98.5%
2-6	Protective Clothing	153	271	1	272	99.6%
2-7	Hearing Protection	123	225	3	228	98.7%
2-8	Respiratory Protection	22	41	0	41	100%
2-9	Other PPE	57	103	1	104	99.0%
2-10	Correct PPE	494	818	12	830	98.6%
Totals:			4504	49	4553	98.9%

Classic BBS Report

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- Enhanced BBS Reports

2.0 - Personal Protective Equipment

Index	Behavior	< 6 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM
2-1	Head Protection	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2-2	Eye and Face Protection	100%	100%	100%	100%	100%	100%	100%	92.9%	99.1%	96.7%	98.1%	100%	100%	100%
2-3	Hand Protection	100%	100%	96.3%	99.2%	99.4%	99.4%	97.9%	100%	96.4%	94.8%	100%	94.6%	100%	100%
2-4	Foot Protection	100%	100%	100%	97.8%	100%	100%	100%	100%	100%	100%	97.8%	100%	100%	100%
2-5	Fall Protection			100%	94.1%	100%	100%		100%	100%	100%	100%	100%		100%
2-6	Protective Clothing	92.9%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2-7	Hearing Protection	100%	100%	100%	100%	95.1%	100%	100%	100%	95.7%	100%	100%	100%		100%
2-8	Respiratory Protection	100%		100%	100%	100%	100%		100%		100%	100%	100%		
2-9	Other PPE	100%		100%	92.3%	100%	100%	100%	100%	100%	100%	100%	100%		
2-10	Correct PPE	93.5%	100%	100%	98.8%	98.2%	98.1%	100%	97.7%	100%	100%	98.1%	100%	100%	66.7%

2.0 - Personal Protective Equipment

Index	Behavior	Sun	Mon	Tue	Wed	Thu	Fri	Sat
2-1	Head Protection	100%	100%	100%	100%	100%	100%	100%
2-2	Eye and Face Protection	100%	98.9%	100%	98.5%	97.6%	100%	100%
2-3	Hand Protection	100%	99.0%	97.0%	97.9%	99.5%	100%	92.9%
2-4	Foot Protection	92.9%	100%	99.4%	100%	99.4%	100%	100%
2-5	Fall Protection	100%	100%	100%	100%	95.2%	100%	
2-6	Protective Clothing	100%	100%	100%	100%	98.3%	100%	100%
2-7	Hearing Protection	100%	97.6%	96.7%	100%	100%	100%	100%
2-8	Respiratory Protection		100%	100%	100%	100%	100%	100%
2-9	Other PPE	100%	100%	100%	96.8%	100%	100%	100%
2-10	Correct PPE	100%	99.4%	97.9%	98.1%	98.1%	100%	100%

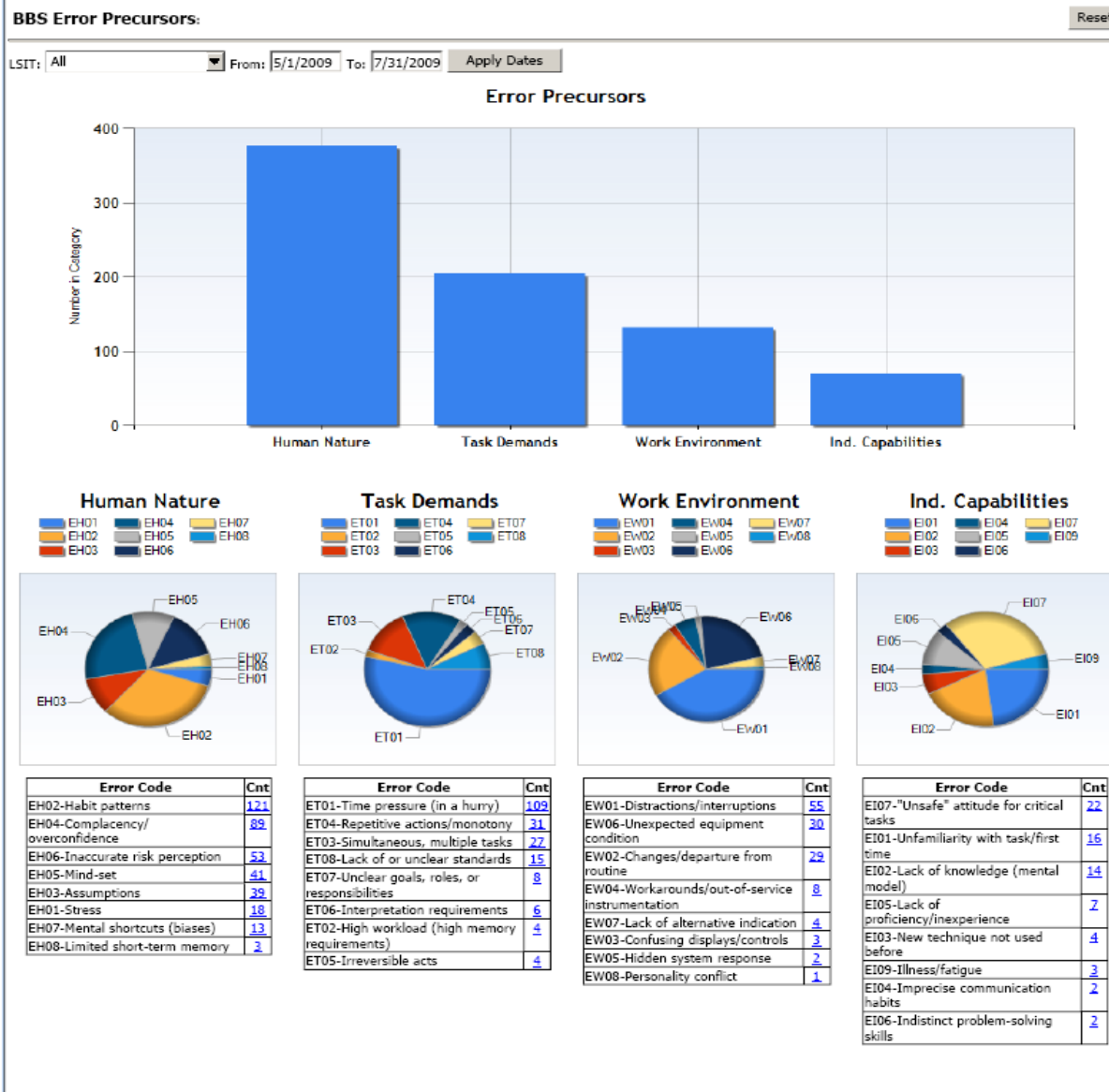
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- Enhanced BBS/HPI Reports

2.0 - Personal Protective Equipment		Human Nature								Individual Capabilities									Task Demands								Work Environment								
Index	Behavior	E H 0 1	E H 0 2	E H 0 3	E H 0 4	E H 0 5	E H 0 6	E H 0 7	E H 0 8	E I 0 1	E I 0 2	E I 0 3	E I 0 4	E I 0 5	E I 0 6	E I 0 7	E I 0 8	E I 0 9	E T 0 1	E T 0 2	E T 0 3	E T 0 4	E T 0 5	E T 0 6	E T 0 7	E T 0 8	E W 0 1	E W 0 2	E W 0 3	E W 0 4	E W 0 5	E W 0 6	E W 0 7	E W 0 8	
2-2	Eye and Face Protection		5		4				1	1	2		1	1					2				1					4							
2-3	Hand Protection	4	3	2	5	1	4	1				2	2						9		4						3				2				
2-4	Foot Protection		1			1													3								2								
2-5	Fall Protection		1	1			1				1												1		1										
2-6	Protective Clothing		1		1														1								1								
2-7	Hearing Protection		1	2	1			1																											
2-9	Other PPE											1																							
2-10	Correct PPE		2	4	3		1	1		3	1								2		4			2											

Enhanced BBS/HPI Reports

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Boldly Go!

- Educate: People must understand
- Communicate: People must know