

## Ames Laboratory Environment, Safety, Health, and Assurance (ESH&A)

### Fiscal Year 2008 Trend Analysis 10-9-08

Trend Analysis is performed to determine common occurrences or prevailing events that should be addressed with additional inspections, training, reviews, policies, etc. The following sources of information were reviewed for trend analysis from FY2004 to FY2008:

- Employee Safety and Security Concerns
- Independent Walk-Through Findings
- Program / Department Walk-Through Findings
- Walk-About (External Walk-Throughs) Findings
- Discrepancy Reports
- Injury and Illness Data
- Event Reporting (including potentially reportable events, Topical Appraisals and Issues and DOE / External Reviews)
- Causal Factors

#### Employee Safety and Security Concerns

As indicated by the following table, there was a 48% decrease in the total number of Employee Safety and Security Concerns from the 4-year average. The Ames Laboratory actively promotes that concerns of all types be brought to the attention of line management and ESH&A. The types of concerns recorded in FY2008 include responsibility of ISU sub-contractors in leased space, odors from painting, roof access on an adjoining ISU building, furniture installer hired by researcher instead of Facilities, fire doors not closing due to excessive exhausting HVAC air in adjoining ISU building, an ex-employee taking pictures and asking about beryllium, accessibility to phones and a chemical spill. No specific trends of concerns have been identified and no concerns of major programmatic significance were found.

<b>Employee Safety and Security Concerns</b>							
<b>Category</b>	<b>FY 2004</b>	<b>FY 2005</b>	<b>FY 2006</b>	<b>FY 2007</b>	<b>4-Year Average</b>	<b>FY 2008</b>	<b>% Change from 4-Year Average</b>
Administrative	0	0	0	0	0	0	None
Chemical Spills	1	2	1	0	1	1	Same
Fire Safety	0	0	1	0	.25	0	Decrease
General Safety	2	1	2	3	2	2	Same
Industrial Hygiene	1	2	3	2	2	0	Decrease
Environmental	0	1	5	1	1.75	0	Decrease
Security	0	0	0	1	.25	1	300% Increase
Radiological	3	0	0	0	.75	0	Decrease
Traffic Safety	2	1	0	0	.75	0	Decrease
Property Management	0	0	0	0	0	1	Increase
Other (non-safety)	1	1	1	0	.75	0	Decrease
Odors	2	2	1	3	2	1	50% Decrease
<b>Total Concerns</b>	<b>12</b>	<b>10</b>	<b>14</b>	<b>10</b>	<b>11.5</b>	<b>6</b>	<b>48% Decrease</b>

## Independent Walk-Through Findings

Ames Laboratory continues to experience a gradual reduction of findings identified during Independent Walk-Throughs (9% decrease from the 4-year average), as indicated in the table below. Some of the findings most likely would not be cited by an OSHA Inspector. The OSHA regulations are intended to be a basic minimum for compliance, and the expectation of the Walk-Through Team exceeds those of OSHA. The Laboratory is striving to be a “Best in Class” facility and these were identified to ensure best practices are promoted.

The Walk-Through Team has expanded this past year with the addition of an ISU EH&S Representative. This has proven to be beneficial with different ideas and perspectives reciprocating to both organizations. It has also made Ames Laboratory and ISU safety programs better aligned for researchers who have research in both organizations.

The new Laboratory Director, Dr. Alex King, has actively participated in the Walk-Through Program. It is valuable to have the workforce see him take an active part in the environment, safety and health programs and become acquainted with the buildings and employees. In addition, his experiences at other laboratories have provided ideas that can be incorporated at Ames Laboratory.

Although there have been increases in specific categories (by percentage), the total number of findings in those specific categories is insignificant. What the table below does not indicate is the history of the findings since 2000. In 2000, there were 409 findings, in 2008 there were 197, nearly a 52% reduction. What the table below also does not indicate is that there has not been a high priority finding since 2003.

The two categories of findings that show a fairly significant increase in FY2008 (if you compare the 4 year average to the total number for FY2008), were compressed gases and fire safety. For compressed gases, the 4-year average was 6.75 and the total number for FY2008 was 10. The types of findings for compressed gases were a missing cap when cylinder was in storage, a compressed cylinder was secured at or below the mid-point, a lecture cylinder was stored on its side instead of upright in a bucket or box, a cylinder was not labeled with contents, etc. Given the many compressed gas cylinders used at Ames Laboratory, these were not of major consequence. The second category that had an increase in findings was fire safety. The fire safety the 4-year average was 5.5 and the total number for FY2008 was 8. The types of findings included combustible materials being stored within 18 inches of a sprinkler head (3 instances), small quantities of flammable chemicals being stored in non-rated refrigerators (2 instances), a leased space from ISU did not have the NFPA 704 Placards indicating the hazards for emergency response, and an extension cord being used in conjunction with a space heater.

The Independent Walk-Through Program has proven to be an effective tool to educate, promote, and measure compliance within the facility.

Independent Walk-Through Findings							
Categories	2004 Totals	2005 Totals	2006 Totals	2007 Totals	4-Year Average	2008 Totals	Percent Change from 4-Year Average
Admin. Controls	0	1	0	1	.5	0	Decrease
Comp. Gases	10	5	8	4	6.75	10	48% Increase
Confined Space Entry	0	0	0	0	0	0	

<b>Independent Walk-Through Findings</b>							
<b>Categories</b>	<b>2004 Totals</b>	<b>2005 Totals</b>	<b>2006 Totals</b>	<b>2007 Totals</b>	<b>4-Year Average</b>	<b>2008 Totals</b>	<b>Percent Change from 4-Year Average</b>
Electrical Safety	103	78	50	44	68.75	64	7% Decrease
Emergency Planning	5	3	2	2	3	3	Same
Environmental	16	16	13	21	16.5	15	9% Decrease
Fire Safety	11	4	5	2	5.5	8	45% Increase
General Safety	47	59	46	68	55	65	18% Increase
Hoisting & Rigging	0	1	0	0	.25	0	Decrease
Hazard Communication	1	0	2	2	1.25	3	140% Increase
Industrial Hygiene	30	41	9	13	23.25	10	57% Decrease
Infrastructure	1	0	0	0	.25	0	Decrease
Ladder Safety	0	0	0	1	.25	0	Decrease
Laser Safety	0	0	0	0	0	0	
Life Safety Code	8	9	6	4	6.75	5	26% Decrease
Lockout/Tagout	1	0	0	1	.5	0	Decrease
Machine Guarding	3	1	3	6	3.25	2	38% Decrease
Other	0	1	1	2	1	0	Decrease
PPE	16	25	11	3	13.75	2	85% Decrease
Plumbing	1	0	1	1	.75	0	Decrease
Procedural	0	0	0	0	0	0	
Property Management	5	1	2	5	3.25	4	23% Increase
Radiation	0	1	5	1	1.75	1	43% Decrease
Respiratory	4	6	3	4	4.25	5	18% Increase
Training	0	0	0	0	0	0	
<b>Totals</b>	<b>262</b>	<b>252</b>	<b>167</b>	<b>185</b>	<b>216.5</b>	<b>197</b>	<b>9% Decrease</b>
Noteworthy Practices	2	1	0	2	1.25	0	Decrease

### **Program / Department Walk-Through Findings**

In the past, the Program / Department Walk-Through information has been gathered on a calendar year basis and has not been part of the self assessment trend analysis. The information collected from the programs / departments is requested in percentage (not the total number of findings). Specific comparisons (number of finding), cannot be made to the Independent Walk-Through Concerns, but general observations on the type of concerns identified can be ascertained. The largest category observed was “General Safety” and the second largest category was “Electrical” concerns. This is consistent with the Independent Walk-Through Program. No major concerns are discernable.

### **Walk-About (External Walk-Through) Findings**

A Walk-About has been performed annually since 2004. The most recent Walk-About was performed October 2007 and the next will be performed before the end of October 2008. The goal of the Walk-About is to identify safety hazards and violations that are not identified during the Independent Walk-Through Program. Hazards such as deviations in concrete for walking and working surfaces, proper operation of Ground Fault Circuit Interrupters, handrails on stairs are secured, proper signs are posted for

hazards, bushes / trees are not infringing on emergency exits, etc. No High Hazard Findings have been identified during these Walk-Abouts. Below is the number of identified concerns by year:

Year	Concerns
2004	17
2005	28
2006	10
2007	9

## Discrepancy Reports

Discrepancy reports are issued by the Plant Protection staff during facility tours. The organization(s) responsible for the discrepancy are notified via Plant Protection / ESH&A Staff for follow-up and correction of the identified discrepancies. A new category of emphasis “Hood Sash /Set Back” was added the last quarter of FY2007, thus the large increase from FY2007 (64) to FY2008 (232). This was requested by the Energy Management Steering Committee to emphasize this subject for energy conservation.

There was an increase in most of the categories tracked by Plant Protection. It is important to note that occasionally the number of observations may not be newly identified incidents, but rather the same incidents are identified repeatedly until the correction or abatement has been implemented. It should also be noted that increases and decreases in specific categories may be due to changes in the nature of the research in an area (compressed gas cylinders unsecured) or, for that matter, changes in the staff in an area (the coffee drinkers are gone). The increases in the concerns (excluding Hood Sashes) have been evaluated, and no trend towards programmatic weaknesses has been discerned.

Discrepancy Reports							
Category	2004	2005	2006	2007	4-Year Average	2008	% Change from 4-Year Average
Coffee Pots On & Hot	57	53	39	83	58	72	24% Increase
Soldering Pen/Iron on & hot	5	9	7	3	6	9	50% Increase
Unsecured Gas Cylinder	23	18	9	18	17	19	12% Increase
Natural Gas Valve On	18	11	10	19	14.5	15	3% Increase
Main Cylinder Valve	9	16	13	14	13	22	69% Increase
Uncapped Cylinder	25	21	14	12	18	25	39% Increase
Unattended Flame	0	1	1	4	1.5	3	100% Increase
Obstructed Hallway / Door	0	0	0	15	3.75	3	20% Decrease
Unsecured Door	136	122	87	87	108	86	20% Decrease
Hood Sash / Set Back (New Category -2007 Emphasis)	-	-	-	64	NA	232	263% Increase (from previous year)
Improper / Incompatible Storage	0	0	0	8	2	7	250% Increase
Obvious Equipment Malfunction	0	0	0	13	3.25	13	300% Increase
Window Open	0	0	0	7	1.75	5	186 Increase
Miscellaneous	125	69	45	54	73.25	57	22% Decrease
<b>Total Discrepancies</b>	<b>398</b>	<b>320</b>	<b>225</b>	<b>401</b>	<b>336</b>	<b>568</b>	<b>69% Increase</b>

## Injury and Illness Data

There has been a 65% decrease of total injuries / illnesses and a 64% decrease of OSHA Recordable injuries and illnesses (those requiring medical attention beyond first aid). Much effort continues to be targeted towards the reduction / elimination of injuries including lacerations and sprains and strains at the Laboratory, the two leading categories of injuries and OSHA Recordable incidents. The reduction in OSHA-recordable injuries is attributable to the emphasis on safety at new employee orientation, line management responsibility for safety, distribution of lessons learned, the circulation of Safety Guides, the use of personal protective equipment, and safety training. To address sprains and strains, a form is utilized during Readiness Reviews (new activities and 5-year reviews) to identify at-risk tasks and have those individuals complete the Sprains and Strains Prevention Module.

There was one OSHA Recordable injury in FY2008. A Facilities Services worker had been preparing to mix mortar for masonry wall repair; he bent over to retrieve sand for the mix, and he felt his back "pop" before lifting anything. This was not a "pre-existing case" issue, as no history of back issues has been reported. The case was determined to be work-related, was reported into CAIRS with two (2) lost workdays and eighteen (18) restricted workdays. A prescription medication had been offered, as well.

The reduction / elimination of lacerations and sprains and strains continue to be an emphasis in General Employee Training which is required for all new Ames Laboratory employees. In addition, the Laboratory Director continues to send Laboratory-wide safety messages stressing the importance of safety and the expectation for all employees to maintain a safe and healthful workplace. The Director stresses the importance of supervisors, group leaders and co-workers to provide assistance and oversight of potentially hazardous activities. Because the total number of injuries are low it is difficult to discern trends. The Laboratory will continue to stress the importance of line management responsibilities for safety, identification and correction of hazards, the use of personal protective equipment and safety training in an effort to further reduce injuries in the workplace.

Injury and Illness Data							
Type of Injury / Illness	2004	2005	2006	2007	4-Year Average	2008	% Change from 4-Year Average
Contusion / Abrasions	2	4 (1)	4	2	3	0	Decrease
Burn	0	1	2	0	.75	0	Decrease
Eye Injury	1	0	0	0	.25	0	Decrease
Fracture	0	0	1 (1)	0	.25	0	Decrease
Laceration	6 (2)	2 (1)	0	6 (2)	3.5	2	43% Decrease
Puncture	0	0	0	1	.25	0	Decrease
Acute Musculoskeletal Injury	4 (3)	1 (1)	0	2	1.75 (1)	1 (1)	43% Decrease
Cumulative Trauma Disorder	3	0	0	0	.75	0	Decrease
Miscellaneous:							
Otagia (Pain in the ear)	0	0	1	0	.25	0	Decrease
Respiratory Irritant	2	0	0	1	.75	0	Decrease
Twisted Ankle	0	0	0	0	0	1	Increase
<b>Total</b>	<b>18</b>	<b>8</b>	<b>8</b>	<b>12</b>	<b>11.5</b>	<b>4</b>	<b>65% Decrease</b>
OSHA Recordable	5	3	1	2	2.75	1	64% Decrease
Non-OSHA Recordable	13	5	7	10	8.75	3	66% Decrease
Lost Work Days -LWD	4	180	0	0	46	2	96% Decrease
Restricted Work Days – RWD	7	0	0	0	1.75	18	929 % Increase
Total of LWD and RWD	11	180	0	0	48	20	58% Decrease
DART Rate	.62	.21	0	0	.21	.23	10% Increase

<b>Injury and Illness Data</b>							
<b>Type of Injury / Illness</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>4-Year Average</b>	<b>2008</b>	<b>% Change from 4-Year Average</b>
Total Recordable Case Rate (TRCR)	1.52	.62	.24	0.48	.72	.23	68% Decrease

( ) indicates OSHA Recordable Injury

DART: Days Away, Restricted, and/or Transferred

### Event Reporting (FY)

The Laboratory utilizes information from a broad variety of sources to determine events which are reviewed against external and local reporting criteria. The sources include concerns, injuries and illnesses, assessment results and operational data. Event reporting information is presented in the following three tables: Event Reporting Summary, Reportable Events, and Ames Local Events. As indicated in the summary tables, there were four incidents reported to the Occurrence Reporting Processing System (ORPS) in FY2008. The four ORPS included a failed fire alarm annunciator during annual fire alarm system test and fire drill in Wilhelm Hall; after review of a DOE lessons learned a man-lift was determined to have suspect/counterfeit bolts; a larger cylinder of Hydrofluoric Acid was purchased & installed contrary to the Safety Analysis Document and Standard Operating Procedure; and a wall vent fell onto a desk during an HVAC Upgrade Project in Spedding Hall. There were no concerns reported to the Non-Compliance Tracking System (NTS) or Incidents of Security Concern (ISC). No trends were observed with the Reportable Events (ORPS, NTS or ISC).

<b>Event Reporting Summary (FY)</b>						
<b>Categories</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>3-Year Average</b>	<b>2008</b>	<b>% Change from 3-Year Average</b>
Total Events Screened	45	46	41	44	67	52% Increase
Occurrence Reports (ORPS)	4	0	2	2	4	100% Increase
Noncompliance Tracking System (NTS)	0	0	0	0	0	Same
Incidents of Security Concern (ISC)	0	1	0	.3	0	Decrease
Ames Local (AL)	14	33	24	23.7	38	60% Increase
Accident and Injury (CAIRS)	3	1	2	2	1	50% Decrease
Other (below reporting threshold)	24	11	13	16	24	50% Increase

The Reportable Events table below provides further details on the reportable events since FY2004.

<b>Reportable Events (FY)</b>					
<b>Year</b>	<b>Type</b>	<b>Identification</b>	<b>Date</b>	<b>Title</b>	<b>Description</b>
FY 2004	ORPS	ORPS CH— AMES – Ames-2004- 0001	1-29-04	Electrical Contact	Researcher contacts 110 VAC when trying to reduce the clicking noise of an electrical contact / relay within the interlock box.
FY	ORPS	ORPS CH—	12-20-04	Suspect /	While performing a Readiness Review,

Reportable Events (FY)					
Year	Type	Identification	Date	Title	Description
2005		AMES – Ames-2004- 0002		Counterfeit Bolts	suspect / counterfeit bolts (non load bearing) was discovered.
	ORPS	ORPS CH— AMES – Ames-2005- 0001	2-1-05	Potential High Voltage Exposure	A visiting scientist (not supported by SC Funding) assembled a prototype research system before seeking Readiness Review.
	ORPS	ORPS CH— AMES – Ames-2005- 0002	4-20-05	Flash Hazard Analysis Accuracy Questioned	During the SC Electrical Safety Review, the consultant questioned the accuracy of the analysis.
	ORPS	ORPS CH— AMES – Ames-2005- 0003	8-10-05	Software Issue Found in Fire Alarm System	A smoke detector in building alarmed at the fire panel and central station but did not activate the alarms.
FY 2006	ISC	ISC – IMI 3(#19) Incident # 51451	2-17-06	System Intrusion	An intruder allegedly from force.coe.neu.edu used a real username/password to access gateway.cmpgroup.ameslab.gov.
FY 2007	ORPS	CH- - Ames- Ames-2007- 0001	12-29-06	Smolder /Smoke in Renovation Area	A small crack in the concrete floor between two buildings allowed a spark from plasma-arc cutting to reach expansion joint material.
	ORPS	CH- - Ames- Ames 2007- 0002	7-27-07	Electrical Conduit Penetration	Conduit penetrated by screw during roofing operations.
FY 2008	ORPS	SC—AMSO- AMES-AMES- 2007-0003	10-4-07	Switch Failure – Fire Alarm System	During annual fire alarm system test and fire drill, the Wilhelm Hall over-ride switch failed.
	ORPS	SC—AMSO- AMES-Ames- 2008-0001	4-23-08	Suspect /Counterfeit Bolts	After review of a lessons learned, the man-lifts were reviewed with one having suspect/counterfeit bolts.
	ORPS	SC—AMSO- AMES-Ames- 2008-0002	5-16-08	Hydrofluoric Acid SAD Procedure Deviation	A larger cylinder of Hydrofluoric Acid was purchased & installed contrary to the Safety Analysis Document and Standard Operating Procedure.
	ORPS	SC—AMES- AMES-Ames- 2008-0003	7-3-08	HVAC Vent Unexpectedly Drops	HVAC Upgrade Project a wall vent was not verified that it was removed before removing supply duct.

The Ames Local Events table below provides further details on the Ames Local events since FY2005.

Ames Local Events (FY)			
Tracking #	Date	Event Reporting Program Changed	Designation
E04-025	10-20-04	Live Work Stand Down	AMES LOCAL - ORPS
E04-028	11-02-04	Orange Material Flash	AMES LOCAL – ORPS
E04-034	12-22-04	Readiness Review Incomplete	AMES LOCAL – ORPS
E05-002	1-07-05	Snow Melt in RWA	AMES LOCAL– ORPS
E05-007	2-10-05	HF Leak	AMES LOCAL– ORPS
E05-018	4-20-05	CO Emergency Prep Audit	AMES LOCAL - ORPS

<b>Ames Local Events (FY)</b>			
<b>Tracking #</b>	<b>Date</b>	<b>Event Reporting Program Changed</b>	<b>Designation</b>
E05-019	4-15-05	SC Electrical Safety Review	AMES LOCAL - ORPS
E05-021	6-06-05	Trash Flash	AMES LOCAL - ORPS
E05-022	6-14-05	Smoldering Tygon Tubing	AMES LOCAL - ORPS
E05-024	6-21-05	Inappropriate tag use	AMES LOCAL - ORPS
E05-027	6-27-05	Laser Safety Audit	AMES LOCAL - ORPS
E05-030	8-22-05	Packaging and Transportation Audit	AMES LOCAL - ORPS
E05-031	8-22-05	S&S Audit 8-16-05	AMES LOCAL - ISC
E05-032	8-31-05	Chemical Management Review	AMES LOCAL - ORPS
<b>FY2006</b>			
E05-036	11-17-05	Environmental Mgmt Audit	AMES LOCAL - ORPS
E05-037	11-17-05	Hoist-Rig Audit	AMES LOCAL - ORPS
E05-039	12-24-05	DEV Steam Leak	AMES LOCAL - ORPS
E06-001	1-06-06	Data Loss/Partial Recovery	AMES LOCAL - ORPS
E06-002	1-11-06	Penetration of Compressed Air Line	AMES LOCAL - ORPS
E06-003	1-12-06	Animal Pathogen Use w/o Approval	AMES LOCAL - ORPS
E06-004	1-23-06	Compromised System (bat)	AMES LOCAL - ORPS
E06-005	12-9-05	ISMS Review	AMES LOCAL - ORPS
E06-007	2-7-06	Powder Release Activating Smoke Detector	AMES LOCAL - ORPS
E06-008	2-13-06	Change of Shift- RWP update	AMES LOCAL - ORPS
E06-010	2-14-06	Solvent Contact, PAC Shop	AMES LOCAL - ORPS
E06-011	2-17-06	SPH Fire Evacuation	AMES LOCAL - ORPS
E06-016	2-23-06	Alleged Improper Disposal of Scrap Metal	AMES LOCAL - ORPS
E06-017	2-27-06	Fire Alarm 135 Metals Development	AMES LOCAL - ORPS
E06-019	3-15-06	Smoking Furnace	AMES LOCAL - ORPS
E06-020	3-16-06	NAS Device Found	AMES LOCAL - ISC
E06-021	3-16-06	Parr Bomb Explosion	AMES LOCAL - ORPS
E06-023	4-26-06	Possible Compromise of B1 System	AMES LOCAL - ISC
E06-024	5-22-06	System Compromise	AMES LOCAL - ISC
E06-026	5-24-06	DEV Dumpster Fire	AMES LOCAL - ORPS
E06-027	6-5-06	HF Alarm	AMES LOCAL - ORPS
E06-028	6-12-06	Hydride-Methanol Reactions	AMES LOCAL - ORPS
E06-029	6-26-06	Thermal Burn from Electrical Source	AMES LOCAL - ORPS
E06-031	7-10-06	Delay in Radiation Survey	AMES LOCAL - NTS
E06-032	7-12-06	Network anomaly discovered	AMES LOCAL - ISC
E06-033	7-31-06	X-Win 32 Vulnerability	AMES LOCAL - ISC (merged into E06-037)
E06-034	7-31-06	Infected System	AMES LOCAL - ISC
E06-035	8-7-06	X-Win32 Vulnerability 8-7-06	AMES LOCAL - ISC (merged into E06-037)
E06-036	8-7-06	Stuck X-ray Shutter	AMES LOCAL - NTS
E06-037	8-8-06	System Vulnerability 8-8-06	AMES LOCAL - ISC (includes E06-033 & 035)
E06-038	8-18-06	Fire/Bldg Evacuation B33-34 SPH	AMES LOCAL - ORPS
E06-040	9-07-06	Slip-Fall in HWH	AMES LOCAL - CAIRS
E06-042	9-15-06	Finger Laceration	AMES LOCAL - CAIRS
<b>FY2007</b>			
E06-043	10-2-06	Site Assistance Visit	AMES LOCAL - ISC
E06-044	10-9-06	Needle Stick (unused needle)	AMES LOCAL - CAIRS
E06-045	11-15-06	Occupational Medicine Review	AMES LOCAL - ORPS
E06-047	11-21-06	ESH&A Review of Management Controls Over Regulations	AMES LOCAL - ORPS

<b>Ames Local Events (FY)</b>			
<b>Tracking #</b>	<b>Date</b>	<b>Event Reporting Program Changed</b>	<b>Designation</b>
E06-049	11-29-06	Finger Cut while setting up collapsible table	AMES LOCAL - CAIRS
E07-002	1-22-07	Trifluoroacetic Acid Intake (potential)	AMES LOCAL - CAIRS
E07-009	5-9-07	Delayed Spill Reporting - A216 Zaffarano	AMES LOCAL - ORPS
E07-010	5-9-07	Jammed finger on door	AMES LOCAL - CAIRS
E07-012	6-5-07	Chemical Dermatitis	AMES LOCAL - CAIRS
E07-013	6-8-07	Blocked Circuit Breaker Panel	AMES LOCAL - ORPS
E07-014	6-19-07	2007 Review of Material Control and Accountability Program	AMES LOCAL - ISC
E07-015	6-22-07	Sprained Wrist	AMES LOCAL - CAIRS
E07-016	6-24-07	Broken Hose	AMES LOCAL - ORPS
E07-017	6-26-07	Knee Contusion	AMES LOCAL - CAIRS
E07-019	7-10-07	Fire Alarm - HWH	AMES LOCAL - ORPS
E07-020	7-11-07	Infected Desktop Computer	AMES LOCAL - ISC
E07-021	7-11-07	Work Without Survey	AMES LOCAL - NTS
E07-023	7-17-07	Laceration	AMES LOCAL - CAIRS
E07-024	7-23-07	Fire Alarm - MD	AMES LOCAL - ORPS
E07-025	7-24-07	Head Injury	AMES LOCAL - CAIRS
E07-027	7-30-07	Laptop Theft - Switzerland	AMES LOCAL - ISC
E07-028	8-02-07	Finger Laceration	AMES LOCAL - CAIRS
E07-029	8-23-07	Fire Alarm - HWH	AMES LOCAL - ORPS
E07-030	8-28-07	Hand Injury	AMES LOCAL - CAIRS
<b>FY2008</b>			
E07-032	10-4-07	Contractor Assurance System Assessment	AMES LOCAL - ORPS
E07-033	10-4-07	Industrial Hygiene Program Review Assessment	AMES LOCAL - ORPS
E07-035	10-11-07	Radiation Program Review (Broad Scope)	AMES LOCAL - PAAA
E07-036	10-18-07	SPH Elevator Stalls	AMES LOCAL - ORPS
E07-037	10-25-07	Infected System	AMES LOCAL - ISC
E07-038	10-31-07	Infected System	AMES LOCAL - ISC
E07-039	11-7-07	Band Saw Fire	AMES LOCAL - ORPS
E07-040	11-9-07	AMSO RPP Assessment	AMES LOCAL - NTS
E07-041	8-15-07	Safeguards and Security inspection	AMES LOCAL - ISC
E07-042	11-19-07	Improper Controlled Area Access	AMES LOCAL - NTS
E07-043	12-18-07	Materials Storage Issue	AMES LOCAL - ORPS
E08-001	01-04-08	Password Documentation Not Current	AMES LOCAL - ISC
E08-002	1-20-08	Ruptured Water Line - Front Yard of HWH	AMES LOCAL - ORPS
E08-004	1-23-08	Lacerated Thumbs (glassware)	AMES LOCAL - CAIRS
E08-005	1-18-08	System Compromise Type 1	AMES LOCAL - ISC
E08-006	2-12-08	DOT Training Lapse for Guards	AMES LOCAL - ORPS
E08-007	2-13-08	Small Fire In 135 Metals Development	AMES LOCAL - ORPS
E08-008	2-21-08	Mercury Spill	AMES LOCAL - ORPS
E08-009	3-4-08	SPD, TASF and Gilman Fire Doors Propped Open - Employee Concern 08-002	AMES LOCAL - ORPS
E08-010	3-4-08	Broken Water Line - Flood in 118 ZAFF	AMES LOCAL - ORPS
E08-011	3-20-08	Finger Laceration, 47A HWH	AMES LOCAL - CAIRS
E08-021	5-20-08	Tantalite Ore (Rad) Samples found in B15 - B17 Spedding	AMES LOCAL - PAAA
E08-022	5-21-08	DOE Cyber-security Testing	AMES LOCAL - ISC
E08-023	5-29-08	Environmental Management System (EMS) Assessment and NEPA Review	AMES LOCAL - ORPS
E08-024	6-4-08	Emergency Management Program Review	AMES LOCAL - ORPS

<b>Ames Local Events (FY)</b>			
<b>Tracking #</b>	<b>Date</b>	<b>Event Reporting Program Changed</b>	<b>Designation</b>
E08-027	6-27-08	Projector Theft	AMES LOCAL -ISC
E08-034	2-25-08	Waste Segregation Topical Appraisal	AMES LOCAL -ORPS
E08-035	3-14-08	Hazardous Waste Training Topical Appraisal	AMES LOCAL -ORPS
E08-036	8-5-08	Back Injury	CAIRS Report
E08-037	8-5-08	Methanol Spill 278 Metals Development	AMES LOCAL -ORPS
E08-038	8-15-08	NFPA 801 Topical Appraisal	AMES LOCAL -ORPS
E08-039	8-18-08	System Compromise Type 1 Low	AMES LOCAL -ISC
E08-041	8-20-08	System Compromise Type 1 Low Incident	AMES LOCAL -ISC
E08-043	9-4-08	Foreign Visits and Assignments Topical Appraisal	AMES LOCAL -ISC
E08-044	8-29-08	Voluntary Usage of Dust masks Topical Appraisal	AMES LOCAL –WSH
E08-046	9-3-08	NFPA 232 Protection of Records –Topical Appraisal	AMES LOCAL – WSH
E08-047	9-8-08	System Compromise Type 1 Low Incident	AMES LOCAL -ISC
E08-048	9-11-08	System Compromise Type 1 Low Incident	AMES LOCAL -ISC
E08-049	9-15-08	Contractor Damages Light Fixture at HWH	AMES LOCAL - ORPS
E08-050	9-17-08	Confrontation prompted by procedural failure.	AMES LOCAL – ORPS
E08-052	9-26-08	334 Wilhelm Hall Chemical Spill	AMES LOCAL – ORPS
E08-054	9-30-08	Notification of Injuries and Fatalities – Topical Appraisal	AMES LOCAL - ORPS

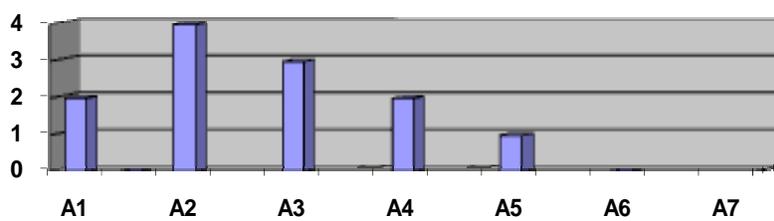
### **Causal Factors**

As detailed in the following tables and discussion, TapRoot analysis is performed on reportable events and a brief causal analysis process is performed on Ames Local Events.

**TapRoot Analysis:** TapRoot is a formal (standardized) method used at Ames Laboratory to investigate and determine causal factors for significant events (those beyond Ames Local Events). It is a method that is used by other DOE Facilities. The use of TapRoot at Ames Laboratory began in 2004 for Reportable Events (Occurrences (ORPS), Non Compliance Tracking System (NTS) and Incidents of Security Concern (ISC)). There have been five (5) ORPS and one (1) ISC to date since the adoption of TapRoot. All have undergone TapRoot to determine causal factors. No trends are apparent. Below is a chart of the ORPS that received TapRoot analysis.

<b>TapRoot Analysis</b>		
<b>ORPS Number</b>	<b>ORPS Description</b>	<b>Causal Analysis</b>
ORPS – 2004 - 001	Electrical Shock –Group Leader not authorized to remove cover.	A5 – Communication LTA
ORPS – 2004 - 002	Suspect Bolts - Equipment sent from Manufacturer with suspect bolts	A1 – Design / Engineering Problem
ORPS – 2005 - 001	Potential High Voltage Exposure	A3 – Human Performance
ORPS- 2005 - 002	Accuracy of Flash Analysis Questioned	A1 - Design / Equipment Problem
ORPS – 2005 - 003	Fire Alarm Annunciation Failed to Activate	A2 – Equipment / Material Problem

TapRoot Analysis		
ORPS Number	ORPS Description	Causal Analysis
ISC – IMI – 3(#19) #51451	Condensed Matter Physics SSH Incident	A4 – Management Problem
ORPS 2007 -0001	Smoke – Smoldering Event in Graphics Renovation	A2 – Equipment Problem
ORPS 2007-0002	Electrical Conduit Penetration at Warehouse	A3 – Human Performance
ORPS 2007 – 0003	Wilhelm Hall Annunciators Did Not Activate During Fire Drill	A2 - Equipment / Material Problem
ORPS 2008-0001	Suspect / Counterfeit Parts on Man-lift	A2 – Equipment / Material Problem
ORPS 2008-0002	Hydrofluoric Acid Procedure Deviation	A3 – Human Performance
ORPS 2008-0003	HVAC Upgrade Project – Wall Vent Fell Onto Desk	A4- Management Problem

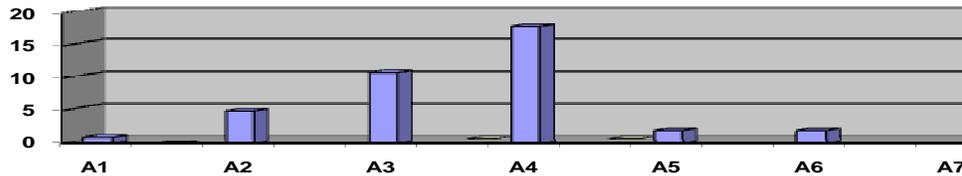


A1- Design/Engineering Problem - 2 A2- Equipment/Material Problem - 4 A3- Human Performance LTA - 3 A4- Management Problem - 2 A5- Communications LTA - 1 A6- Training Deficiency - 0 A7- Other Problem (Ext. Phenomena, Rad/Haz Mat'l) - 0
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**Causal Analysis:** Causal Analysis of Ames Local Events started in May of 2004. An Ames Local Event is one which does not meet the threshold of reportability to DOE, but warrants further investigation and potentially the development of corrective actions.

The Laboratory also records injuries and illnesses as Ames Local Events that would not be considered recordable to OSHA using the DOE Computerized Accident / Incident Reporting System (CAIRS). The Laboratory includes non-recordable injuries and illnesses (Ames Local- CAIRS) as an opportunity to ensure incidents are evaluated, potential corrective actions are documented and tracked; furthermore Ames Local Events are evaluated for recurrence (trending). Ames Laboratory views the causal analysis (investigation and analysis) program as a proactive opportunity to address concerns and develop corrective actions to prevent even the most minor concerns which could lead to more severe injuries and events.

Below are the results of the Causal Factors review of FY2008.



A1- Design/Engineering Problem - 1
A2- Equipment/Material Problem - 5
A3- Human Performance LTA - 11
A4- Management Problem - 18
A5- Communications LTA - 2
A6- Training Deficiency - 2
A7- Other Problem (Ext. Phenomena, Rad/Haz Mat'l) - 0

“Management Problem LTA” (A4) from the DOE Guide 231.1-2 was the predominant causal factor identified (18 occurrences). Management Problem LTA is further separated into five (5) subsections (Management Methods LTA, Resource Management LTA, Work Organization and Planning LTA, Supervisory Methods LTA, and Change Management LTA). Change of Management LTA (6 times) was the causal factor most frequently determined. The corrective actions taken appropriately matched the identified causal factor. Last year’s self assessment identified Human Performance LTA (A3) as the leading predominant causal factor. There was no trend from last year’s assessment to this year.

It is important to note that many of the events categorized are of low significance but because they received corrective actions they were deemed to be “Ames Local” events. As such, they receive the same rigor of effort for investigation and analysis. The Laboratory will continue to categorize events, audits, topical appraisals, etc. to stress the importance of line management responsibilities for environment, safety and health, the identification and correction of hazards and feedback and improvement.

Corrective actions are developed, tracked and completed for Ames Local Events as appropriate. Ames Local events requiring corrective actions are tracked in ALCATS, which also receive effectiveness verifications (at 6 month and 12 month intervals) to ensure concerns are addressed adequately. Included in the verification process, Group Leaders / Department Managers and workers are interviewed to determine the results of the implemented corrective actions. The verifications performed since May 1, 2005 (when process initiated), there have been two (2) events that the corrective actions were deemed to be “Partially Effective” at the 6 month verification. The first event (E06-001 Data Loss / Partial Recovery) had additional corrections implemented, then at the 12 month verification it was determined to be “Effective”. The second event (E07-014, 2007 Review of Materials Control and Accountability Program) has not become due for the 12 month verification. It is anticipated that the changes made at the 6 month verification will correct any discrepancies.