The Application of HFACS in an OHS Reporting System

OR

How to Get a Job in the OHS Industry Using Your Aviation Experience!
Introduction

Who Am I?

My Background

Why you are sought after in the OHS world

Why everything is FOC.
Scope

The University SMS, Project Zero
Brief introduction to UniHIRTTS (University Hazard and Incident Reporting and Tracking System)
Brief history of HFACS
Applying HFACS to UniHIRTTS
The Results
Conclusion.
Designed and developed to meet legislative requirements but based on aviation industry experience

Goals

zero harm...attributable to human factors within control of USQ,

zero breaches of...legislation,

zero hazards and safety related risks that are not recognised and managed..., and

zero unreported incidents...

Philosophy – all should leave in as good as if not better condition than when they arrived.
12 Elements

1. Management commitment
2. Safety organisation structure
3. Risk management
4. Workplace health and safety procedures
5. Suppliers, contractors and purchasing controls
6. Incident and hazard management
7. Injury and illness management
8. Emergency management
9. Participation and consultation
10. Education and training
11. Wellbeing
12. Audit and survey
Built-in audit tools, training packages, WMS, risk management system, etc

Packaged transportable system available FOC on the internet

Currently used by the QLD wine industry

System has been very successful within USQ (results later)
Facts:
Each year in Australia, people are killed in a wide range of confined spaces, from storage vessels, to complex industrial equipment. Many of these fatalities occur when attempting to rescue another person in a confined space. Additionally, people can be seriously injured from other hazards found within confined spaces.

Legislation:

General Safety Tips
- Managers/supervisors should always conduct a risk assessment to identify and control any hazards associated with entering a confined space in the particular situation.
- Use Risk Matrix Tool below
- All applicable workers should be trained in confined space entry

<table>
<thead>
<tr>
<th>Probability</th>
<th>Insignificant</th>
<th>Minor</th>
<th>Moderate</th>
<th>Major</th>
<th>Catastrophic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost Certain</td>
<td>M</td>
<td>H</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Likely</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Possible</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Unlikely</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Rare</td>
<td>L</td>
<td>L</td>
<td>L</td>
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</tbody>
</table>

Recommended Action Guide
- E = Extreme Risk - Task MUST NOT proceed
- H = High Risk - Special procedures required (see USQSafe)
- M = Moderate Risk - Work method statement required
- L = Low Risk - Use routine procedures
Element 1. Management Commitment

<table>
<thead>
<tr>
<th>Policy</th>
<th>(circle response)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is the University Workplace Health and Safety policy displayed in a prominent place and is it available to all personnel within the work area?</td>
<td>Yes No</td>
</tr>
<tr>
<td>2. Do management actions in this work area reflect the attributes of the policy?</td>
<td>Yes No</td>
</tr>
<tr>
<td>3. Does management communicate the policy objectives to all employees and others at this workplace?</td>
<td>Yes No</td>
</tr>
<tr>
<td>4. Does management evaluate the effectiveness of communicating the policy objectives by visiting training sessions, checking notice boards, attending health and safety meetings etc?</td>
<td>Yes No</td>
</tr>
</tbody>
</table>

Provision of Information

| 1. Does management provide relevant information at this workplace? for example: procedure manuals, maintenance manuals, procedures for high-risk jobs, notice boards, MSDS reference manuals, group meetings | Yes No |

Action Plan Element 1

(Record the action required to address each "no" response in the space provided)

<table>
<thead>
<tr>
<th>ACTION</th>
<th>DATE FOR COMPLETION</th>
</tr>
</thead>
<tbody>
<tr>
<td>BY WHOM</td>
<td>ACTION</td>
</tr>
<tr>
<td>DATE FOR COMPLETION</td>
<td></td>
</tr>
</tbody>
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UniHIRTS

University Hazard and Incident Reporting and Tracking System

Developed in-house

Web based (Java)

Hierarchical structure (based on business org structure)

Uses email for notifications and elevation of status.
UniHIRT S (cont)

Tracks Actions and Recommendations
Closed loop (cannot close without resolution)
Risk management included
Interacts with PeopleSoft HR system
Investigation tool
HFACS
Report function.
Create Report  My Reports  USQSafe  Admin Reports

INCIDENT REPORT
Has an incident occurred?

Use this incident report if an incident has already occurred. Also use this for ‘near misses’.

Begin an incident report

HAZARD REPORT
Have you identified a hazardous situation?

Use this hazard report if you think an incident could occur in the future.

Begin a hazard report
My reports

This ‘My Reports’ page will only show reports:

- that you have saved,
- that you have submitted and are still at the supervisor level,
- where you are designated as the supervisor,
- which have been submitted for you by someone else,
- that are in 'ALERT' status because your supervisor has not responded (which may require routing to another supervisor), or
- where an action or recommendation has been assigned to you.

### Incident Report List

<table>
<thead>
<tr>
<th>Ref ID</th>
<th>Status</th>
<th>Created Date</th>
<th>Title (Brief Description)</th>
<th>Incident Date</th>
<th>Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-09-140</td>
<td>RCLOS 11/03/2009</td>
<td>Student suffered a Panic Attack in Library</td>
<td>09/03/2009 03:00 PM</td>
<td>[By Bryan Flemming][For Leylah Abaw][To Tony Machlin]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>I-09-139</td>
<td>IVES 11/03/2009</td>
<td>Car speeding between people at Steele Rudd</td>
<td>22/02/2009 04:15 PM</td>
<td>[By Bryan Flemming][For Cameron Summerville][To Brad Everton]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>I-09-123</td>
<td>RCLOS 27/01/2009</td>
<td>Staff member not using PPE</td>
<td>27/01/2009 12:45 PM</td>
<td>[By Bryan Flemming][For Bob Horstman][To Rebecca Scollen]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>I-09-113</td>
<td>IVES 13/01/2009</td>
<td>Level crossing accident</td>
<td>07/01/2009 08:36 AM</td>
<td>[By Roger Stone][For Roger Stone][To Graham Baker]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>I-08-088</td>
<td>RCLOS 22/10/2008</td>
<td>Mobile Scaffold pushed into foot</td>
<td>03/10/2008 09:25 AM</td>
<td>[By Leath Baldwin][For Tyrone Pearce][To Terry McCarthy]</td>
<td>View Delete Action</td>
</tr>
</tbody>
</table>

### Hazard Report List

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<th>Title (Brief Description)</th>
<th>Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-09-036</td>
<td>SUPER 17/04/2009</td>
<td>Dangerous Driving by Buses on Ring Road</td>
<td>[By Michael Flannery][For Michael Flannery][To John Pearson]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>H-09-051</td>
<td>RCLOS 06/03/2009</td>
<td>Speed Hump Confusion with Pedestrian Crossing</td>
<td>[By Paul Murray][For Paul Murray][To Greg Cooman]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>H-09-029</td>
<td>SUPER 23/02/2009</td>
<td>Vehicular traffic in the Quad</td>
<td>[By Kath O'Donnel][For Kath O'Donnel][To Michael Flannery]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>H-08-001</td>
<td>CLOSE 01/04/2008</td>
<td>3 pin Plugs Breaking</td>
<td>[By Peter Munster][For Peter Munster][To Peter Munster]</td>
<td>View Delete Action</td>
</tr>
<tr>
<td>Ref No</td>
<td>Reported Date</td>
<td>Title</td>
<td>Status</td>
<td>USQSafe Comment</td>
</tr>
<tr>
<td>--------</td>
<td>---------------</td>
<td>-------</td>
<td>--------</td>
<td>-----------------</td>
</tr>
<tr>
<td>H-09-025</td>
<td>07-Jan-2009</td>
<td>Bougainvillea with large spikes hanging over path.</td>
<td>CLOSE</td>
<td>Agree with the recommendation.</td>
</tr>
<tr>
<td>H-09-026</td>
<td>21-Jan-2009</td>
<td>Smoke passing through air conditioning ducts</td>
<td>CLOSE</td>
<td>USQSafe manager has discussed with the Group Manager Facilities and No Smoking signs will be posted in the undercroft. Vehicle traffic will also be kept to a minimum. This area will be re-developed in the near future. GM Facilities was reluctant to further restrict vehicle traffic as the tradesmen need access to the plant rooms.</td>
</tr>
<tr>
<td>H-09-027</td>
<td>21-Jan-2009</td>
<td>Gas smell in Q138</td>
<td>RCLOS</td>
<td>Investigation into the gas smell found that it was the used gas bottles waiting for collection being turned on. The person responsible was advised about the contamination of air into Q Block and the subsequent evacuation of students. A recommendation to Artworx to review the need for gas bottles to be kept onsite will be forwarded.</td>
</tr>
<tr>
<td>H-09-028</td>
<td>23-Feb-2009</td>
<td>Slippery step at C block.</td>
<td>RCLOS</td>
<td>Area was inspected. Dirt,</td>
</tr>
</tbody>
</table>
Human factors identified as significantly contributing factors in 80-90% of all incidents.

This figure is probably closer to 100%.

Identity the human factors and target training/design/etc.

How do we identify the Human Factors?
Human Factors Analysis and Classification System

History from Aviation

Wider use

The Reason Model
The Reason Model
Organisational Error Chain

Organisational and System Factors

Task and Environmental Conditions

Individual and Team Actions

Latent Conditions

Limited window of opportunity

(Adapted from Reason, 1990)
The Reason Model

**ORGANISATION** (Organisational Deficiencies Latent Failures)

**MANAGEMENT DECISIONS AND ORGANISATIONAL PROCESSES**

**WORKPLACE** (Local Conditions)

**ERROR-PRODUCING CONDITIONS**

**VIOLATION-PRODUCING CONDITIONS**

**PERSON** (Active Failures)

**ERRORS**

**VIOLATIONS**

**DEFENCE BARRIERS**

**ACCIDENTS & MAJOR INCIDENTS**

**LATENT FAILURES IN DEFENCES** (HOLES IN THE DEFENCES - SWISS CHEESE MODEL)
Unsafe Acts
Preconditions for Unsafe Acts
Unsafe Supervision
Organisational Influences.
Errors

Violations.
HFACS – Unsafe Acts - Errors

Decision Errors
Skill-based Errors
Perceptual Errors.
Improper procedure
Misdiagnosed emergency
Wrong response to emergency
Exceeded ability
Inappropriate action
Poor decision.
Unsafe Acts

Preconditions for Unsafe Acts

Unsafe Supervision

Organisational Influences.
Inadequate Supervision
Planned Inappropriate Operations
Failed to Correct Problem
Supervisory Violations.
HFACS – Unsafe Supervision – **Inadequate Supervision**

Failed to provide operational doctrine
Failed to provide guidance
Failed to track performance
Failed to provide training
Failed to track qualifications
Failed to provide oversight.
Applying HFACS to UniHIRTS

Add New Human Factor

Factor:

- Unsafe Acts
  - Violations
  - Errors
- Preconditions for Unsafe Acts
  - Substandard practices of Operators
  - Substandard Conditions of Operators
    - Physical/Mental Limitations
    - Adverse Mental States
    - Adverse Physiological States
    - Medical illness
    - Physical fatigue

Current Selected Factor: <None>

Comment:

Save & Close  Save & Add New  Cancel
Applying HFACS to UniHIRTS

The issues:

Training

Education

How to use the information

Acceptance by an unenlightened population.
The Results

Incidents and Hazards
Reporting up
Severity down
Trend analysis
Targeting the problem areas
Injury Statistics.
The Results

Reports by Calendar Year (2010 extrapolated)
The Results
2009 – 240 Reports
Significant
Errors
2009 HFACS Significant Contributing Factors

Violations
Substandard Conditions of Operator
Inadequate Supervision
Resource Management
Initiatives from Significant Contributing factors

Failed to Prioritise Attention – Task analysis to trap errors

Poor Technique – increased manual handling training

Misjudged distance/angle/speed – Task analysis to trap errors

Use of an unauthorised procedure – task review to ensure suitable procedures are available

Medical Illness – (nil if the illness was the incident)

Failed to provide operational doctrine – doctrine review to ensure all tasks have appropriate written procedures

Failed to provide oversight – training on supervisor responsibilities

Poor design – major project on procurement to ensure all purchases are checked for safety considerations
2008 and 2009 Calendar Year Work Related Injury Statistics
Conclusion

HFACS – is it worth the trouble?
UniHIRTS availability
Intention to provide FOC to all
Based on Oracle database and PeopleSoft
Future Changes
Search function
Enhanced reporting
Auto analysis
Rehab module?
And Finally…

If you ever choose to move, your aviation safety experience is highly sought after and transferable.