Hazard Management Effectiveness & Measurement

Drillsafe Meeting
Perth 25th March, 2004
Paul Young

Hazard Management

- Variety of Hazard Management Tools
- A Means to Measure
- Assessment and Continuous improvement
- Knowledge Sharing Ability

Schlumberger Hazard Analysis Tools

QHSE
just live it

Process
INCREASING COMPLEXITY
Task

QRA

PRIAM
HAZID/HAZOP

HARC Record Form
(Design & Planning)

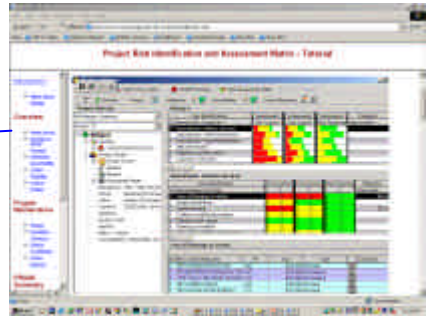
HARC Record Form
(Worksite Operations)

JSA (QHSE) Form

THA Prompt Card

Stand Back 5x5

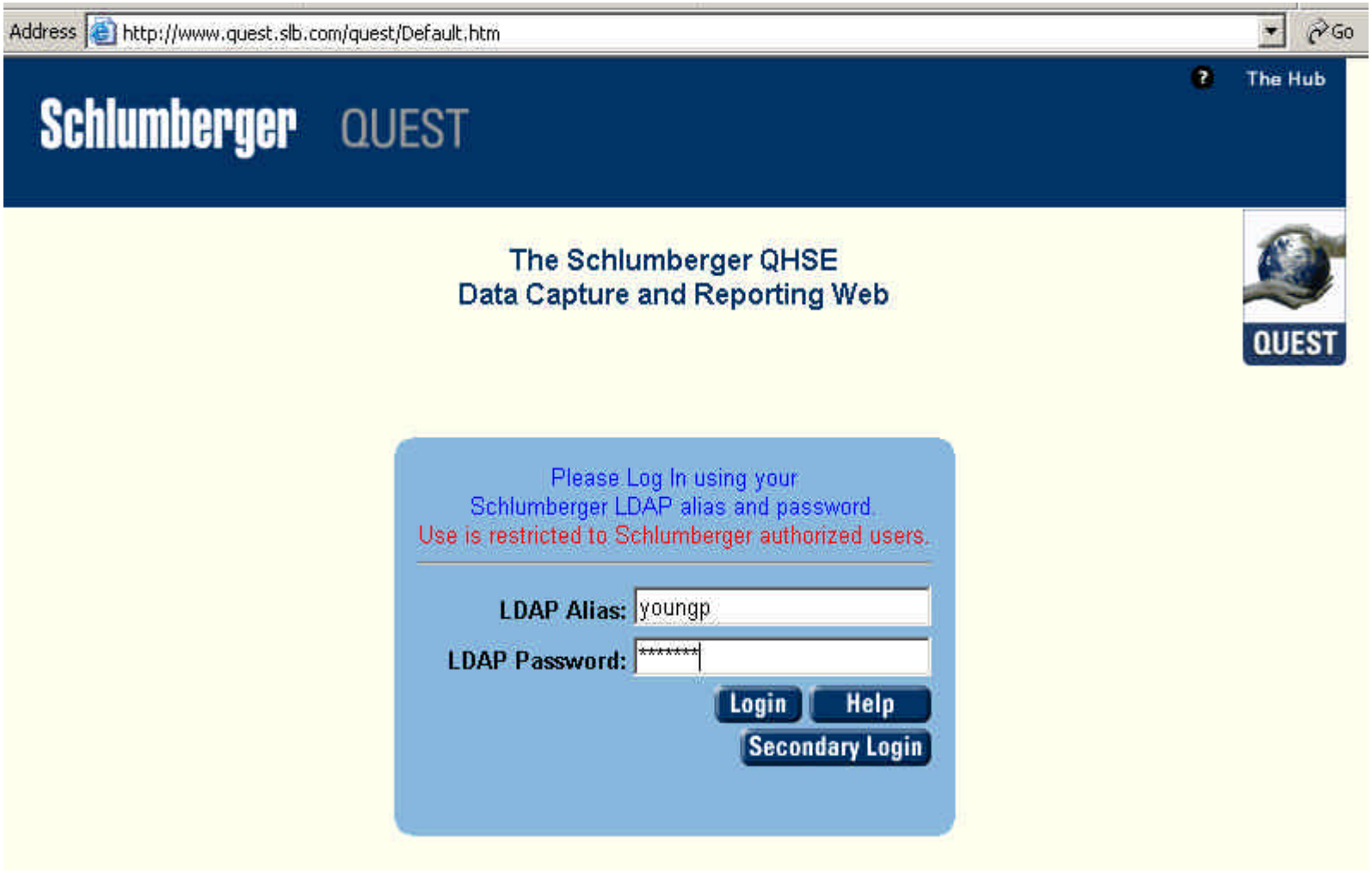
STOP, Commentary Drive
SIPP Observation, Unsafe Act Audit



Measuring Effectiveness

- Statistics
  - Trend Analysis
  - Performance Against Objectives (Score Cards)
- Participation
  - Reporting Rates
  - Passport
- Audits and Assessments
  - Scores
  - Remedial Action Closure.

Measuring Effectiveness



Measuring Effectiveness

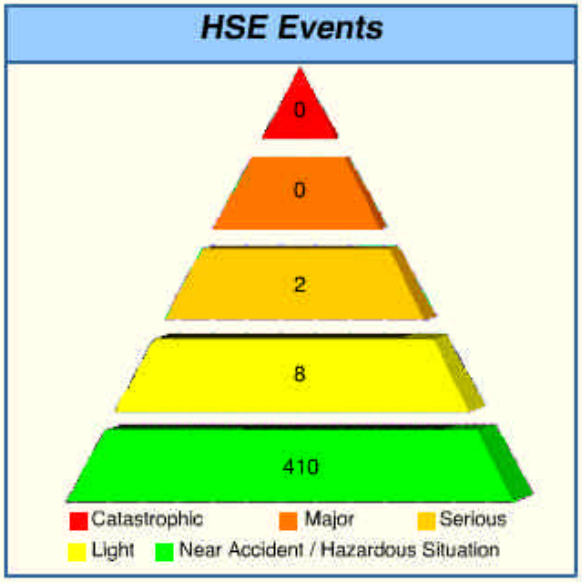
QHSE just live it

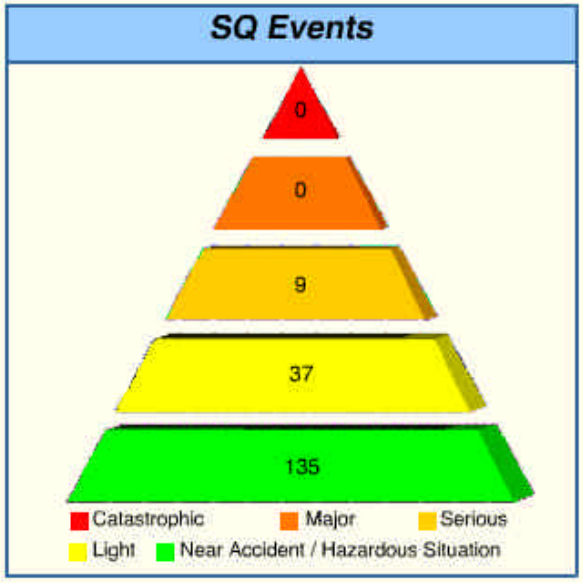
Display Indicator Value Table | QHSE Indicators Description

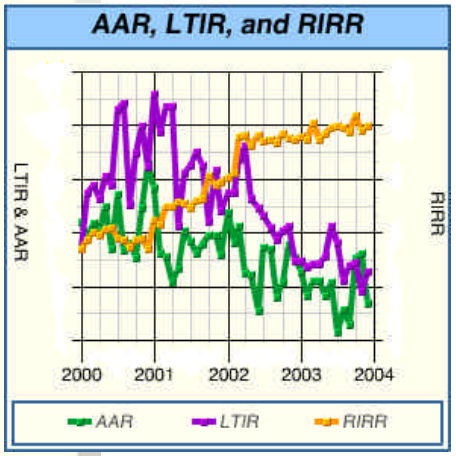
Rates vs. Objectives

	2001	2002	2003	2004 YTD	Obj 2004
AAR(CMSL)by Miles	17.97	19.93	23.19	24.89	13.00
Combined Lost Time Injury Frequency	13.63	11.37	5.56	4.74	4.72
HSE Risk Reporting Rate	6.94	5.87	4.98	5.38	5.48
SQ Risk Reporting Rate	0.53	2.27	2.67	2.18	4.00
CM SQ Index/M$ Revenue	-	-	0.18	0.00	0.16

Display Rate Value Table | Rates Description







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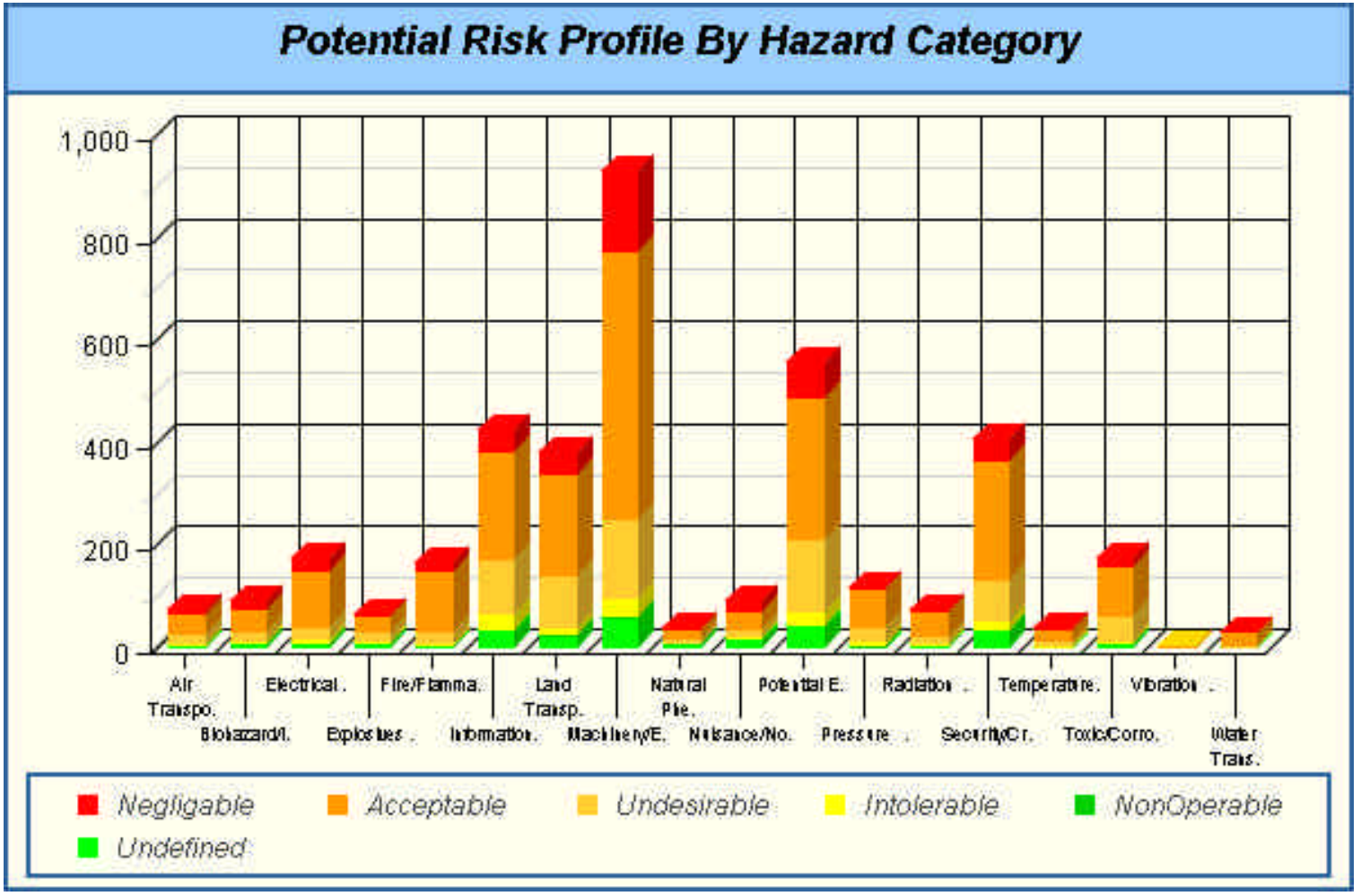
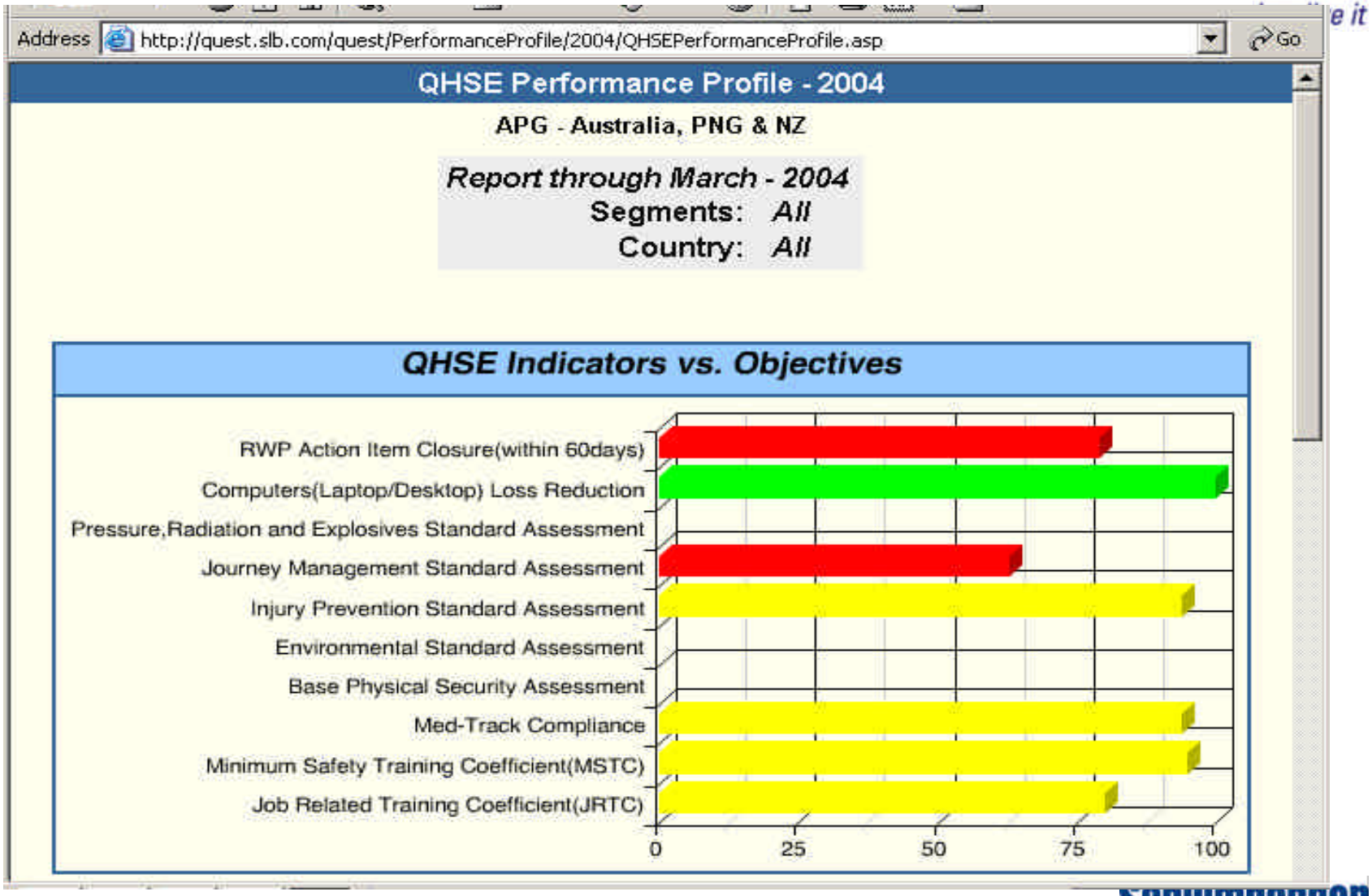
Hazard Management – Risk Profile



Measuring Effectiveness - Scorecards



Measuring Effectiveness

Address http://quest.slb.com/quest/SafetyNetASP/Rpts/HSESummaryReport.asp Go

HSE Summary Report [Printable] [Download] [Help]

From Jan 01, 2004 To Mar 24, 2004 Report

Business Segment: All Sub-Segment: All

Country: All

APG - Australia, PNG & NZ

2004	Jan	Feb	Mar	Total
HSE Events - CMSL				
Catastrophic	0	0	0	0
Major	0	0	0	0
Serious	1	0	1	2
Light	2	3	3	8
Total CMSL	3	3	4	10
HSE Related Losses - CMSL				
SLB losses in K$ value	1.0	3.0	0.0	4.0
Client losses in K$ value	0.0	0.0	0.0	0.0
Total losses in K$ value	1.0	3.0	0.0	4.0
HSE Performance Indicators				
HSE Reporting Rate (#HSE Reports/employee/year)	5.8	5.2	4.2	5.1
HSE Closure Rate (%actions closed within 60 days)	88.8%	100.0%	100.0%	94.7%
HSE Closure Rate (%actions closed in Due Time)	72.0%	62.9%	65.9%	67.5%
Supporting Data				
Number of Employees	350	349	338	346
Number of HSE Event Reports	170	150	119	439
Number of Actions Created (CR)	180	145	162	487
Number of Actions Created,Qualifying for 60 days Closure (CR-C)	178	106	90	374
Number of Actions Created,Qualifying for Due Time Closure (CR-T)	161	116	123	400
Number of Actions Closed within 60 days (CL)	158	106	90	354
Number of Actions Closed in Due Time (CWT)	116	73	81	270

Note:

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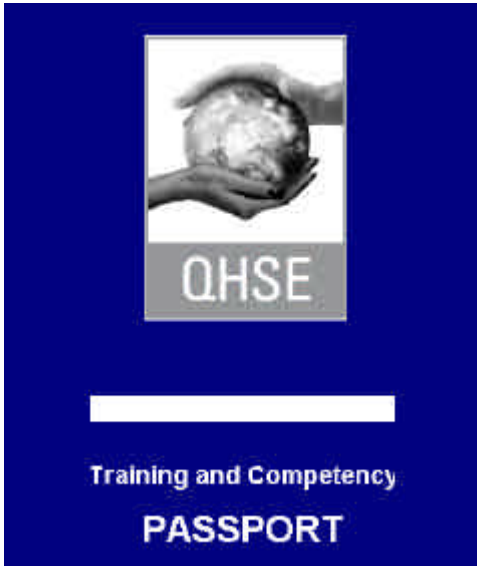
Participation – Passport Review



Site and Job Audit Records

This page is a record of QHSE Audits and Inspections the Passport holder has received or has participated in as an assessment team member. Record any formal Audit or Inspection and indicate the type of assessment (QHSE Management System Audit, Radiation/Explosives Inspection, IP Program Assessment, Wellsite Job Review, Cell Equipment Inspection etc.).
The assessment team leader should validate the participation of all parties

Operation/Site Audited	Date	Remarks	Signature

Orientation Records

A newcomer or visitor to a facility should be oriented to the location specific risk profile and any QHSE concerns immediately upon arrival. At a minimum such an orientation should cover: personal security, safety, medical and health; local customs, regulations; emergency response plans; and any specific QHSE training requirements.
Record all orientations here.

Manager Name	Date	Location	Signature

Generic Certifications

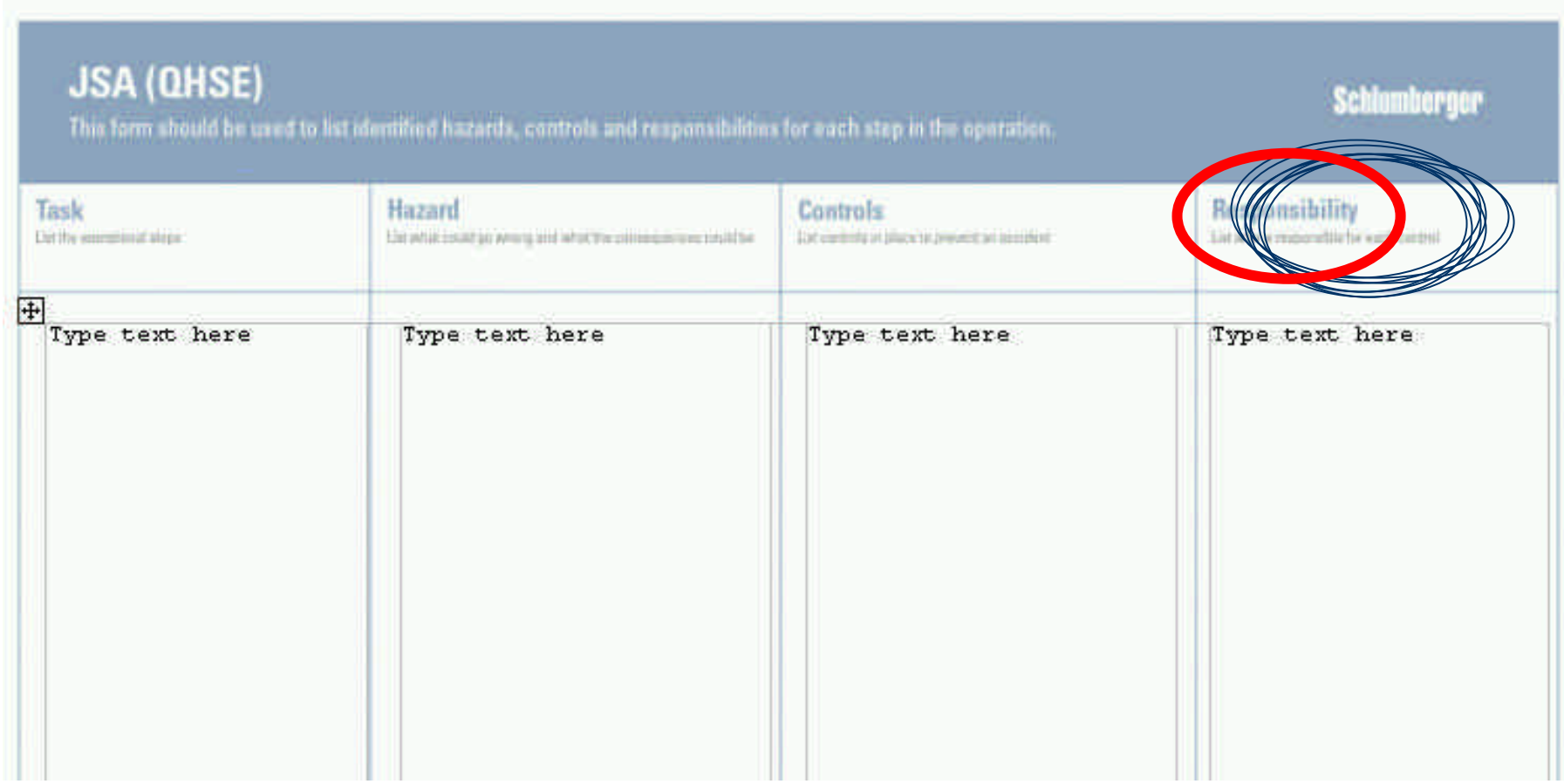
Print-out from QUEST.

Certification	Level	Training	Expiration	Valid
Certification		Training Date	Expiration Date	Valid
Minimum Requirements:				
Defensive Driving Level 1		Aug 08, 1997	permanent	Yes
Electrical Level 1		Jan 01, 1999	permanent	Yes
Emergency Response Level 1		Jan 01, 1999	permanent	Yes
Environment Level 1		Jan 01, 1999	Dec 31, 2003	Yes
Fire Level 1		Jan 01, 1999	permanent	Yes
First Aid Level 1		Nov 15, 2002	Nov 15, 2005	Yes
Health and Hygiene Level 1		Jan 01, 1999	permanent	Yes
PPE Level 1		Jan 01, 1999	permanent	Yes
QHSE MS Level 1		May 20, 1999	permanent	Yes
Risk/Hazard Reporting Level 1		Jan 01, 1999	permanent	Yes
SPP Level 1		Jan 01, 1999	permanent	Yes
SPP Level 2		-	-	No
Substance Abuse Level 1		Jan 01, 1999	permanent	Yes
			Minimum Requirements: 87.5 = 92.8%	
Job Related Requirements:				
Auditing Level 1		Sep 14, 2000	permanent	Yes
Commentary Drive		Dec 14, 2001	Dec 13, 2002	No
Defensive Driving Level 2		Dec 14, 2000	Dec 13, 2003	Yes
Information Security Level 1		Jan 01, 1999	permanent	Yes
Information Security Level 2		Aug 13, 2001	Aug 12, 2004	Yes
Journey Management Level 1		Feb 01, 2002	Jan 31, 2005	Yes

Continuous Improvement

- Accountability
- Behavioural Observations
- Evolution of the HARC
- Knowledge Management.

JSA – Instilling Accountability



JSA (QHSE)

This form should be used to list identified hazards, controls and responsibilities for each step in the operation.

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Task	Hazard	Controls	Responsibility
Type text here	Type text here	Type text here	Type text here

Behavioural Observations

Wellsite Behaviour Observation Checklist

Date:	Location:	Observer:
Checklist Type:		Time:

1.0	PPE	Safe	At-Risk	Unseen / N/A
1.1	Person is wearing a hard hat when near crane operations			
1.2	Barrier cream, surgical gloves and normal gloves are worn when handling drill mud			
1.3	Appropriate safety glasses are worn with side shields			
1.4	Face shield is worn when appropriate (eg mixing cement, water blasting)			
1.5	Gloves are worn when appropriate			
1.6	Long sleeved overalls are worn			
1.7	Clothing is secured (eg sleeves are buttoned up)			
2.0	Housekeeping			
2.1	Area is kept clean and tidy			
2.2	Units are placed in a dry area where possible			
3.0	Working Method			
3.1	Long hair is tied back			
4.0	Procedures			
4.1	Person has the appropriate permit to work (eg hot work)			
4.2	JSA has been carried out			

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Schlumberger **Behavioural Observations**

Save Report Data

Print Close

Wellsite Checklist (OFS NZ) 'Category Feedback Report' Summary for Observations Spanning 01-MAY-2003 - 01-OCTOBER-2003

General Summary of Demographics

Location: NZ - New Plymouth OFS Base **Total Observations:** 7

Summary of Categories Percent Safe Scores

Behavioural Category	Safe	At-Risk	Unseen	% Safe	Target %	Previous %	Change
1. PPE	6	0	1	100	100	0	+100
2. Housekeeping	2	0	0	100	100	0	+100
3. Lifting or Moving Loads	1	3	0	25	100	0	+25
4. Procedures	1	0	1	100	100	0	+100
7. Working Method	1	0	0	100	100	0	+100
8. Hand Placement & Pinch Points	0	0	4	0	100	0	0
11. Explosives	0	0	6	0	100	0	0
12. Radiation	6	0	0	100	100	0	+100
Totals	**17**	**3**	**12**	**85**	-	-	-

Graphical Representation of Category Safe Percent

FOCUS AREA

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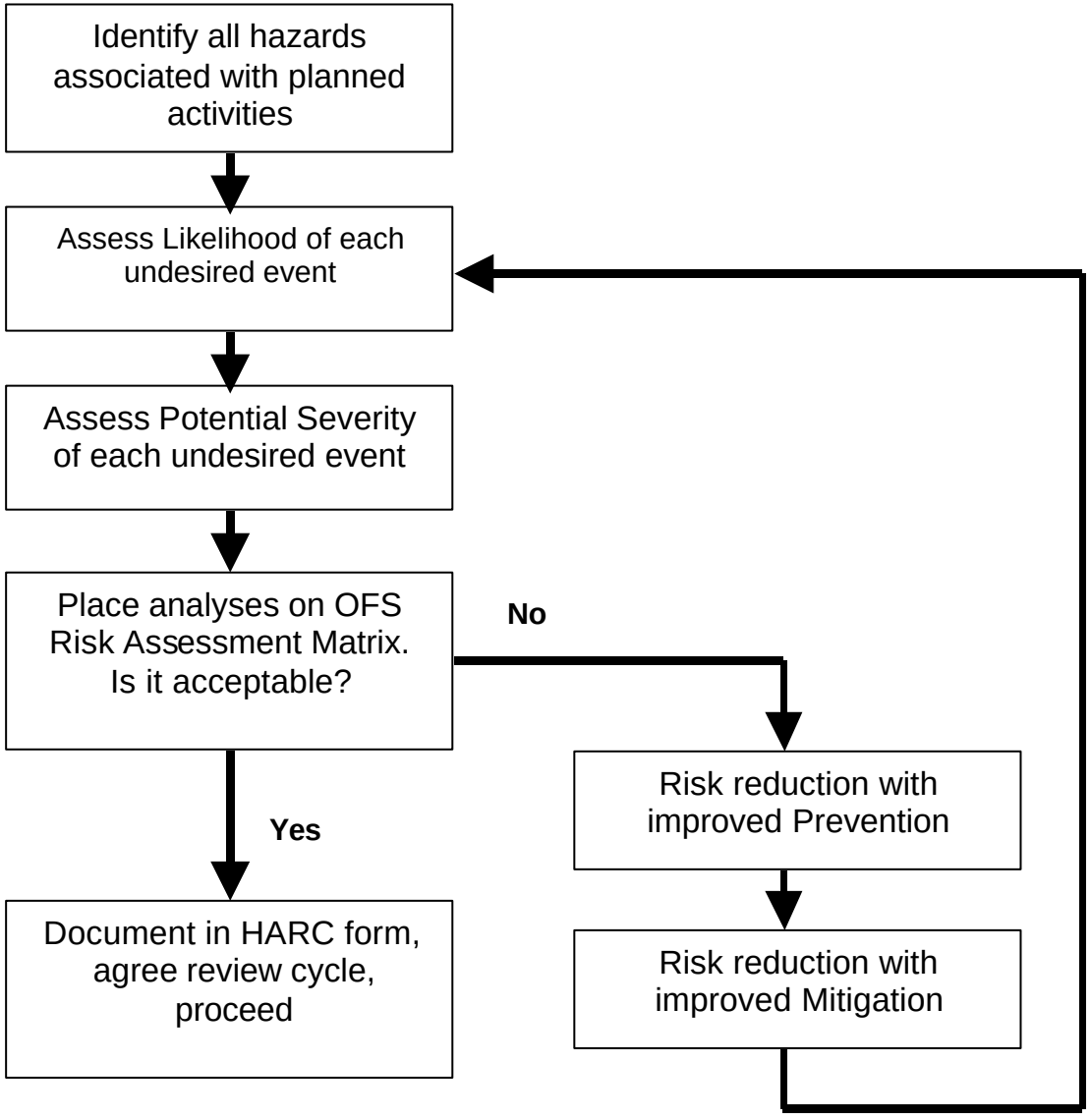
Evolution of the HARC

- **H**azard **A**nalysis & **R**isk **C**ontrol
  - Refining the JSA to ensure ALARP before proceeding
  - A Hazard Management Tool for tasks of significant risk.

HARC Workflow



HARC

Hazard Analysis and Risk Control Record			
Revision:		**Task/Process Assessed:**	
Date:		**Location:**	
Operation:		**Assessment Team:**	

	HAZARD		INITIAL RISK			CONTROL MEASURES		RESIDUAL RISK		
						List all Current and Planned Control Measures, taking into Account all Contributing and Escalating Factors				
Activity Steps	Hazard Description and Worst Case Consequences with no Prevention or Mitigation Measures in Place	Loss Category/ Population Affected	Likelihood	Severity	Risk Level	Current and Planned Prevention Measures to reduce Likelihood	Current and Planned Mitigation Measures to reduce Severity	Likelihood	Severity	Risk Level

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Risk Assessment

-25 to -20	BLACK	NON-OPERABLE:	Evacuate the zone and or area/country
-16 to -10	RED	INTOLERABLE:	Do not take this risk
-9 to -5	YELLOW	UNDESIRABLE:	Demonstrate ALARP before proceeding
-4 to -2	GREEN	ACCEPTABLE:	Proceed carefully, with continuous improvement
-1	BLUE	NEGLIGIBLE:	Safe to proceed

SEVERITY	Improbable 1	Unlikely 2	Possible 3	Likely 4	Probable 5
	LIKELIHOOD →				
Light -1	-1 1L	-2 2L	-3 3L	-4 4L	-5 5L
Serious -2	-2 1S	-4 2S	-6 3S	-8 4S	-10 5S
Major -3	-3 1M	-6 2M	-9 3M	-12 4M	-15 5M
Catastrophic -4	-4 1C	-8 2C	-12 3C	-16 4C	-20 5C
Multi-Catastrophic -5	-5 1MC	-10 2MC	-15 3MC	-20 4MC	-25 5MC

White arrow indicates decreasing risk

Negligible — **Safe to proceed**

Acceptable improvement — **Proceed carefully, with continuous**

Undesirable — **Demonstrate ALARP before proceeding**

Intolerable — **Do not take this Risk**

Black Zone — **Non-Operable**

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Knowledge Management

- All HSE documentation controlled centra
- HARCS, Hazards & Alerts stored centra
- Employee Subscriptions to Knowledge databases
- Automatic email notification of alerts & changes

Summary

- Successful Hazard Management depends on
  - having the right tools for the complexity and risk involved
  - a method to measure and assess effectiveness
  - continuous assessment improvement
  - an effective way to share identified hazards with all employees

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