

Excellence in Construction HSE



Presentation for the 30th Annual European AIChE Seminar
By Sytse Kamstra, Home Office Construction HSE Engineer,
Technip Benelux B.V.

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Introduction S. Kamstra

Sytse Kamstra – Home Office Construction HSE Engineer

- ▶ **Introduction**
- ▶ **Role**



Contents

1. **Introduction**
2. **Start of a project**
3. **Safe System of Work**
4. **Work preparation**
5. **Key Role TPB Discipline Supervisors**
6. **Communication**
7. **Monitoring of HSE**
8. **Lessons learned/ Trend Analysis**



1. Introduction

- ▶ **Technip**
- ▶ **Technip Benelux B.V.**
- ▶ **Construction Department**

Technip Today

With engineering, technologies and project management, on land and at sea, we safely and successfully deliver the best solutions for our clients in the energy business.

Worldwide presence with 30,000 people in 48 countries.

Industrial assets on all continents, a fleet of 34 vessels (of which 4 under construction)
2011 revenue: €6.8 billion.

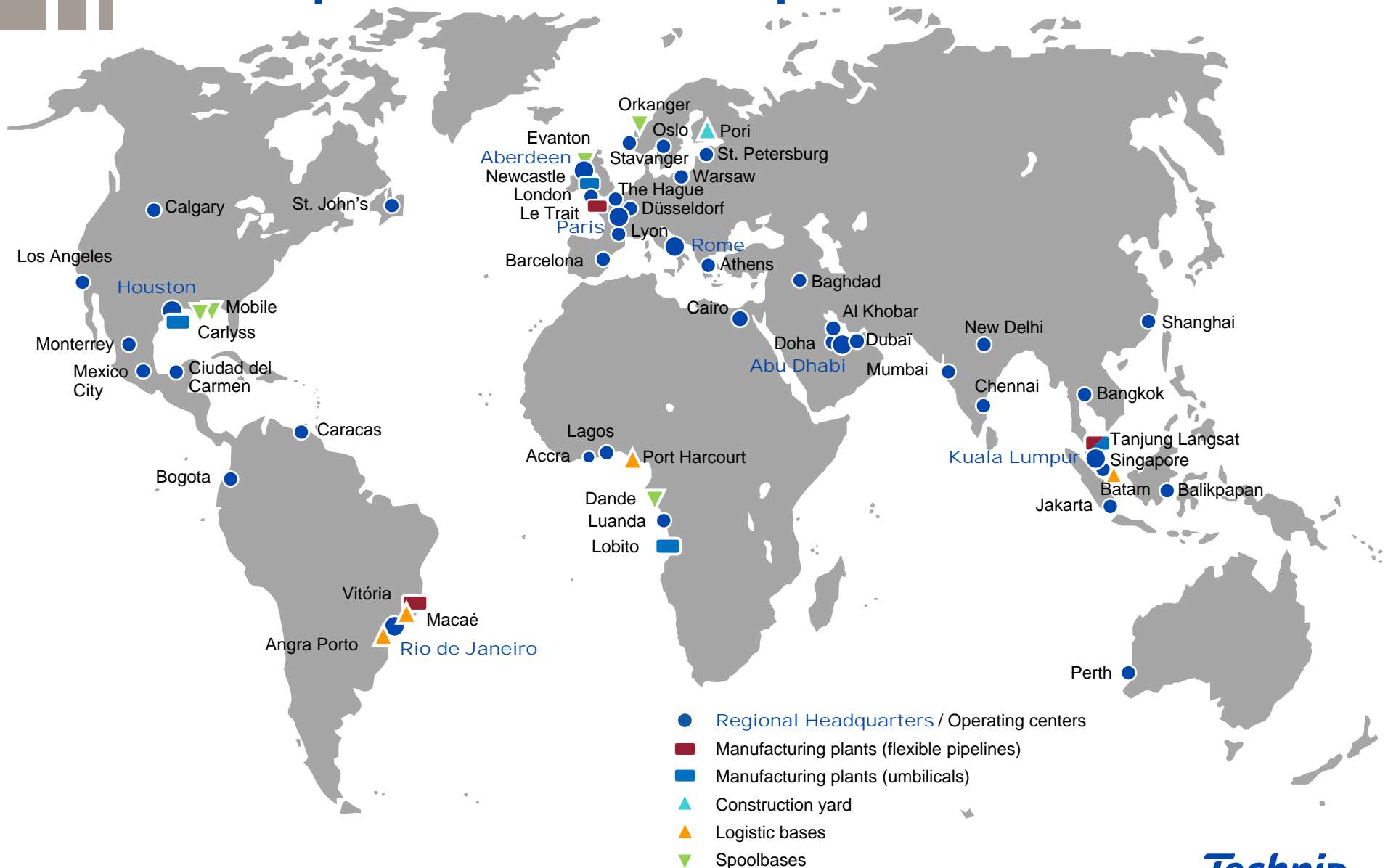


Energy is at the core of Technip

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A Unique Worldwide Footprint



Business Segments



Subsea

- Design, manufacture and supply of deepwater flexible and rigid pipelines, umbilicals, and riser systems
- Subsea construction, pipeline installation services and Heavy lift
- Six state-of-the-art flexible pipe and / or umbilical manufacturing plants
- Five spool bases for reeled pipeline assembly as well as four logistics bases
- A constantly evolving fleet strategically deployed in the world's major offshore markets



Offshore

- Engineering and fabrication of fixed platforms for shallow waters (TPG 500, Unideck®)
- Engineering and fabrication of floating platforms for deep waters (Spar, semi-submersible platforms, FPSO)
- Leadership in float over technology
- Floating Liquefied Natural Gas (FLNG)
- Construction yard



Onshore

- Gas treatment and liquefaction (LNG), Gas-to-Liquids (GTL)
- Oil refining (refining, hydrogen and Sulphur units)
- Onshore pipelines
- Petrochemicals (ethylene, aromatics, olefins, polymers, fertilizers)
- Bio fuel and renewable energies (including offshore wind)
- Non-oil activities (principally in life sciences, metals & mining, construction)

The best solutions across the value chain

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An Absolute Commitment to HSE



Health, Safety and Environment (HSE) Policy

Our goal: create and sustain an incident-free environment delivering excellent HSE performance at every level

3 main focus areas:

- The maintenance of effective HSE management systems

- Establishing meaningful leading and lagging indicators to measure and manage performance

- Creating a climate that is intolerant of inappropriate HSE behaviours and unsafe situations

Safety as a value and a culture

- Clear commitment to safety by management

- Workforce participation and ownership of safety problems and solutions

- Trust between shop floor and management

- Good communications

- A competent workforce

Pulse : a program now adopted by major clients (Wheatstone project in Australia for Chevron, FLNG for Shell)

“The health and safety of our people is a core value and an absolute commitment” Thierry Pilenko, Chairman and CEO of Technip



Approach

Approach after 2009, focus on

- PULSE site training (Leadership Training focussing on Supervisor's role)**
- Site visits/ auditing/ training**
 - ▶ Keep things practical/ simple, no extensive systems/ programs**
 - ▶ Awareness of cultural influences**
 - ▶ The importance of a local HSE Supervisor**

8 years without LTI

from 2004 to 2011

Technip Benelux

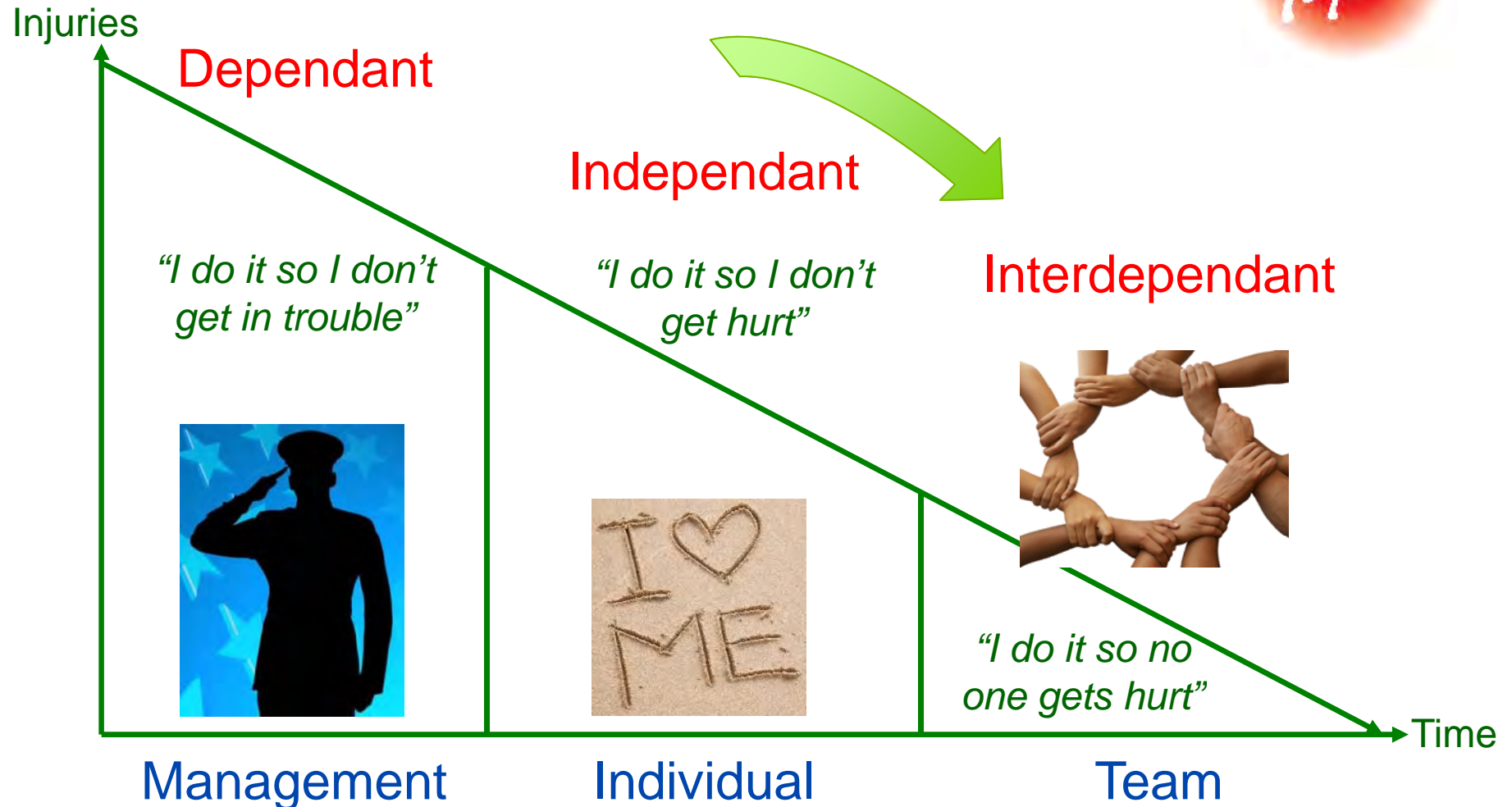
the commitment for 2012 and beyond:

**My care for Health & Safety is
reflected in my daily actions.**





The Bradley Curve



Source: Dupont

Technip Benelux makes teams more responsible for safety



Focus on observations

Trend of the number of Observations of Technip Benelux Construction/
Start-up totals in the years 2009-2011

Year	2009	2010	2011
Observations per 1,000,000 manhours	380	2210	9760



More focus on safety results in more observations

2. Start of a project

Steps after contract awarding, depending on role (contract) TPB

- ▶ **Mobilizing/ Man power - organizing the site team, including (hired) HSE Supervisor (local/expat)**
- ▶ **Implementation of TPB Safe System of Work**
- ▶ **Review of (sub)contractor's documents**
- ▶ **Training program (induction, PULSE, specific instruction/ training)**
- ▶ **Equipment on site**

3. Safe System of Work

HSE system as described in TPB's 3 HSE 'key documents'

- ▶ **Construction HSE Plan**
- ▶ **Risk Inventory & Evaluation**
- ▶ **Rules & Requirements**



Safe System of Work

Safe System of Work

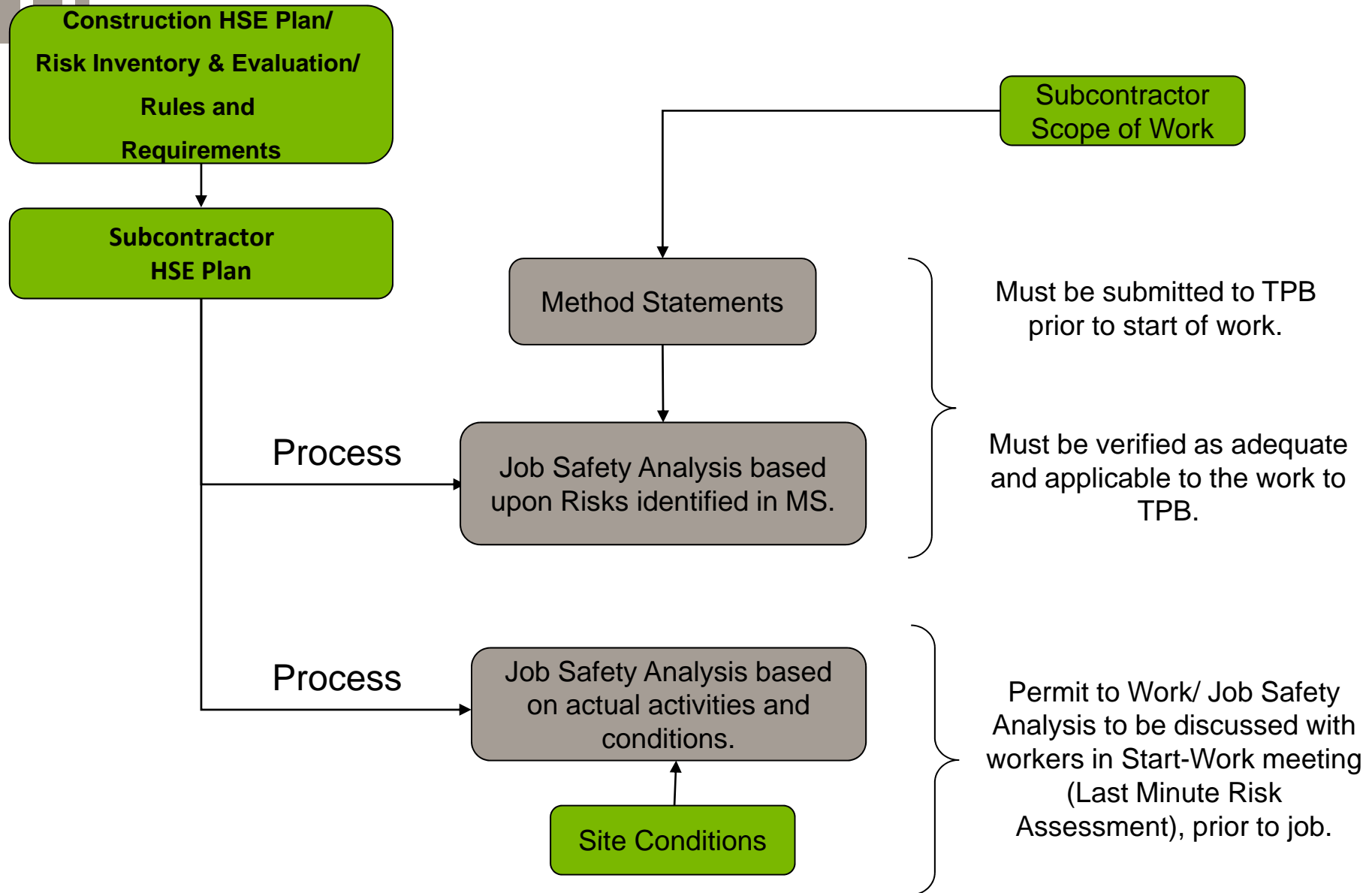
- ▶ **TPB's 3 HSE key documents**
- ▶ **Permit to Work system**
- ▶ **Instruction/ Training**
- ▶ **Inspections/ Audits**
- ▶ **Daily Observations Logbook**

4. Work preparation

Levels

- ▶ **TPB Risk Inventory & Evaluation**
- ▶ **(Sub)contractor's HSE Plan + Method Statement/ Risk Assessment, reviewed/ approved by TPB**
- ▶ **Start-work meeting**
- ▶ **Last Minute Risk Assessment**

HSE in Work Preparation



5. Role Discipline Supervisors

Most important roles & responsibilities regarding Safety

- ▶ **Enforce the Construction HSE Plan at site.**
- ▶ **Control the safe execution of the work performed by the (sub)contractors working on the project, based upon permit to work.**
- ▶ **Identify and classify high-risk activities and participate in developing Job Safety Analysis for these activities.**
- ▶ **Stop work that is not being executed in a safe manner (EVERYBODY's RESPONSIBILITY!!).**



Role Discipline Supervisors

- Discipline Supervisors are ‘KEY’ in Safety Awareness process
- Leading by example (Pulse - ‘You are the message’).
- Assess the hazards in the immediate work area and the use of JSA/ LMRA for the task.
- Discuss the identified hazards and controls with their team (Start-Work meetings).
- Put in place extra precautions if necessary.
- Check throughout the day (not ‘just’ prior to the job) if precautions and controls are being followed by the team.

6. Communication

On site

- ▶ **Induction + specific instruction/ training**
- ▶ **Daily Co-ordination meeting**
- ▶ **Weekly HSE Meeting**
- ▶ **Start-work meetings**
- ▶ **Progress meetings**

Communication Home Office

- ▶ **HO Construction HSE Engineer**
- ▶ **Site visits/ auditing Management Home Office Zoetermeer**
- ▶ **Annual HSE meeting Construction Department Home Office Zoetermeer**



Communication on site

Induction/ examples

PRE-TASK TALK/ LMRA

- ▶ Everyone must attend a pre-task talk and perform the Last Minute Risk Analysis (LMRA) before starting work
- ▶ The talk should be led by the supervisor
- ▶ Discussion should concern hazards of the work about to be performed
- ▶ Please share any concerns or lessons learned from previous jobs



12 KEYS FOR SAFETY

1. PPE
2. HOUSE KEEPING
3. WORK AT HEIGHT
4. CONFINED SPACE
5. EXCAVATION
6. ENVIRONMENT
7. TOOLS & EQUIPMENT
8. PTW
9. HAZARDOUS MATERIALS
10. LIFTING & RIGGING
11. ELECTRICAL SAFETY
12. ROAD SAFETY



UNSAFE CONDITION



Inform Supervisor



Incidents / Accidents

- **You must report all:**
 - incidents
 - near misses
 - injuries (however small)
 - spills, fires
 - work related illness
- *on the day* they happen!
- **This is so we can investigate them, learn from them and make the workplace a safer place for everyone**



7. Monitoring of HSE

- ▶ **HSE Audits/ Site visits Home Office**
- ▶ **Monthly reporting of HSE statistics (incidents, observations) per project and Home Office overall report**
- ▶ **‘Smiley board’/ Top 6 topics (Daily Observations)**



**RECONVERSÃO DA REFINARIA DE SINES
STEAM REFORMER**

HSE Statistic

Worked hours week Horas de trabalho da semana	3,347
Total worked hours Total de horas de trabalho	14,961
Overall DAFWC frequency (200.000) Frequência de DAFWC	0.0
Overall LWD severity rate (200.000) Grau de gravidade de LWD	0.0
Total Recordable Cases (200.000) Total de Casos Registrados	0.0



8. Lessons Learned/ Trend Analysis



- ▶ **Sharing**
- ▶ **Observations/incident reporting & investigation (team approach)**
- ▶ **Trend Analysis sites and Home Office**
- ▶ **Results: actions (training/ attention/ improvement plans)**

Trend analysis - example

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Project No.
32049/32041/32057

Doc. Type
NM

Works Code
6100

Rev.
0

Monthly Trend Analyses

Projects 2011

Summary: Employee														
Category			Year 2011											
			Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
1.1	Knowledge	Lack of training/experience	0	2	1	1	0	0	0	0	0	1	0	15
1.2		Lack of knowledge, skills	4	5	3	3	3	0	0	0	0	0	0	18
1.3		Lack of discipline	2	6	0	0	0	0	1	0	5	2	1	17
1.4	Behavior	Negative attitude toward HSE, lack of belief	16	16	2	5	6	2	2	1	2	0	1	53
1.5		Non compliance with procedures	1	4	13	1	1	1	0	1	12	18	9	61
1.6		Violation of HSE Rules and Regulations	2	7	9	1	1	2	0	0	5	18	8	53
1.7	Use of PPE	PPE not used	29	59	39	24	15	35	23	14	61	64	403	
1.8		PPE wrongly used	3	8	1	0	2	6	2	0	7	5	0	34
1.9	Use of tools & equipment	Using defective tools/equipment	10	9	9	6	7	4	1	3	3	0	0	52
1.10		Incorrect/improper use of tools/equipment	1	7	3	0	0	1	1	0	1	1	1	16

722

Summary: Procedures														
Category			Year 2011											
			Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
2.1	Procedures	Proc Not available	0	0	0	0	0	0	0	0	4	1	0	5
2.2		Proc Not followed	57	87	36	37	29	26	11	13	9	28	16	349
2.3		Work permit Not available	0	1	0	0	0	0	0	0	0	0	0	1
2.4	Work Permit	Work permit Not followed	1	0	1	0	0	2	1	0	0	0	0	5
2.5		JSA Not available	0	0	0	0	0	0	0	0	0	0	0	0
2.6		JSA Not followed	0	1	0	0	0	0	0	0	0	0	0	1
2.7	LMRA	LMRA Not available	0	0	0	0	0	0	0	0	0	1	0	1
2.8		LMRA Not OK	0	0	0	0	1	0	0	0	0	0	0	1
2.9		LMRA Not followed	0	0	1	0	0	0	0	0	0	0	0	1

364

Summary: Work area														
Category		Year 2011												
		Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	total
3.1		Poor Housekeeping	38	55	49	19	35	18	10	3	9	24	8	268
3.2		Poor Access/Egress	33	22	18	11	9	5	8	5	3	10	1	125
3.3		Inadequate Safety Barricades/Signs & Signals	21	20	11	0	6	6	4	3	8	14	5	98
3.4		Inadequate emergency response equipment	0	0	0	0	0	0	0	0	2	0	2	
3.5		Emergency exit poorly marked or blocked	0	1	1	0	1	0	0	0	0	0	0	4
3.6		Incorrect loading/stacking/storage	0	12	8	13	3	1	2	0	4	0	4	43
3.7		Incorrect hoisting/lifting	5	1	1	8	0	3	0	0	3	6	0	27
3.8		Incorrect positioning/set up	0	0	0	0	0	0	2	1	6	1	3	13
3.9		Poor lighting	0	1	1	0	0	0	0	0	11	4	0	17
3.10		Unprotected height	2	1	4	8	8	0	7	0	1	3	0	34
3.11		Incorrect use of ladders and scaffolding	1	1	2	1	1	1	1	0	15	17	3	43
3.12		Equipment, materials not secured	1	2	1	0	3	0	1	0	3	8	2	21

695

Summary: Chemical Storage and Waste Management														
Category			Year 2011											
			Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
4.1		Incorrect storage/labeling	1	1	0	0	3	4	3	1	0	1	1	15
4.2		Incorrect loading/unloading	0	0	0	0	0	0	0	0	0	0	0	0
4.3		MSDS Not available	0	1	0	0	1	0	0	0	0	0	0	2
4.4		Emission/ leakages/spills	0	0	0	0	1	0	0	0	0	0	0	2
4.5		Adequate number of waste disposal facilities	5	4	1	1	0	0	0	0	0	0	0	11
4.6		Correct identification & Segregation of waste	5	4	1	0	1	0	0	0	0	0	0	11
4.7		Regular and sufficient collection of waste	5	3	1	0	0	0	0	0	0	0	0	9

50

Summary trend analyses															
Category			Year 2011												
			Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
2		Procedures	58	89	38	37	30	26	12	13	13	30	16		664
1		Employee	77	123	80	41	35	52	30	19	96	109	0		722
3		Work area	102	116	96	60	66	34	35	12	59	93	22	0	695
4		Chemical Storage and Waste Management	16	13	3	1	6	4	3	1	0	2	1	0	50

1831

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Annual HSE Meeting

**Actions Annual HSE meeting Construction
Department, December 2011.**

- **Update Top 6 topics ('Smiley board') 2012 for sites, based upon 2011 Trend Analysis.**
- **Focus on Nr. 1 and 2 Top 6, PPE & Behavior/ procedures (Safety awareness & Communication to be improved).**
- **Re-defining Categories Daily Observations Logbook.**
- **Make Trent Analysis process more transparent .**
- **Increase involvement Subcontractors (EPCm AND Construction Advisory Services) in Daily Observations Logbook.**



Conclusions

Technip Benelux

- **Absolute commitment to HSE**
- **Continuously increasing Construction HSE Awareness**
- **8 years without LTI**
- **Growing Team HSE Achievement (Bradley)**



Questions?

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