

November 2018

International Federation of Inspection Agencies

Petroleum and Petrochemicals Committee

First Safety Conference

Held at:

World Port Centre

Rotterdam

Netherlands

October 17/18, 2018

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1. Introduction and summary

The first IFIA safety conference was held at the port of Rotterdam on October 17/18 2018. The main aim was to combine the petroleum inspection safety meetings, which have previously been called individually by a number of the oil majors, into one joint meeting and at the same time to involve other inspection company clients, shipping and barge companies and terminals.

The conference was organised by IFIA in partnership with BP, Shell, ExxonMobil and the Port of Rotterdam. Over 70 delegates attended, representing the following companies and organisations:

BP
Bureau Veritas (Inspectorate)
Camin Cargo Control
Cargo Inspections Group
Chevron
DuPont
European Commission
ExxonMobil
Geo Chem Middle East
IFIA
Intertek Caleb Brett
JSHP Consulting Ltd.
Koole Tankstorage Minerals
LyondellBasell
Phillips 66 Limited
Port of Rotterdam
Rochem Inspectors
Saybolt International BV
SGS
Shell
The AmSpec Group
Total Oil Trading SA
Varo Energy BV
Vitol

The conference included three presentations:

Cedric Parentelli, Director, Europe and North America, Dupont
Capture Value of Digitalisation through Safety Culture Transformation

Tony Gower-Jones, Board member, Tripod Foundation
Changing leadership conversations by changing how you measure safety

James Coull, Director, JSHP Consulting Limited
Guidance on portable self-energised electrical and electronic devices in potentially explosive areas

Delegates participated in working sessions addressing Stop Work Authority (scenarios and empowerment) and topics relating to a proposed IFIA Safety Code for petroleum inspection. There was overwhelming support for the development of the Safety Code and delegates were also polled on a number of related issues in a lively interactive session.

Work will now begin on the development of the Safety Code and, following the success of this first event, IFIA are already looking to hold a second conference in 2019, probably in a different region where concerns may be different and to provide an opportunity for broader participation.

2. Opening address

The opening address was given by Peter Boks, President of Saybolt, IFIA Council member and also IFIA Treasurer.

Peter welcomed delegates and noted the strict procedures governing IFIA membership which are embodied in the Compliance Code and subject to annual external audits. The code covers:

- ✓ **Integrity**
- ✓ **Conflict of interest**
- ✓ **Confidentiality and Data Protection**
- ✓ **Anti-bribery**
- ✓ **Fair Business Conduct**
- ✓ **Health and Safety**
- ✓ **Fair Labour**

- all aimed at ensuring that clients can have trust in working with IFIA Member Companies.

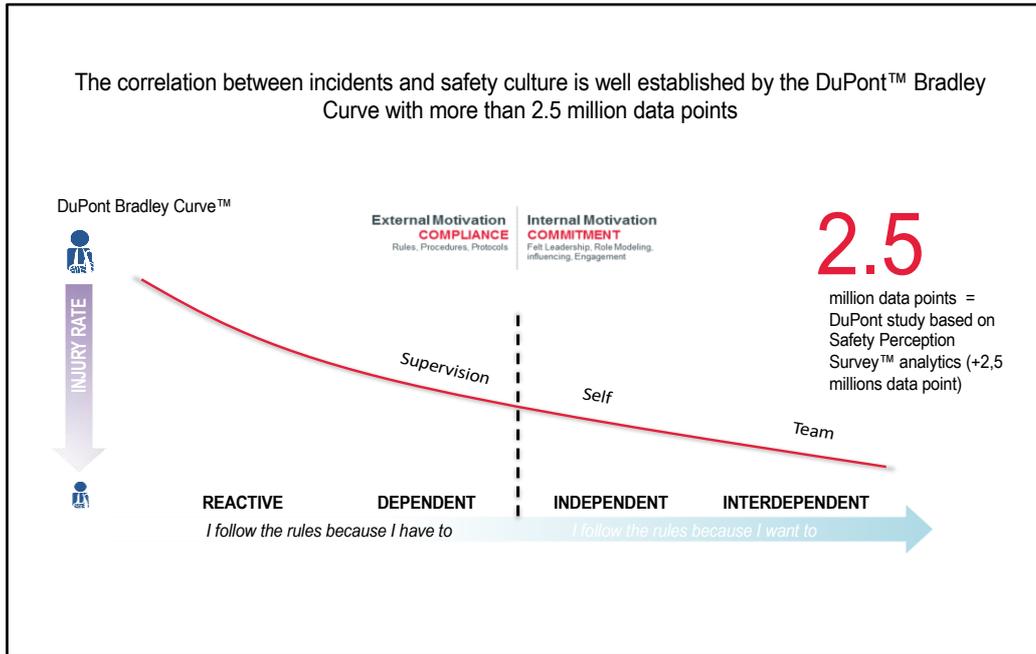
The development of the Inspector Certification Programme was then summarised, from its inception in the USA in 1997 with training books and pencil and paper tests through the start of international programme in 2003 to the global on-line process which is now in place. Over 16,000 candidates have been processed through the programme of which a major part focusses on safety, aiming to raise and harmonise standards.

3. Presentations

3.1 The “Bradley Curve”

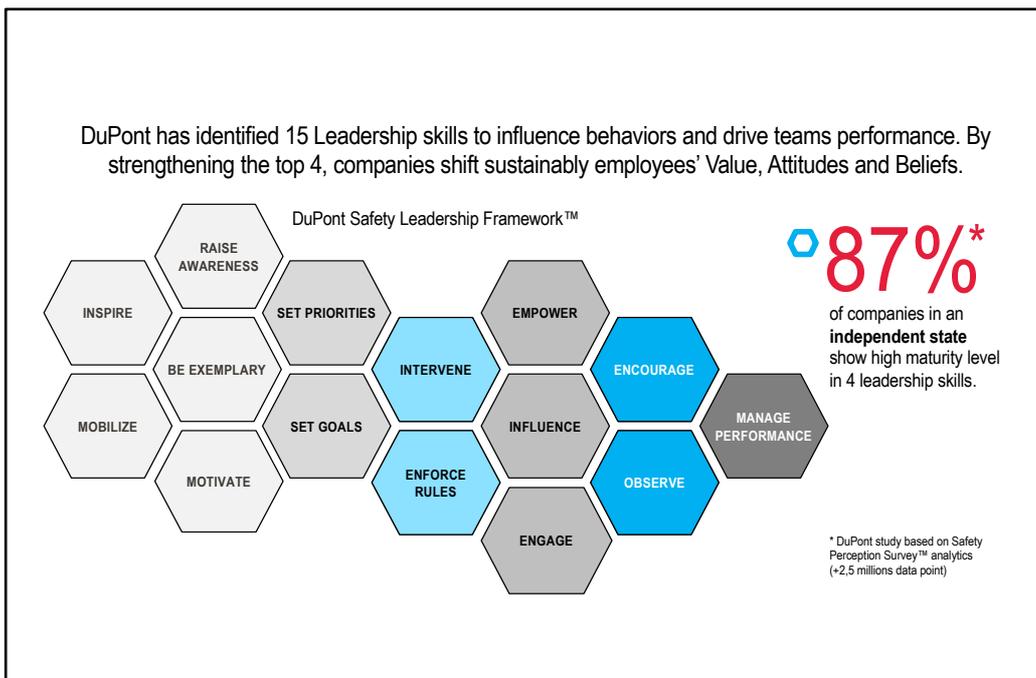
Cedric Parentelli, Director, Europe and North America, Dupont

Cedric explained the Bradley Curve which has been developed by Dupont and is a widely accepted model for safety culture development. The basic curve is shown below.



The main feature is the breakthrough in the centre of the curve from compliance to individual commitment and independence and it was noted that many organisations fail to pass this point and many even slip back to the reactive state.

Key leadership skills were then presented in the slide below.



* DuPont study based on Safety Perception Survey™ analytics (+2,5 millions data point)

All these skills are involved and strengthening any four was seen as being required to move to and sustain an independent state and hopefully progress to interdependence. Four examples were chosen:

Intervention through fast risk analysis before starting a “job” moves the situation from reactive to pro-active.

Enforcing rules through feedback to those who don’t follow them or who take unnecessary or unwanted risks can obtain positive change.

Encouraging information flow from the bottom up helps to ensure that leaders understand what is happening.

Engaging in dialogue enables change and also helps in identification of risks, ensuring that controls are in place, etc.

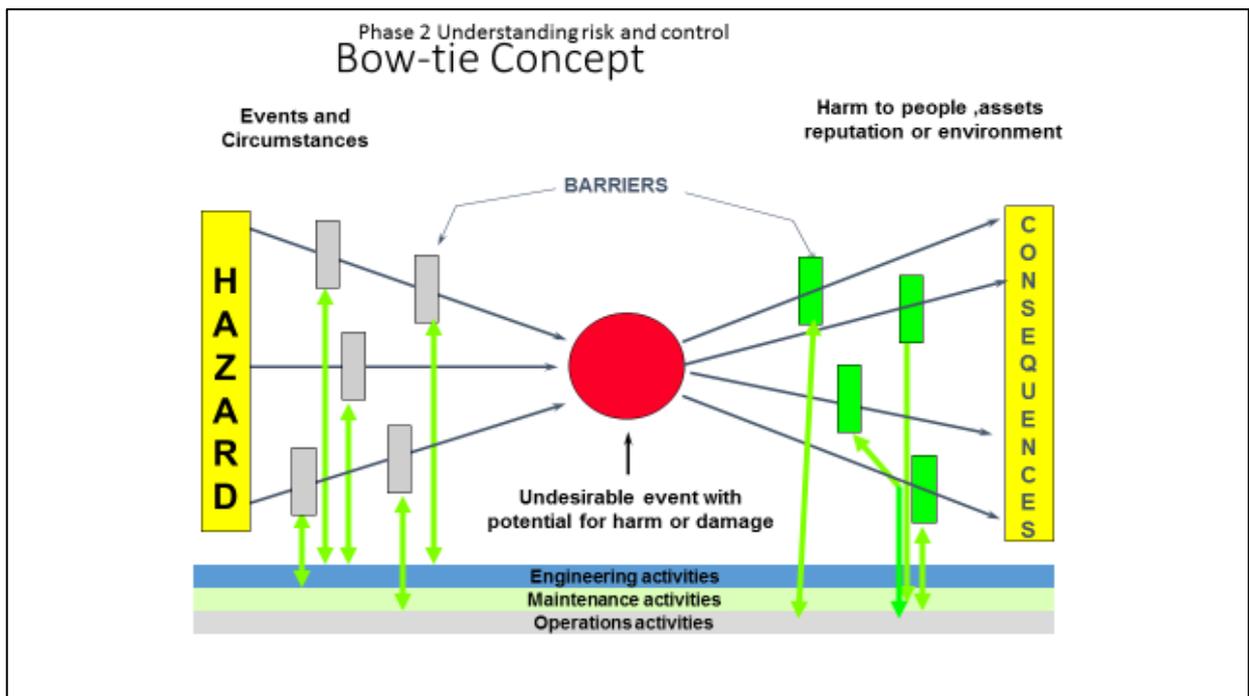
Cedric concluded by noting that digitalisation, by providing for faster access to safety information and improved communication between individuals in a team and between leaders and their teams should make it easier to achieve the extensive collaboration needed for an interdependent safety culture.

3.2 Changing leadership conversations by changing how you measure safety

Tony Gower-Jones, Board member, Tripod Foundation

Tony began by noting that in most organisations’ safety incidents are now so few that any short-term changes in the traditionally reported safety ratios are almost certainly “noise” and not relevant. This should, of course, be celebrated but means that conversations should now be shifted to more meaningful topics.

To determine what might be more useful conversations and possible alternative safety measurements to consider Tony referred to the “bowtie” concept which can be used to analyse actual and potential incidents.



Tony also referred to the Tripod incident causation model which shows the typical chain of events which lies behind an accident:



The organisation causes conditions which influence the person to take (or not take) action causing barriers to fail and leading to an event.

Meaningful measurements might be related to behaviour, risk reporting and reaction to non-critical events which might indicate barrier weaknesses with management rewarding pre-emptive activities.

Tony suggested that the focus of attention and discussions now needs to move to look at these factors on a continuous basis rather than simply investigating events. The value of discussions with the workforce as to what parts of their work they feel might be risky and could be made safer was highlighted.

3.3 Portable electronic and electrical equipment

James Coull, Director, JSHP Consulting Limited

James presented the new guidance developed by the Energy Institute; Guidance on the presence and operation of portable self-energised electrical/electronic devices in potentially explosive atmospheres which is due to be published shortly.

The guidance has stemmed from earlier work on button cell devices, recognising the rapid increase in the availability of these and other non-certified devices and the need to manage them as possible sources of ignition in potentially explosive atmospheres.

The guidance is based around the flow chart shown below and rather than trying to be proscriptive when devices are developing and changing rapidly, this provides a management protocol.

James asked a series of questions which delegates answered via an automated polling system. Key points were noted:

Not all battery powered devices have the potential to produce a dangerous ignition source

- non-rechargeable button cells typically do not carry sufficient energy

Ex certified devices are not always suitable for use in hazardous areas

- the Ex certification varies and must match the specific hazard

Devices with the potential to produce a dangerous ignition source can be used in a hazardous area

- providing that a safe system of work (SSOW) has been developed and controls introduced such that risks are as low as reasonable possible (ALARP)

A handout has been developed which summarises the process for assessing a device and this is included as an attachment to this document.

4. Working sessions

4.1 Stop work authority scenarios

Stop work authority (SWA) was defined as:

The right and responsibility to stop any operation, which has imminent hazard to safety, health, equipment, and/or the environment.

The importance of a “bottom up” approach was noted, which follows on from the comments in presentations summarised in Sections 3.1 and 3.2 above, and the SWA is seen as an important part of this.

An SWA was noted as resulting from “chronic unease” on the part of the individual concerned and the need to act on “weak” signals and to use “slow thinking” was stressed.

Problems of risk normalisation, where regular tasks are involved, were pointed out along with the requirement for management to obtain all the facts before jumping to conclusions when SWAs were issued.

Delegates split in to work groups to address the following scenarios. Key points raised are noted for each one.

Sampling in inclement weather

- Inspection company is assigned to urgently sample a number of rail tank cars on a railroad yard.
- The sampling is taking place during night hours during January. Weather conditions: temperatures below zero, wind force 5-6
- At the railroad yard, there are no lights. There are no rail car access platforms available. Side ladders must be used on the RTC's.
- Due to the lack of proper lighting and the combination of wind and slippery rail tank cars, the inspectors using their stop work authority.
Terminal evaluates the situation as safe.

- *Advise all parties immediately*
- *Provide positive feedback to the inspector*
- *Work with client and terminal to find a solution*
- *Risk assess the job in advance in future*
- *Attempt to address root cause (lack of platforms)*
- *Share the experience*

Sampling in inclement weather (2)

- Inspection company is assigned to urgently sample a number of rail tank cars on a railroad yard.
- The sampling is taking place during night hours during January. Weather conditions: temperatures below zero, wind force 5-6
- At the railroad yard, there are no lights. There are no rail car access platforms available. Side ladders must be used on the RTC's.
- Due to the lack of proper lighting and the combination of wind and slippery rail tank cars, the inspectors using their stop work authority.
Customer threatens to assign the task to another inspection company.

- *All as above but also;*
- *Communicate and escalate the issue with the inspection company and client*
- *Work with client and terminal to find a solution to mitigate risks in future*

H₂S issue

- During a sampling operation, the personal H₂S alarm goes off.
- The inspector leaves the area, to collect his SCBA and measuring equipment.
- When returning, wearing his SCBA, he measures an H₂S level of 800 ppm.
- Based on that level, he uses his Stop Work Authority.
 - *All agreed that SWA was justified*
 - *H₂S level of 800ppm too high*
 - *Work with client to risk assess and mitigate risks*

Vessel Boarding in Inclement Weather

- Oil and Gas Company performs routine lightering operations off-shore, requiring multiple vessel boarding and de-boarding between Mother and Daughter vessels.
- With high demurrage exposure, pressure from customer exists to commence lightering operations as soon as possible.
- Due to routine operations, 2-3 different inspectors usually perform all work on their operations for this customer, and they have built a strong working relationship with the local customers.
- However, due to a recent increase in workload, the typical 2-3 inspectors who are familiar with this job are all unavailable, and a different inspector is sent. This inspector has all of the required and certification to perform the work, however he or she has not performed this particular job with this customer before.
- This area is known for choppier seas, and rain is in the forecast. However, no specific major storm or dangerous conditions have been reported by local weather stations, news, or inspector main office.
- As the inspector readies to board the first vessel to be measured, the inspector observes strong sea conditions.
- Crew notifies inspector that current sea conditions are normal and nothing to be afraid of – the normal inspectors would perform this task all of the time.
 - *All agreed that SWA was justified*
 - *Provide positive feedback to the inspector*
 - *Inspector's assessment at the time must be supported*

H₂S monitor issue

- An inspector exercised a SWA on top of a shore tank when about to sample and gauge heavy fuel oil.
- He noticed that the cargo superintendent was not wearing an H₂S monitor which was part of mandatory PPE for the facility.
- He refused to commence sampling until the person either removed himself or got a monitor.
- A monitor was supplied and the work commenced.
 - *All agreed that SWA was justified*
 - *Provide positive feedback to the inspector*
 - *Client and terminal should be notified by the inspection company office, noting details, times, etc. so that corrective action can be taken*

Boarding vessel issue

- Surveyors attended a vessel for the discharge of base oils at a terminal.
- The ship was alongside at one of the jetties at Terminal and pilot ladder was secured on the port side of the ship for embarkation.
- At the point of embarkation, the surveyors discovered that the gap, being separated by the fender was about 3 feet wide and our surveyors had to step onto the fender first, then reach out to the ladder before climbing.
- The surveyors felt that was too risky and decided not to board. They exercised the SWA and immediately informed the terminal of their action.
- The terminal then arranged for a service boat to bring the surveyors around to the starboard side so they could have proper access to the ladder and board safely.
 - *All agreed that SWA was justified*
 - *All parties to agree a solution to avoid this situation in future*
 - *Provide management support and escalate to client and terminal*
 - *Master should not have allowed this*

4.2 Stop work authority empowerment

Empowerment was then addressed with work groups considering six key issues and providing comments as follow:

Geographical issues

Cultural and regional issues

- *Continual efforts needed to overcome issues relating to cultural norms (obedience to authority) and cheap labour*
- *Need to understand the barriers*

New employee issues

- *Training and induction seen to be crucial*
- *Reinforce with tool box talks*
- *Regular reviews and encouragement*

Experienced employee issues

- *Old employees seen as part of the problem (“always done this way”)*
- *Find and focus on natural leaders*
- *Reward new and old for good behaviour*

Commercial issues

- *Communicate, escalate and suggest solutions*
- *Create acceptance with clients*
- *Concerted action with other bodies – OCIMF/IMO*
- *Long term process*

Individual perception of employees

- *All doubts are important*

Final conclusions were that there should be SWAs and more would be welcome as they are a sign that the organisation is moving towards a situation where employees are becoming independent and that the system is working.

Recording SWAs might be a means to monitor progress but it was noted that many issues are probably dealt with immediately without being recorded, particularly if there is no break in the work schedule. Maybe these should be captured as minor SWAs or recorded in some other way.

5. Safety Code

A presentation with the draft content of the safety code was then reviewed by delegates during an interactive session. It was noted that this is proposed as a “code” and not a “guideline” and the intent is that this should be mandatory.

In an initial poll a large majority (94%) supported development of the code which should be a consensus document agreed with client organisations. The topics to be covered in the code were then presented and discussed with comments raised as follows:

5.1 Personal Protective Equipment (PPE)

There was general agreement on minimum PPE requirements but it was noted that there are issues with heat and comfort in some environments which need to be addressed.

Additional PPE might include:

- Personal identification (should be mandatory)
- Four gas monitors where risks are not confined to H₂S
- SCBA – noting the need for personnel training and the importance of equipment maintenance and also the additional risks relating to the equipment itself
- Cartridge masks
- Personal Flotation devices (Life Jackets)
- Survival suits
- Lanyards or descenders when working at height
- “Man down” devices (or regular radio checks?) for lone workers.

5.2 Ergonomics (lifting and carrying)

The bulk and weight (24kg) of current dipping and sampling equipment was noted and, of course, the samples themselves will add to the loads which inspectors are expected to carry. Eliminating unnecessary samples will help but with increased use of closed or restricted equipment it would seem that most operations will require two people.

5.3 Slips, Trips and Falls

These result in a third of injuries across all industries and prevention seems elusive. Engineering controls assist but the biggest contributory factors are rushing and fatigue – both essentially behavioural issues. It was also noted that keeping this topic fresh is difficult, but that regular reminders and examples will help. It was also felt that clients should be advised if time is short and consideration given to alternate approaches to the work which will avoid any need to rush. Ducking under and climbing over deck piping and other obstacles was highlighted.

5.4 Vessel Access (On and Off Shore)

Minimising risks associated with vessel access, particularly offshore is a key issue. Clients, charterers and vessel owners need to be involved and alerted when risks are noted. Following on from 5.2 above, it was felt that crew members should be available to assist with equipment transfer. It was also felt that additional practical training for inspectors would be valuable along with targeted physical fitness assessments. Consideration should also be given to restricting offshore transfers to those who are able to swim.

5.5 Intrinsically Safe Equipment and Static Electricity

New guidance from the Energy Institute had been presented in Section 3.3 above.

5.6 Hydrogen Sulphide and Benzene

In considering H₂S it was agreed that filter masks are to be used only for escape and that SCBA should not be a requirement for routine work but used only under permit to work conditions following risk assessment.

For benzene it was felt that health monitoring regimes should be more clearly defined and that increased and regular awareness training relating to both substances was desirable.

5.7 Confined Space Entry

Delegates agreed that confined space entry should only take place under a permit to work with identified controls in place. Closer collaboration with terminals and vessels is needed to ensure that this process is followed.

It was also agreed that a floating roof is a confined space and these should not be accessed as part of routine inspection activities.

5.8 Working at Height / Road tankers and Rail tankers

It was suggested that access to ISO tanks should be included. Fall restraint systems are also required as railings alone are often not adequate given the work which the inspector needs to do.

Working in situations where rail cars were likely to be moving was not seen as acceptable.

5.9 Driving and Journey Planning

Breaks every 2 hours were seen as essential and it was felt that IFIA should develop a set of rules to be followed. These to cover not only rest breaks but also license checks, personal vehicle checks, (if used) including insurance, use of seatbelts and mobile phones. Consideration should also be given to covering motorcycles and bicycles where these are used in terminals, etc.

5.10 Hazard Awareness and Job Safety Analysis (JSA)

This will be covered in detail with the emphasis on controlling risks to ALARP levels (as low as reasonably practical) and, most importantly, making a decision as to whether the remaining risk is acceptable.

5.11 Intervention and Stop Work Authority (SWA)

This issue will be covered in detail noting the points raised in Section 4 above.

Following the presentation there were additional topics suggested which included the laboratory activities, working on the deck of vessels and the risks around working under suspended loads and around mooring lines.

6. Conclusions

The conference was well attended with all places taken and good representation from IFIA members and clients. However, additional representation from trading companies, terminals and shipping/barge companies would have been welcome and further efforts will be made to engage with them in the future.

Discussions were open, lively and productive with consensus reached on the majority of the key issues discussed.

The presentations were well received and, given the time available to focus on safety issues, delegates were able to discuss these and include some of the ideas raised in the work group activities.

Noting the comments above, it seems reasonable to plan a second conference in 2019, probably in a different region, where concerns may be different, and to provide an opportunity for broader participation.

There was almost unanimous support for development of an IFIA Safety Code, the content of which was discussed in some detail with broad consensus reached as to the topics which need to be included.