

COMMUNITIES AND INDUSTRIES FORUM (CIF)

A forum for communication between industry and the community – all welcome.

24 October 2017, 5.30pm
Ken Jackman Hall, Darius Wells Library & Resource Centre,
Chisham Ave, Kwinana.

NOTES FROM MEETING

PRESENT

Ross	Stidolph	DMIRS
Peter	Re	BOC
Karen	Boyce	BMT
Daniel	Marjjanovic	BOC
Karla	Hinkley	Ramboll Environ
Wayne	Tentori	WPA
Kevin	Desmond	Resident
Brendan	Thomson	Bertram
Les	Whiddett	Wandi PA
Don	Allanactt	Resident
Glenn	Smith	BP Refinery
Sam	Penglis	BHP
Bob	Cooper	Resident
Wendy	Cooper	City of Kwinana
Gabe	Van den Bertg	Tronox
Trevor	Naughton	WesCEF
Jacqueline	Prosser	WesCEF
Bob	Gregorovich	WesCEF
Norm	Hodgkinson	Industry
David	Honey	Alcoa
Elizabeth	Brockbank	Alcoa
Yvonne	Noack	KIC
Chris	Oughton	KIC

APOLOGIES

Cr Sandra Lee City of Kwinana

1. WELCOME, ADMINISTRATION

Chris Oughton welcomed attendees and received the above apologies.

Housekeeping matters were advised, including rest room locations and exit points. Attendees were reminded to sign the Attendance Register to ensure an accurate list is recorded for the minutes. Those who have questions may ask them at the the end of a presentation, clearly identifying themselves and the name of the organisation they represent. Suggestions for future presentations or guest speakers can be directed to the CIF Coordinator or via a form in the Suggestion Box at the entry.

In November 2016 the CIF Executive reviewed the future direction of the Forum. As a result, the CIF Executive decided to wind itself up and hand over the administration of the CIF Executive to Kwinana Industries Council (KIC).

KIC currently manages and funds the CIF. The Forums will continue to follow the existing agenda and format. In March 2017 a review of the CIF was undertaken resulting in agreement to conduct Forums bi-annually rather than quarterly. Forums will be held in May and October each year.

This evening, there are four presentations:

- **BOC Limited**
BOC are celebrating the construction and operation of their third Air Separation Plant in Kwinana. This presentation is to provide the community with information about the products at the site and the controls in place.
Peter Re, General Manager, Process Operations South Pacific
- **Department of Mines, Industry Regulation and Safety**
An update on changes in the Department.
Ross Stidolph, Director, Dangerous Goods and Petroleum Safety
- **CSBP Ltd**
Construction of the Ammonium Nitrate Emulsion plant and overview of safety systems.
Bob Gregorovich, Process Safety Superintendent, WesCEF
- **BHP Nickel West, Kwinana**
Developments at the Refinery.
Sam Penglis, Manager Operations Readiness

2. PREVIOUS MEETING

Notes from the previous meeting held 30 May 2017 were made available.

3. MATTERS ARISING FROM PREVIOUS MINUTES

There were no matters arising.

4. PRESENTATIONS

4.1 BOC Limited

This presentation is to provide the community with information about the products at the site and the controls in place.

Presentation by: Peter Re, General Manager, Process Operations South Pacific

BOC is a member of the Linde Group, a gas and engineering company, spanning more than 100 countries globally with over 60,000 employees. 25% of business comes through health care, for example, hospitals in the USA.

There are a number of sites across the South Pacific region, including Australia. The supply chain works on a pipeline grid and a number of customers receive BOC products. These processes result in a number of synergies. Some uses of gasses produced include, for example:

- Oxygen: hospitals and medical facilities, minerals/ gold, cutting and melting, waste water, steel pigment, mineral processing, and glass.
- Nitrogen: Purging/ Safety with customers such as BP, CSBP, BHP and Nufarm.
- LIN for food freezing, MAP, glass, steel, electronic components, mine safety.
- LAr: Welding, ship building, light tubes, steelmaking.
- GCO₂: Ph control, waste treatment, greenhouses.
- LCO₂: Beverages, food chilling/ freezing, fire extinguishers, enhanced oil recovery.

BOC Kwinana was established in 1969. The first ASU saw LOX LIN and GAN to local customers. During the 1980s there were various upgrades to the facility including a second oxygen plant.

- CO2 various upgrades through to 1990.
- 1985, second ASU with relocated Nitrogen Liquefaction.
- GAN customers retained.
- End of hydrogen plant contract (now removed).

Today,

- 2004 small hydrogen PSA for the H2 bus trial (now decommissioned/ degassed).
- 2006 gaseous CO2 pipeline supply scheme CO2 chemically reacted with caustic waste.
- LCO2 assets still in service with the oldest items removed.
- 2014 – a third ASU with liquefier, an increase in LOX storage.

BOC Kwinana has been deemed a MFH site because of the quantity of liquid oxygen stored. This involves a number of process safety requirements:

- A Safety Case is being prepared.
- A Safety Report will be implemented in accordance with the Dangerous Goods Safety Act 2004, and Dangerous Goods Safety (MHF) Regulations 2007.
- The safety Report will document the potential safety risks associated with BOC, how it impacts our neighbours and the measures to control the risks.
- The Safety Report will address the risks associated with:
 - Hydrocarbon accumulation in the ASU, potential ignition and energy release
 - Loss of containment of cryogenic liquid from fixed storage; and tanker ISO vessels.

The process safety management system include a number of processes:

- Hydrocarbon Risk Assessment
- Process safety audits
- Incident investigation
- Contractor management
- Emergency preparedness and response
- Safe systems of work
- Lockout Tagout
- Management commitment
- Mechanical integrity
- Process safety hazard analysis
- Safety instrumented systems
- Plant operating procedures and Plant drawings
- Pre start-up safety review
- Process safety KIP
- Engineering management of change
- Operator training and assessments

There were lessons learned from Bintulu (Malaysia) explosion in the late 1990s, including plant design to minimise risk. External risks and controls are in place at the Kwinana facility. For example, a hydrocarbon accumulation and internal ignition in a reboiler may be managed by:

- Plant design;
- On-line analysis of HCs and plugging components (CO2, N2)) with alarm and trip;
- Level control, alarm and trip to ensure full submergence of reboiler and purge;
- Reboiler lab analysis for impurities;
- Hydrocarbon risk assessments;
- Plant thaws, by bringing the area up to room temperature.

Another example, loss of containment from storage vessels, may be managed by:

- Pressure and level automatic control;
- Low temperature alarm and trip in vent;
- Duplicate pressure and level transmitters on each tank with alarm and trip;
- Pressure relief devices;
- Fog detection to be implemented.

Questions & Answers

Nil.

4.2 Department of Mines, Industry Regulation and Safety An update on changes in the Department.

Presentation by: Ross Stidolph, Director, Dangerous Goods and Petroleum Safety

The Department of Mines & Petroleum merged earlier in the year to form The Department of Mines, Industry Regulation and Safety.

The main safety regulators are now under the one department, being petroleum, mines, pipelines and dangerous goods including MHF. Work is underway to finalise the government structure and regulatory strategy.

Towards 2020 our goals are a collaboration of partnerships, to work with other regulators and industry. "Towards 2020" is the Department's regulatory strategy covering all legislation administered by the Resources Safety Division. This high-level strategy describes the goals, focus areas and measures of success for safety and health initiatives undertaken by the regulator.

The vision of a safe and healthy resources sector is supported by three key goals:

World leading regulation

- Collaboration and partnership – Resources safety works with other regulators, peak bodies, industry and workers, in its pursuit of world-leading regulation.
- Innovative systems – technological innovations help drive efficiency and effectiveness, increase transparency and identify emerging safety and health risks and trends.
- Competency and training – staff have the skills, knowledge, qualification and professional development necessary for consistent delivery of high-quality regulatory services.

Smarter systems

- Digital platforms – platforms improve the way we work, to have accessible safety and health information, efficient communication channels, and strengthen engagement with stakeholders.
- Data driven decisions – the Department's enhanced data collection allows better analysis to support evidence-based decision making, and track trends and progress.
- Balanced and integrated use of resources – our resources are allocated to optimise effectiveness and efficiency.

Well informed industry.

- Lessons shared – learn from incident analysis and recognise good practice.
- Guidance provided – we draw on a wide range of internal and external expertise to produce targeted guidance for industry.
- Collective learning opportunities – workshops, roadshows and other information sessions provide opportunities to learn from collective experience and advance our safety and health knowledge.

Our commitments: Everyone is dealing with ageing assets – businesses want to run as long as possible whilst being effective and safe. There are organisational factors such as mental health and wellbeing, and how you look after staff.

The Department's commitments: modernised legislation; human and organisational factors; safety regulation system enhancements; mental health and wellbeing; performance standards; safety case assessments; ageing asset management.

In terms of the new government, in July 2017 the government announced development of a modernized Work Health and Safety Bill for WA. The Bill is based on the national Work Health and Safety Act and will improve consistency with the rest of Australia as WA's primary legislation for workplace safety and health.

The Bill will replace three Acts:

- Occupational Safety and Health Act 1984
- Mines Safety and Inspection Act 1994
- Petroleum and Geothermal Energy Safety Levies Act 2011

Development of the Bill will involve extensive consultation with stakeholders, prior to the Bill being introduced to State Parliament in mid-2019. Consolidated legislation will provide for a risk-based regime that caters for industry diversity and encourages innovation. Industry manages its own risks and regulation requires it to do that.

Towards 2020 commitment for petroleum and major hazard facilities operators focus on raising awareness of the regulators requirements for performance standards; safety case submissions; and managing ageing assets.

Mental health and wellbeing are now reasonably well known. Mental health is a major issue. Thirty recommendations were made as to how the mental health of FIFO workers can be improved. Industry stakeholders were asked to take a proactive approach in improving mental health in general.

Mental health is a growing area for workplace health and industry as people can self-harm. Mental Health Commission (MHC) research is underway. A Psychosocial Harm Audit tool and baseline report has been published on the Departmental website. A Safety bulletin on suicide awareness has also been published. A One-Stop-Shop for mental health information/ links has been proposed, to be hosted by MHC. Mental health training program assessment criteria for resources companies is under way. The Department has appointed a mental health inspector and graduate. Ministerial support for the development of a code of practice.

Human and organisational factors are important. Managing different human behaviours, such as fatigue, drugs, alcohol, texting on phones, is a huge issue for society and similar issues are in the workplace.

Human and organizational factors is the term given to all elements within a workplace that have an influence on the people who work there. For example, workers and their equipment, work procedures or their environment.

To consider all the factors that are relevant to any given task, it can be helpful to consider three interrelated areas:

- Job – what people are being asked to do (the task and its characteristics)
- Individual – who is doing the task (the person and their competence)
- Organisation – where the person is working (the organisation and its attributes).

People are our assets and a lot we do is around health and safety. The goal is to manage human reliability and performance. Influences on human reliability and performance within an organisation's culture can include: having usable procedures; training and competence; staffing levels and supervision; organisational change. More information can be found on the Department's website.

The Resource Safety Compliance Cycle considers: Risk profile – data input, analysis, information from compliance monitoring; Compliance strategy – common understanding with regulator, external consultation; Awareness – communication tools, compliance tools; Enforce Legislation – inspections, audits, investigations, prosecutions; Monitor compliance – set targets, program of work, common understanding with regulator; Competency and capacity – formal training, coaching and mentoring, compliance champions.

Characteristics of high reliability organisations:

- being aware and conscious of the work process
- addressing complexity, reluctant to simplify
- paranoid to failure – watches for “drift”
- deters to expertise
- resilient and relentless.

Questions & Answers

Q: A member of the audience commented: bringing over punitive measures that unify legislation are quite onerous.

A: Ross responded saying that we don't set the regime around fines; that is a government view, and with what society expects, we don't make comment either way, and there can be discussion around that.

4.3 CSBP Ltd

Construction of the Ammonium Nitrate Emulsion plant and overview of safety systems.

Presentation by: Bob Gregorovich, Process Safety Superintendent WesCEF

Towards the end of 2016, CSBP entered a new market for Ammonia Nitrate (AN) – up until then AN was either a liquid or in solid form.

Ammonium Nitrate Emulsion (ANE) is a blend of the following materials: AN, emulsifier, hydrocarbon (typically diesel) and various stabilisers and pH modifiers.

ANE technical parameters – ANE is a class 5.1 oxidising agent; Similar to ammonium nitrate UN1942 Class 5.1. The dangerous goods classification and associated packing group is based on recommendations on the transport of dangerous goods, and the Manual of Tests and Criteria.

ANE is viscous – similar to mayonnaise. It has a slight odour to that of petroleum/ diesel. It is classified under the UN Test Criteria as an oxidizing Agent (Class 5.1). The emulsion will stay stable well in excess of 30 days, which means this can go outside WA. It is water repellent and mining companies use ANE to inject into water filled holes.

ANE is used throughout WA at mine sites in blasting operations. AN is highly hygroscopic, readily absorbing water from air. In humid environments, absorbed water interferes with its explosive function. AN Emulsion is water repelling so it can be used in areas where soil moisture is problematic.

The plant is located at the CSBP site and is connected to other processes for efficiency purposes. As the demand for the product increases we have the capacity to expand and add further units.

Plant capacity is 30tph with the ability to manufacture in batch and continuous modes. Ammonium nitrate solution is directly sourced from existing production plants. Utilities are sourced from existing prilling plant facilities. The Technology provider is UTEC, located in Riverton, Kansas USA, while Engineering is undertaken by Worley Parsons locally in Perth.

The ANE process combines an AN solution with a fuel solution to blend and produce ANE. Risk assessments were undertaken to ensure necessary equipment was installed and appropriate

emergency systems were in place. We are a MHF and use dangerous goods – we need to understand risk and control measures and storage hazards.

The ANE safety system is as per the Australian Explosive Industry and Safety Group Code of Practice, storage and handling of UN3375. When moving ANE in pipes caution has to be taken. We have a number of alarms systems in place and we reduce the risk by monitoring the flow, pressure and temperature - the same systems we have been using in our existing plant.

The transportation of ANE is transported in purpose built trailers. The first shipment was transported this month. ANE can be transported in triple trailers to a maximum length of 36.5m. Toll currently transports Ammonium Nitrate solid and liquid.

Regulatory approvals: The Dangerous Goods Storage and Handling licence for AANPF was updated and approved July 2017. Security Sensitive Ammonium Nitrate Manufacture licence was updated and approved August 2017. Revised AANPF Safety Report including the ANEP was approved June 2017. ANEP part of the Ammonia, Ammonium Nitrate Production Facility (AANPF).

Question & Answers

Q: Is it only road transport or are there other transport options?

A: One of the benefits is that it is stable – time will tell. We will go wherever we can. A number of emulsion plants are already in WA, Geraldton for example. A lot of mine sites have the capacity to take emulsion directly. The technology provider builds stand-alone plants at mine sites overseas and once complete, the plant is taken away.

4.3 BHP, Kwinana Nickel Refinery Developments at the Refinery Sam Penglis, Manager Operations Readiness

BHP has been a part of the strip for about 47 years and is located at the most southern site of the strip. A new hydrogen plant was commissioned in 2012, making nickel briquette. Nickel sulphate has been in the press lately. We plan to make a nickel sulphate product, hopefully by 2019. It will take approximately two years to reach completion, with major construction activities starting in November 2017 (pending external approvals.)

We have approved funding for the first phase of our *Nickel Sulphate Project*, which will be located at the Kwinana Refinery. The process will be developed in house.

We are also a MHF that has structures and process systems in place around safety.

Phase 1 funding has been approved for the Nickel Sulphate project:

- It is expected to produce 100ktpa of nickel sulphate hexahydrate by dissolving nickel powder at the Kwinana Nickel Refinery in sulphuric acid from the Kalgoorlie Smelter,
- The process is fully automated with no human intervention, until after the nickel sulphate has been crystallised and packed into shrink-wrapped bags for sale.
- Subject to approvals, the first production is expected in the second quarter of 2019 calendar year.

Expandable to 200ktpa as a low cost expansion option

- Expansion would have lower capital intensity leveraging pre-investment from Phase 1.
- At full capacity the plant would consume 44kt of nickel powder and would be the world's largest nickel sulphate facility.

Nickel Sulphate is a good fit for Nickel West:

- Low technical risk
- Successful lab test-work and pilot trials.
- Well-developed processes, systems, operating discipline.

- Existing installed infrastructure lowers overall capital cost of installation.

This repositions Nickel West in the New Energy market, with the many opportunities that this sector will offer in the future.

The electric vehicle revolution has commenced. Recently, Nickel West met five of the world's largest battery producers:

- Car makers are planning significant growth in electric vehicle sales.
- Battery producers are expected to match electric vehicle growth rate while responding to growing demand from other areas i.e. Stationary Storage.
- Industry expectations for growth are remarkable - between 25% and 40% CAGR to 2025.
- Battery producers are also expected to play the leading role in delivering price parity with Internal Combustion Engines (ICE) (~US\$100/kwh).
- Virtually all battery producers are moving to higher nickel-rich chemistries.

Nickel plate has a major role in battery production. There is a lot of talk about lithium yet there can be eight times more nickel in batteries.

We have been developing the purity at the Refinery. One of the advantages BHP NW has is we have a Class 1 product – further downstream we could look at other minerals and synergies.

We have proven experience and capability in developing medium scale mining and infrastructure developments across the world.

Some of the New plant infrastructure includes: a Nickel Powder Leaching area comprising of six batching leach tanks, a Leach Acid Preparation Tank and IX Acid Preparation Tank; Aeration, Purification and Ion Exchange; a Nickel hydroxide facility comprises of a single nickel hydroxide unloading crane, hopper and repulp tank. Also a Crystalliser, Dewatering and Drying Modules. The existing storage facility will be expanded to make way for two additional product bagging lines.

Nickel West aspires to make a difference

- Nickel West is a fully integrated mine-to-market business with end-to-end control of its supply chain throughout Western Australia.
- We have mineral resources to support the business to 2040 with a series of new mines planned to be developed over the next five years.
- We are well placed to become a globally significant battery materials supplier.
- Class I nickel powder and briquette is the preferred product for the battery market and we are the largest producer in that segment.
- We have approved the construction of a 100,000 tonne nickel sulphate plant.
- Nickel West will continue to strive to energize our future and its presence in WA.

Question & Answers

Q: Kevin Desmond: What is the life span – are you worried that technology will move away from this?

A: Our view is that it won't – technology is developing, lithium batteries has a long way to run

Q: Kevin Desmond: What are you planning – how many years do you expect this to run?

A: We believe the demand for nickel will be very favourable in the future.

Q: Ross Stidolph: Can it stand on its own economically – as a high value product.

A: Nickel west has always been a mining company.

David Honey commented they have turned it around, and it's a great opportunity.

5. GENERAL BUSINESS

KIC is keen to see new innovations coming to the KIA.

David Honey expressed that tonight's Forum showcased sophisticated manufacturing facilities adding value to our economy.

As there was no further business, the Facilitator Chris Oughton thanked everyone for attending and invited everyone to stay for refreshments. The meeting closed at 7.00pm.

6. CLOSE/ NEXT MEETING

The next Forum will be held in May 2018.