## NZMPA CONFERENCE

*"Promoting Industry Understanding of Human Factors and Just Culture"*

The 2016 NZMPA Conference held in Auckland from 15th -18th November was a most intensive brain-storming week, with a focus on cruise industry operating the largest and costliest ships, hi-tech bridges and highly trained bridge teams. But where and how does the pilot fit? How does a pilot add value and remain relevant?  What are the legal implications? How best communicatate & "share mental models"? Delegates came from Australasia, UK, Canada, USA, and Oceania – including PNG, Vanuatu, Kiribati, Fiji, Tonga, Hawaii, Tahiti, New Caledonia. A squadron from Air New Zealand joined forces with a high priesthood of safety & mindfulness gurus hovering around. Every presentation was catalyst for dynamic energies of professional minds engaging in healthy debate. The stated theme of "Promoting Industry Understanding of Human Factors and Just Culture" was fully honoured, but expanded beyond the physical and psychological into the realms of the metaphysical: Determinism vs. Free Will, the future of Capitalism, People & Profit, Milk of Human Kindness (…and milk made by bacteria - not cows!).

This conference shows how much pilots care about their profession and how our work impinges on the welfare of ships, public safety, port infrastructure - and pilots themselves - to ensure training is fit-for-purpose. Marine Pilotage has largely followed aviation in comprehending the importance of Human Factors. In a technically complex and increasingly autonomous world, the Human element must never be forgotten – since all systems were ultimately designed by those self-same fallible Humans.

## CONFERENCE BULLETIN

For the sake of brevity, most of the papers delivered can be found in pdf format in the relevant section of NZMPA's website (http://nzmpa.org/wp/conference-2016/) This bulletin - based on my rough notes - is a key to direct readers to specific lectures (or simply skip to the Conclusions p.4)

### Day 1   Tuesday 15th Nov

1.  (**Ravi Nijjer**) History of BRM from 1988. Based on Finnish Captain Larjo, Navigation = Safety. Fundamental to properly investigate and analyse past events and learn (wise men learn from the mistakes of others). Note too that History can never be relied upon because of political calculus and vested interests. On the modern bridge, the pilot's "feral vigilance" shows how Human instincts can trump technology. Ravi concluded that aviation SMS has faltered and that NZ, with its small cohesive team of pilots (unlike Australia) could pick up the baton, giving SMS a Human Face (aka POSMS).
2.  (**Peter Listrup**) Formerly with Star Cruises (KL) whose ships were floating casinos, but a nav mishap was "bad joss" and empty casino! To reduce error, system based on Larjo and training in simulators. When Princess Cruises lost $50m to accidents, Capt. David Christie consulted gurus and adopted Star Cruise template now in 2nd incarnation at Almere II, costing €80m funded by reduction in Insurance premiums. All Carnival Deck & Engineer officers undergo 1 week training each year to work as teams using BRM. Private Training is way beyond what traditional Nautical Colleges can offer. The point is that successful training of both hard and soft skills is key to continued success in business. Napier was a leader in best practice for successful visits of cruise ships. (See also Peter Listrup on 17th: "Optimisation of Pilotage on Cruise Ships").

3. (**Trond Kildal**) Thorough analysis of historic 2001 grounding of "Regal Princess" entering Cairns, led to a major overhaul, integrating best hydrographic data with best PPU and ship handling skills honed in Smartship simulator, now means that Cairns has re-opened for business to the cruise industry i.e. technology and training pay dividends.
4. (**Kees Buckens**) With Kees' extensive experience both in the cruise industry and in training, he was ideally suited to the role of external auditor for pilot/bridge team performance in the Fiordland operation. Rule 90 requires regular Peer Review and Kees delivers independence.
5. (**Nigel Meek**) "A serving pilot in NZ's busiest cruise ship port offers a perspective on relationships between people and technology on a passenger ship bridge. A once-over lightly look at the prevailing legislation in NZ. Reflections on personal experience as a passenger and a pilot."

## Day 2   Wednesday 16th Nov

**Outline**: Due to the hostile environment, the aviation industry set the standard for safety via engineering excellence, Human Factors, accident investigation, training, SMS & Safety Culture.

1. (**Ravi Nijjer**) History of Human Factors in Aviation dates back to WWII when more aircraft lost due to "pilot error" than enemy action: though pilots were plentiful, aircraft were expensive. (RAF reluctant to issue parachutes lest airmen not do their best to save disabled craft!). "Cambridge Cockpit Studies" – ergonomics (instrument display clarity), fatigue, stress, vigilance e.g. 20m max to watch a screen. They exposed the myth of the "right stuff". Airline pilots have co-pilot, unlike Schettino. US *Space Gemini Project* confirmed that soft skills (Human) more important than hard (Technical). Knut Hammarskjold "*Last Frontier*" written 1975, but not acted upon until Tenerife disaster of 1977 (CRM). Aviation Industry (unlike Marine) says "Never waste an accident" i.e. there are always lessons to be learned. Only after the $50m grounding of *QEII* on Vineyard Shoal (1992) that ATSB suggests BRM training based on Aviation's CRM. Lately, a convergence in Accident Investigation, and Railways and Health following similar pattern. Ravi's BRM II (2011) integrates Pilot Ops SMS, Human Factors, Seamanship & Error Management - aka POSMS.
2. (**Peter Dann**) No definition of "Situational Awareness" because very complex dynamic of Past, Present & Future. Communication, perception, comprehension and projection are all cognitive functions and each Human brain is unique. "*Star Trek*" Bridge design & function was visionary.
3. (**Tony Mikkelson**) *Trelleborg* PPU helps "Reduce Human Error & Enhance Situational Awareness". The loss of Clyde tug "*Flying Phantom*" has many lessons incl. v/l prediction; real-time wx data; local knowledge; b-ENC safety contour lines; SOP & Checklists within PPU; better coms between ships. Training is essential for safe use of PPU. Could PPU have prevented "Flying Phantom"? Yes.
4. (**Mark Hughes**) "Tombstone Safety" = learning lessons in blood i.e reactive. How become pro-active? History of Canadian air accidents and lessons learned. Judge Moshansky inquiry into "*Dryden*" incident (1989) showed how system was riddled with holes. De-regulation of industry was major cause. Moshansky pioneered pro-active defence (HFACS). James Reason's Swiss cheese model was designed pro-active, not reactively as in Marine Industry. Then came SMS which ignored the Human Factor! Over-focus on compliance misses the bigger goal of Risk Management. Think icebergs and *Heinrich Triangle*: what we think we know is the visible tip, but greater danger lies unseen. To discern the depths, a positive reporting is required of near misses and Hazardous incidents (Just Culture): the threat of punishment (Blame Culture) kills this insight. Over-reliance on technology creates complacency and loss of hard skills. (Joke: Why is the co-pilot a dog? The pilot monitors, the aircraft flies itself; the dog is there to bite the pilot if he touches anything!). Pilots need to learn "active monitoring".
5. (**Bob Henderson**) James Reason put cat-food into teapot…Definition of Slips, Lapses, Perception, Mistakes, Violations. Criminal Law is *Actus Reus & Mens Rea*: *"an act does not make a person guilty unless (their) mind is also guilty"; hence…guilt…requires proof of fault, culpability or blameworthiness both in thought and action.* However, all change post Chernobyl! Accountability is too linear and does not represent how minds work. Do we have Free Will? Brains need O2 and

rest: fatigue impairs function. Visual vs. Verbal - No-one can multi-task: we divide attention into smaller bites. (Doidge: "*The Brain that changes itself*"). Brains release rewards (endorphins) both overt (chocolate & sex) and covert dopamines (risk-taking shortcuts, no ill effects!). Likewise, adrenaline freezes cognition: "Don't think! Act!". In an emergency, start talking! NOTA = Notice, Understand, Think Ahead e.g. "I have control. I can see this. What do you see? Etc." We gain Resilance from Knowledge, Training, Experience, Planning, Briefiing. Avoid Overload by sharing intention (thinking aloud).

6. (**Alan Bradbury**) "The Aviation Journey & Safer Systems" Wright Bros – WWII – Jet Age (Technical) – 1970 (Hu. Element) – 1990s Systemic Perspective (Humans: last line of cheese) – 2013 Pro-Active Risk Assessment. Though criminalization exists (Concorde crash 2000), Huam Error, regardless of the outcome, is different from a crime (until politics intrudes).
7. (**Paul Clayton**) History of HF in Air NZ. Written Exams on Theory. System of 7 checks: 2 Class, 4 Sim, 1 Active Flight. Hard & Soft skills tested, graded and reasons for grade. A failure in soft skills is a failure. Pilots are constantly monitored and given opportunity to improve.
8. (**Tahlia Fisher**) explained the phenomenon of "Go Round" which is the required response rather than bend to all other pressures to just get the job done. Very applicable to our industry!

## Day 3   Thursday 17th November

1. (**Tony Gibson**) POAL CEO explained that Capitalism was 'munted' in 2007. POAL is going with robots. Synthetic milk is close. Both cows and Humans now redundant.
2. (**Human Error**) I have to admit: I cannot find my notes so am relying on dodgy memory…the conference proceeded as programmed – though TAIC (and MNZ) were tied-up in Wellington quakes.
3. (**Hugh O'Neill**) In response to a series of near-miss incidents in NZ whilst boarding and landing, NZMPA formed a working group to explore how to improve pilot safety. Most of the best ideas came from Taranaki and were published in the September issue of The Pilot. Knowing that all ports are different, we compiled a draft set of Good Practice Guidelines covering Pilots Ops BRM, Boat manoeuvres, danger of rucksacks, advantage of 2-hand grab, PPE and rescue of Pilot Overboard, Reporting defective ladders, head protection, wet-water drills etc. As pilots, not regulators, we only offer advice. The idea is that a booklet will be available to be used as a repository of ideas to consider. It will evolve. The best ideas are in our heads. Lets aim to leave the job better than we found it.
4. (**Adam Roberts**) Pilot ladder deficiencies – a walk on the wild side! Adam all too graphically showed that not everything is as it first appears. We have a moral (and legal duty) to refuse to use deficient ladders since acceptance by one pilot might cause the death of the next.
5. (**Neil Farmer**) AMPI has developed a robust and bespoke CPD model, which can only raise the standards of the profession: consistent, relevant, achievable and accountable.
6. (**Andrew Beazley**) Port Ash – major asset in training & evaluation of pilots and port infrastructure.
7. (**Dirk Degroote**) Damen tugs history & future: RSD concept is twin-fin fwd &ASD: 68T direct can deliver 98T indirect! Unmanned drone tugs a possible future!
8. (**James Mariner & Paul James**) Inter-Islander & Track Pilot: Pros & Cons; Automation works, but only with careful Human monitoring. Automation is an aid, but all decisions by Bridge Team.
9. (**John Barker**) POAL vision: "To advance the MPX, using the latest processes and technologies to reflect the changing needs of international shipping" integrates environmental data to give accurate UKC, wind and current. Port Ops can be managed. PPU being used to fuller potential.
10. (**Euan Crawford**) NZMPA founder remarked humorously that he was owed $50 (repaid next day!)

## Day 4 – Friday 18th November

Ravi opened the final day: Relationship between Safety Culture & Just Culture.

1. (**John Wright**) This David Attenborough-like [teddy bear] challenged us all into 6 hypothetical Ports' Boards of Directors, to implement SMARTT ideas (Specific, Measurable, Achievable, Realistic, Track-able, Time-based). John's experience of major disasters in the Offshore North Sea provided insights into both the best and the worst. He singled out Chevron for suppressing management hierarchies to empower those at the coalface. This leads to success on every

measure. John's seismic presentation might have been mistaken for a small after-shock. Presentations were correspondingly brilliant!

2. (**Hamish Brown**) of Concordia was the following tsunami of ideas: we care when one London pilot dies, or 29 miners in a coal mine, 1,138 in a Bangladeshi sweat shop, but what about the 5,700 every 24 hours who die in work-related accidents? Hamish's revelation is that Safety Culture can be analysed and forecast just like the weather; imagine if the weatherman blandly predicted a nice day tomorrow based on the fact that today was fine. The simplest way to measure a company's culture was how much space was devoted to H&S in the Annual Report. Until H&S features more than finance, then business matters more than people. The wonderful news however, is that profits soar by 30% once a company fully understands that people are indeed their greatest asset.

3. (**An Eloquence of Lawyers**) explored the respective legal and moral duties of Employer and Employee. Because of criminalization (driven by media's demand for instant scapegoats) then be careful what you say and to whom. Remain silent until own lawyer (not the company's). No such thing as "Off the record". Own Lawyer is legally bound to respect confidentiality. Speak freely to TAIC but you can say "No Comment" to MNZ since the regulator has duty to prosecute. When report an incident to relevant authority? ASAP by telephone. In a crisis, employers need to Control: Prioritise Family, Information then Social Media. Consider appointing Media Liaison.

4. (**Nick Cutmore**) Sec. Gen of IMPA since 1999. Nick explained how IMO works i.e. flag states are often just fronts for corporates. IMPA uses quiet diplomacy and cakes. Finally, a History Lesson on IMPA HQ aboard HQS Wellington: a Grimsby Class convoy escort built in 1934 for service in NZ waters arrived in Auckland in 1935 (arguably the birth-date of RNZ Navy?). She escorted Atlantic convoys throughout WWII and rescued 450 MN seamen, and shared in the kill of a German U-Boat. It is heartening that she is still performing the former duty with great gallantry.

## CONCLUSIONS

1. "Change is the law of life. And those who look only to the past or present are certain to miss the future". In order to remain relevant, we must keep pace with change.

2. Despite all the technology and training on a cruise ship bridge, the pilot's "feral vigilance" is an instinct within our brain's deep wiring to unconsciously detect change in the environment faster than we realise. Pilots' brains are well-attuned to their own port.

3. Corporates like Air NZ and Carnival Cruises are superb at building teams. The pilot can serve the team, but perhaps the greatest value he can have is to challenge the phenomenon of 'Group Think' – a feature of several marine and aviation accidents.

4. Corporate Power can usurp Government Agencies via lobbies and TPP (despite President-Elect Trump's opposition). Be very wary of Trump's 'deals'.

5. All the best evidence points towards making employees first and foremost the focus. Evidence abounds that unleashing all that potential is a win-win. Just as on a ship, loyalty is a 2-way transaction: look after the crew and the crew look after you.

6. Pilots take a long time to make, but can be very fragile. But pilots too have a duty to look after themselves and their colleagues: no-one wishes to see anyone hurt or killed in the line of duty. If a pilot ladder is dodgy, act upon it. Likewise, wearing back-packs on ladders is dumb. Never let an accident go to waste: if it's your own near-miss, learn & share: there is nothing wrong in being Human.

7. John Wright's definition of a near-miss was a roll of dice i.e. double-six makes a near miss an event. We have to record near misses to understand what part luck plays…

8. The character Gordon Gecko's famous dictum that "Greed is Good" portrayed Wall Street's Predatory Capitalism, predicting the inevitable 2007 global financial collapse. Happily Gordon now makes excellent helmets…there is always room for redemption.