The APPEA Journal 2017, **57**, 374–376
http://dx.doi.org/10.1071/AJ16243

Extended abstract

Nimrod XV230—reflections on leadership, culture and priorities

Martin Anderson

Woodside Energy Ltd, 240 St Georges Terrace, Perth WA 6000, Australia.
Email: martin.anderson@woodside.com.au

Abstract. On 2 September 2006 a reconnaissance aircraft Royal Air Force Nimrod XV230 suffered a catastrophic mid-air fire on a mission over Afghanistan, leading to the total loss of the aircraft and the death of all 14 service personnel. This paper summarises key issues from an independent inquiry and challenges the oil and gas industry to reflect on these. The author, a Chartered specialist in human and organisational factors, contributed to The Nimrod Review as a Specialist Inspector with the UK Health and Safety Executive.

Keywords: assumptions, complacency, complexity, Haddon-Cave, organisational change, organisational failures, safety case, safety culture, The Nimrod Review, warning signs.

Accepted 24 March 2017, published online 29 May 2017

Nimrod XV230 and organisational failures

The independent inquiry, led by Charles Haddon-Cave QC (now The Honourable Mr Justice Haddon-Cave), concluded that the Nimrod XV230 accident was avoidable and due to significant failures by the Ministry of Defence (MOD), BAE Systems (who produced the Safety Case) and QinetiQ (independent adviser). This inquiry resulted in the publication of The Nimrod Review (2009).

Many major accidents have occurred in the past 30 years or so, in aviation, rail, offshore oil and gas, onshore petrochemicals, nuclear industry and space exploration. Despite the context and the specific technical causes being different, many of these events have common organisational failings. In particular, The Nimrod Review discusses '*uncanny, and worrying, parallels between the organisational causes of the loss of Nimrod XV230 and the organisational causes of the loss of NASA's Space Shuttle Columbia in 2003*'. What happened to Nimrod XV230 was due to organisational issues and therefore the lessons are relevant to the oil and gas industry.

I had the privilege of meeting with The Honourable Mr Justice Haddon-Cave during the Nimrod Inquiry, when we discussed the parallels between the loss of Nimrod XV230 and the loss of Shuttle Columbia in 2003. These parallels are organisational causes, also observed in other major accidents, including the NASA Challenger disaster. The Nimrod Review also mentions the Kings Cross Fire, the Herald of Free Enterprise, the Marchioness and BP Texas City. Since the publication of the Review, we could add the Deepwater Horizon disaster to this list.

In this paper, I summarise some of the aspects that contributed to the Review's subtitle: 'A failure of leadership, culture and priorities'.

A failure of leadership

The disaster was not due to the actions of the Nimrod's crew, nor could they have done anything to avoid catastrophe. They were casualties of leadership and organisational failures; their fate was sealed before the first fire warning. The Review stated that '*The fundamental failure was a failure of leadership*'; the real tragedy was that the loss of Nimrod XV230 was avoidable and the lessons to be learned are not new.

Safety cases

The Safety Case was described as '*a hurried, sloppy and muddled piece of work, carried out by a junior individual, under time pressure, without sufficient guidance or management oversight*' and '*virtually worthless as a safety tool*'. It was an 'archaeological' exercise, digging around for design data and other historical documentation, with the aim of demonstrating that the aircraft was safe. It did not provide fresh analysis or challenge, and the checks and balances that should have identified this were not present.

> '*Unfortunately, the Nimrod Safety Case was a lamentable job from start to finish. It was riddled with errors. It missed the key dangers. Its production is a story of incompetence, complacency and cynicism. The best opportunity to prevent the accident to XV230 was, tragically, lost*' (The Nimrod Review 2009).

Warning signs

In the Baker Panel Report following Texas City, it was quoted that '*People can forget to be afraid*'. There were several previous

incidents and warning signs potentially relevant to Nimrod XV230, but these were not always investigated. When they were investigated, they were superficial and not the learning opportunities that they should have been. No-one was taking a systemic view, looking for trends or patterns.

Organisational change

Over a period of many years, the MOD underwent what is described as a '*tsunami*' of changes, suffering from a '*sustained period of deep organisational trauma*' from 1998 to the incident. Change is not necessarily a bad thing, but its impact on safety needs to be assessed and managed. The product of the continuous organisational change was more complexity, but safety usually arises from simplicity. I was honoured to be quoted in The Nimrod Review for my comment on the complexity of the NASA organisation in relation to the Shuttle incidents:

> '*NASA was so complex it could not describe itself to others* (*Martin Anderson*, *HSE*, *2008*)' (The Nimrod Review 2009).

Questions for reflection:

- How do you avoid similar issues in the development of your safety case?
- Does your safety case provide a structure for critical analysis and thinking throughout the lifecycle?
- Do you understand and challenge the technical work of contractors and consultants?
- What are the equivalent warning signs in your organisation?
- Do you help to 'join up the dots' between previous incidents?
- Do you create effective learning opportunities?
- Are organisational changes (including cumulative impacts) creating unintended effects?

A failure of culture

Nimrod is 'safe anyway'

Nimrod served the Royal Air Force for over three decades, participated in every major conflict that occurred, and experienced only two accidents before the loss of XV230. There was an assumption that the aircraft and modifications were safe; and these assumptions were not reviewed when the aircraft life was constantly extended. This led to the Safety Case becoming a paperwork exercise, documenting the past rather than rigorous analysis. The Honourable Mr Justice Haddon-Cave said that '*Questions are the antidote to assumptions*'; it is also important to make your assumptions explicit and discuss them.

Paper safety

Many of the MOD checks and balances focused on systems and processes, rather than what actually happened in practice. '*There has been a yawning gap between the appearance and reality of safety*' (The Nimrod Review 2009). This is often referred to as the gap between 'work as imagined' and 'work as done'. The paper safety allowed the organisations involved to feel comfortable and this led to complacency.

Procurement

The MOD procurement process is a story of over-runs and over-spends, and the major organisational changes made matters worse. This created bow-waves of deferred financial problems. If the Nimrod replacement had not been delayed so many times, Nimrod XV230 would probably no longer have been flying in September 2006.

Questions for reflection:

- Do you think that all is well because of historical experience?
- How do you ensure that safety does not just become a paperwork exercise?
- What assumptions are you making in key decisions – are these still valid?
- How do you know that what you think is happening, IS actually happening?
- How do you encourage the reporting of bad news, errors or near-misses?
- Do you actively create the culture, or just let it happen?
- When things are going well, do you ask more questions (rather than fewer)?

A failure of priorities

Through the allocation of time, money and resources, leaders most clearly indicate what is important to them.

Shift from airworthiness

In the MOD there was a shift from safety and airworthiness towards business and financial targets. The cuts, savings and targets changed the culture, diluted the safety activities and caused massive distraction. Everyone was involved in risk, but no-one was responsible.

Demands

Despite increased operational demands (such as conflicts in Iraq and Afghanistan), the assumptions behind organisational changes were not revisited, moving resources further away from safety-related activities.

Aging aircraft

The aging Nimrod fleet required more and more attention; instead, it received fewer resources and less vigilance; not helped by serial delays in its replacement. The Nimrod was always 'just about' to leave service, creating issues around investment and spares availability.

Questions for reflection:

- How might budget cuts, challenges, strategic targets, initiatives etc. have unintended consequences?
- What are your key messages to your teams and to the business?
- What targets do you set?
- How can project or production pressures live comfortably with safety?
- Are you managing aging facilities?
- Do you accept conditions or behaviours that you would not have a few years ago?

I cannot begin to summarise The Nimrod Review in this short article and presentation. The Honourable Mr Justice Haddon-Cave and his team produced an exemplar analysis of organisational factors, and so I suggest that you read The Nimrod Review, or at least the short summaries at the start of each chapter. I also highly recommend that you watch one of the many online keynote speeches delivered by The Honourable Mr Justice Haddon-Cave.

> '*Many of these lessons and truths may be unwelcome*, *uncomfortable and painful*; *but they are all the more important*, *and valuable*, *for being so. It is better that the hard lessons are learned now*, *and not following some future catastrophic accident*' (The Nimrod Review 2009).

Conflicts of interest

None.

References

The Nimrod Review (2009). 'An independent review into the broader issues surrounding the loss of the RAF Nimrod MR2 aircraft XV230 in Afghanistan in 2006.' (The Stationery Office: London.)

Any views or opinions expressed in this paper are solely those of the author and do not necessarily represent those of Woodside Energy Ltd.

The author

Martin Anderson is a graduate in psychology with over 25 years of experience in human factors and safety management, in relation to major hazards and complex systems. He has two Master of Engineering degrees; in human factors, and in process safety. Prior to joining Woodside in 2013, Martin played a key role in developing human factors within the UK Health and Safety Executive. He was a Specialist Inspector for 12 years, regulating human, management and organisational aspects on over 150 major hazard sites. Martin is a Fellow and Chartered Member of the UK Institute of Ergonomics and Human Factors; and was a non-Executive Director of the Institute for 10 years. In 2012 he was presented with the William Floyd Award by the Institute, for outstanding and innovative contributions to ergonomics and human factors. Martin is currently Manager Human Factors at Woodside.