

Plant Status and Configuration Control

A personal perspective

Tony McEvoy – CRA Forum - September 2013



Events on nuclear power stations.....

.....who's to blame?



The operators....?

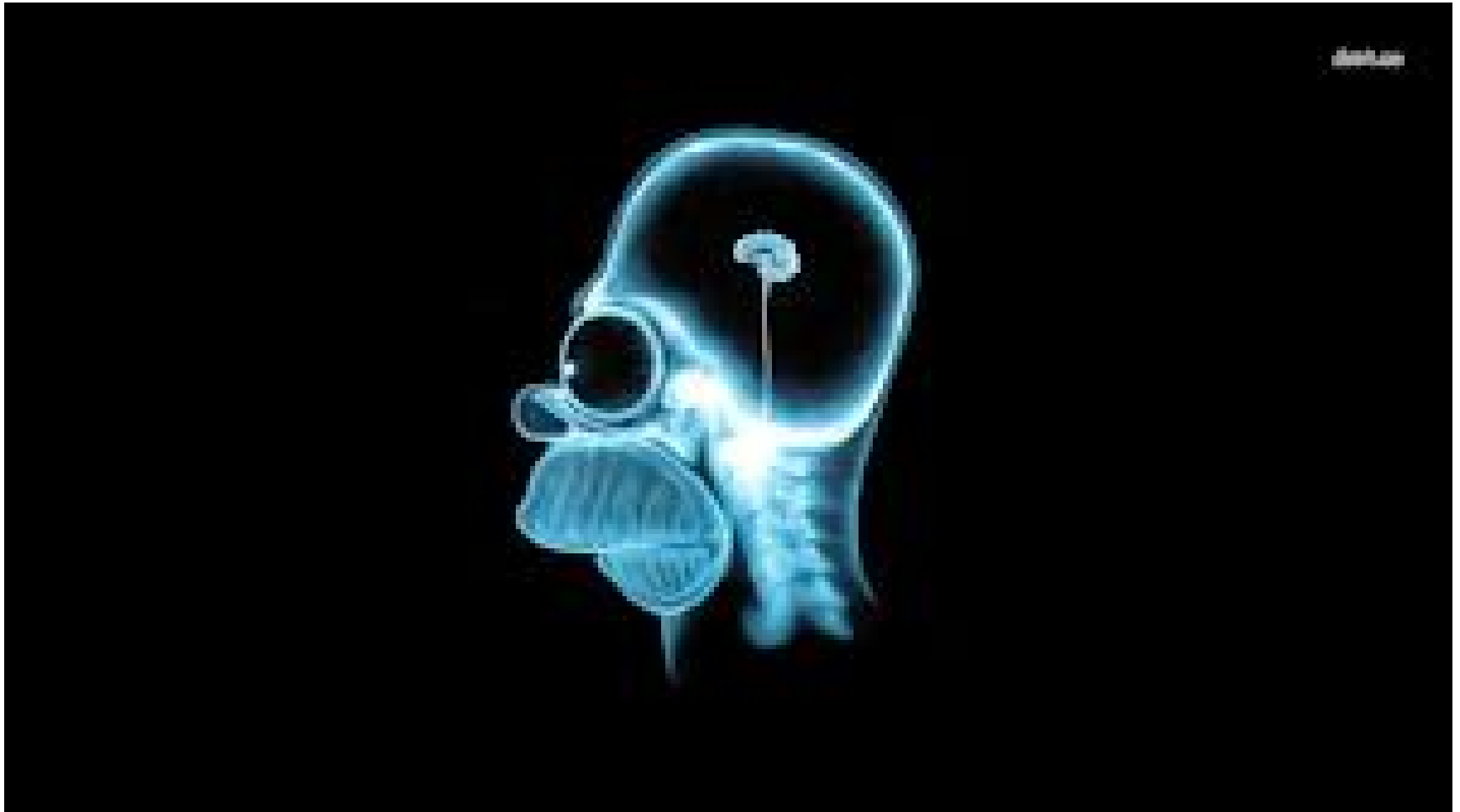
.....of course!

Think of a typical operator.....



How does a typical operator behave in a crisis?







Remember the tag line for later.....

“Perform all tasks to the highest standard”

So what?

Video shown to Hartlepool Control Room Teams last year during Simulator refresher training.

Each operator saw themselves as Ed Frederick.

They also saw similarities at Hartlepool:

1. Maintenance activities that are not perfect
2. Plant misaligned following testing / maintenance
3. Long standing defects in control room / on plant
4. Equipment reliability issues
5. Legacy design issues
6. Repeat events



So why are we having repeat events?

- Operators have a large part to play, however.....
- Think of the factors that resulted in TMI

- Generally, when there is an event, it is very visible.
- It is easy to find the last person involved.
- Generally, they haven't performed every task to the highest standard.

- But we often fail to **really** look back further.
- How honest are we with ourselves and others?



Truth time!

Sit down if you have ever:

- Run out of fuel
- Locked your keys in your car
- Been stopped by the police because your MOT was out of date
- Set your Dad's garage alight using a can of petrol
- (it's a long story)
- Ever broken the speed limit.....





On the basis that we all make mistakes.....

- We shouldn't introduce unnecessary challenges to the way we work
- Especially if we want to
“Perform all tasks to the highest standard”
- Obvious, but.....
- Historically, examination and understanding of events have stopped when the person “holding the smoking gun” has been identified.



Kegworth air disaster

- The Kegworth air disaster occurred on 8 January 1989 when British Midland Flight 92, a Boeing 737-400, crashed onto the embankment of the M1 motorway near Kegworth, Leicestershire, in Britain.
- The aircraft was attempting to conduct an emergency landing at East Midlands Airport.
- Of the 126 people aboard, 47 died and 74, including seven members of the flight crew, sustained serious injuries.



Kegworth air disaster

- Captain Hunt and First Officer McClelland were seriously injured in the crash, and were later dismissed following the criticisms of their actions in the AAIB report.
- Hunt suffered injuries to his spine and legs in the crash.
- He was an experienced pilot, having joined British Midland in 1966 as a junior crewman and became a captain in 1974.
- In April 1991 Hunt told a BBC documentary:
We were the easy option - the cheap option if you wish.
We made a mistake – we both made mistakes – but the question we would like answered is why we made those mistakes.



Kegworth air disaster

- McClelland was less badly hurt but still spent several months in hospital.

- He said:

Pilot error is a very neat term.

What they're saying is that the people who designed it, manufactured it and carried out the specifications all got it right but the two chaps at the front got it wrong.

Straight away it sweeps all the problems below the mat.

Safety Case Methods and Principles

- Deterministic Principles (NSP 2).....

Prevention of failures and deviation from normal operation is the first priority as it is generally easier to provide effective preventative measures than to deal with the consequences of failure.

So how do we check that we are doing our best to prevent failures and that we are not deviating from the norm?



WANO GL 2001-04

WANO

GUIDELINE

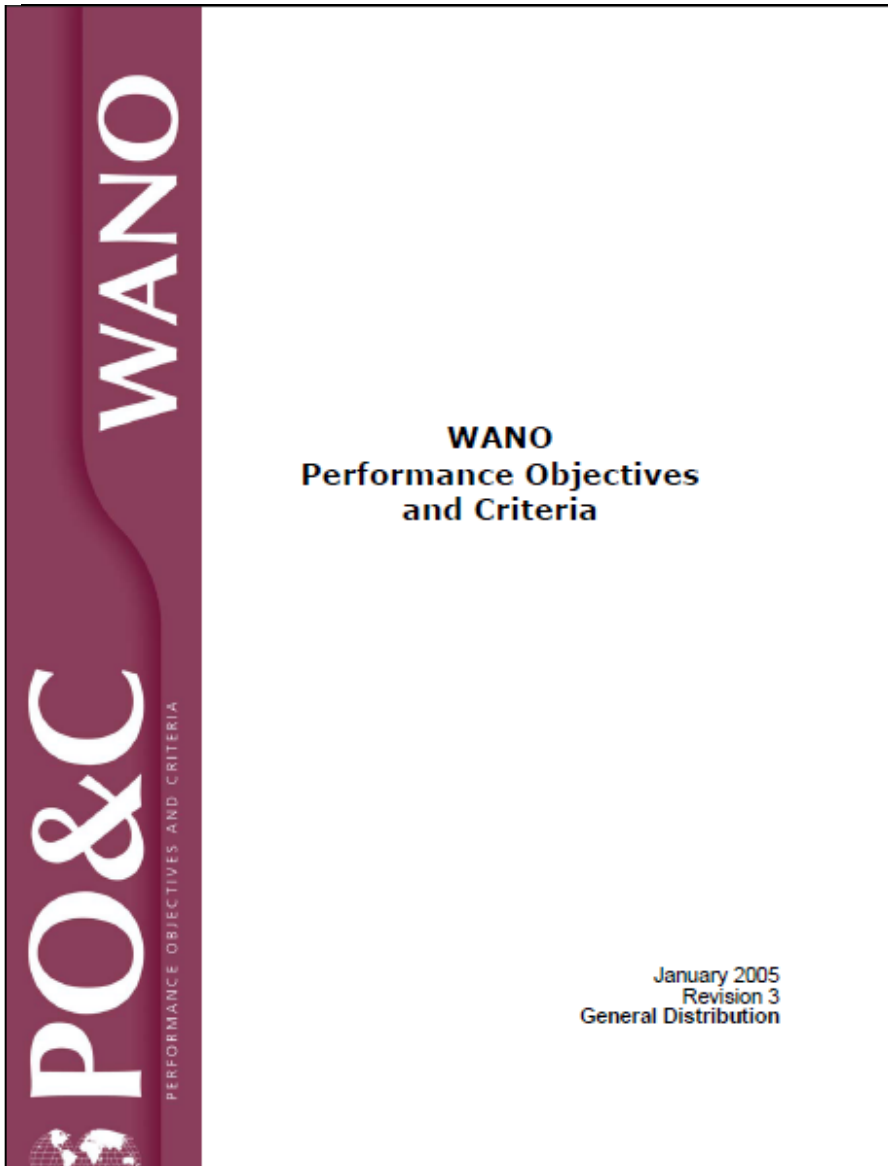
**Guidelines for Plant
Status and
Configuration
Control at Nuclear
Power Plants**

June 2002

**WANO Guideline
GL 2001-04**

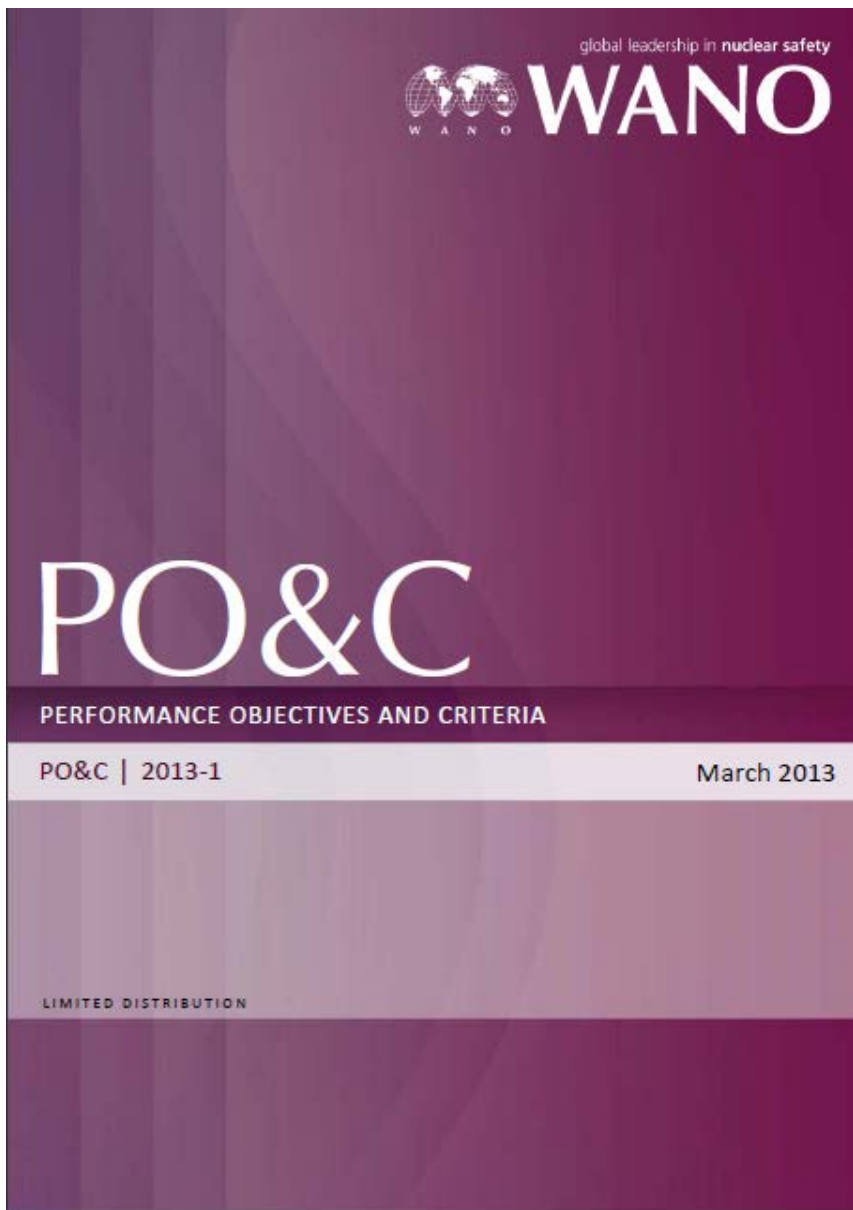


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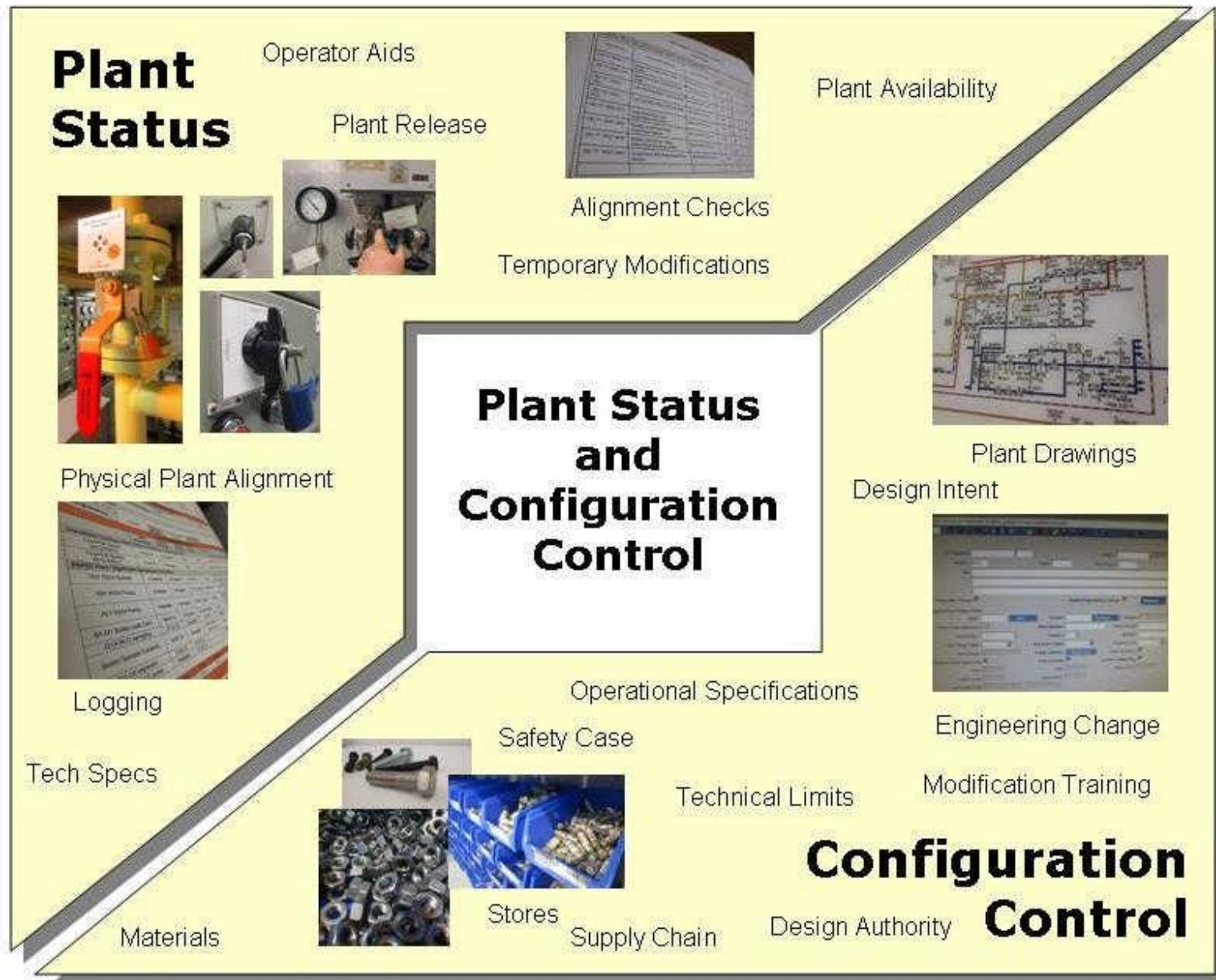


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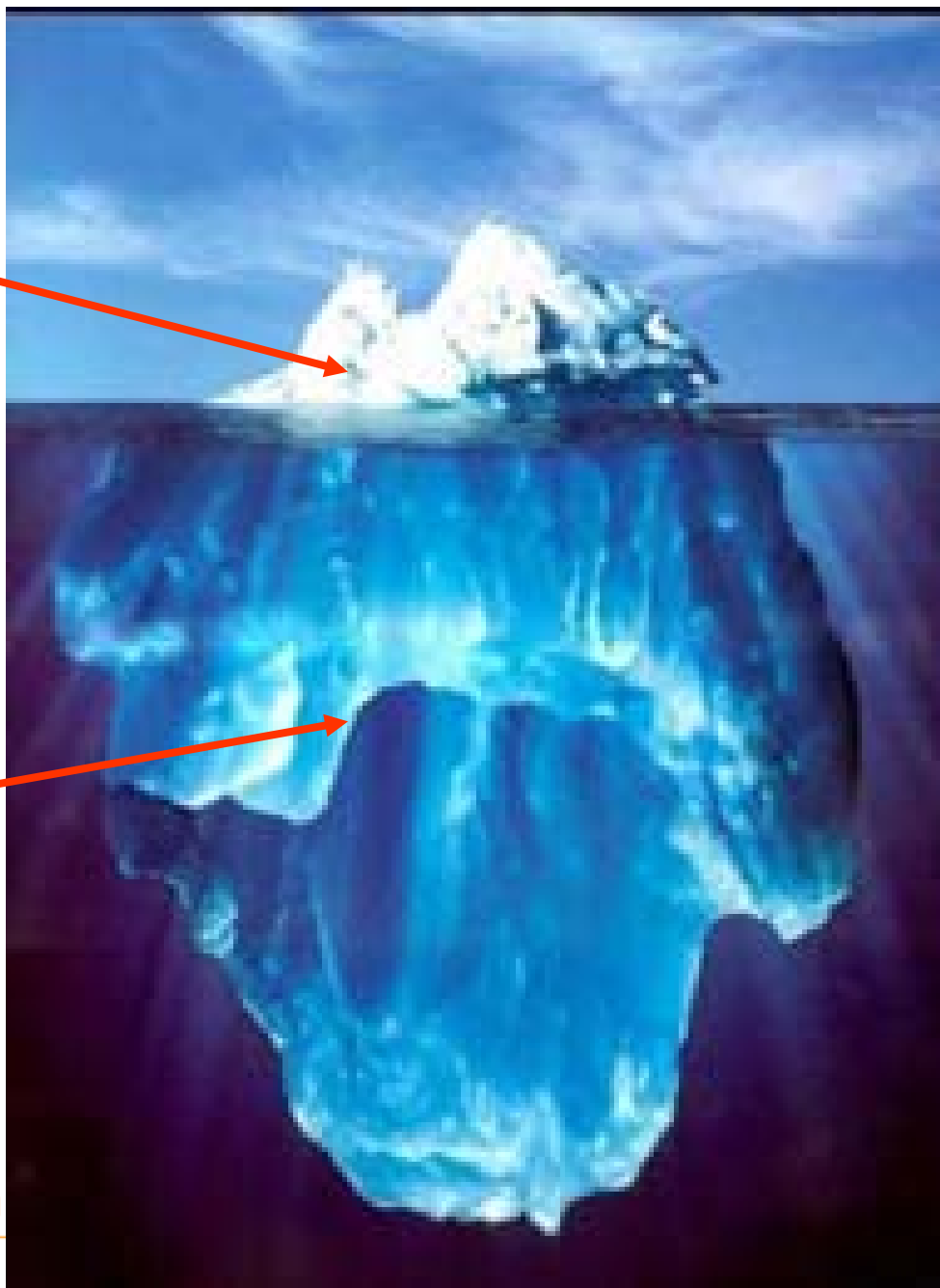
**Valid from
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What is Plant Status and Configuration Control?

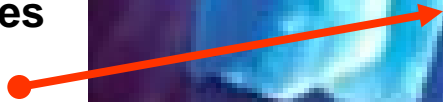


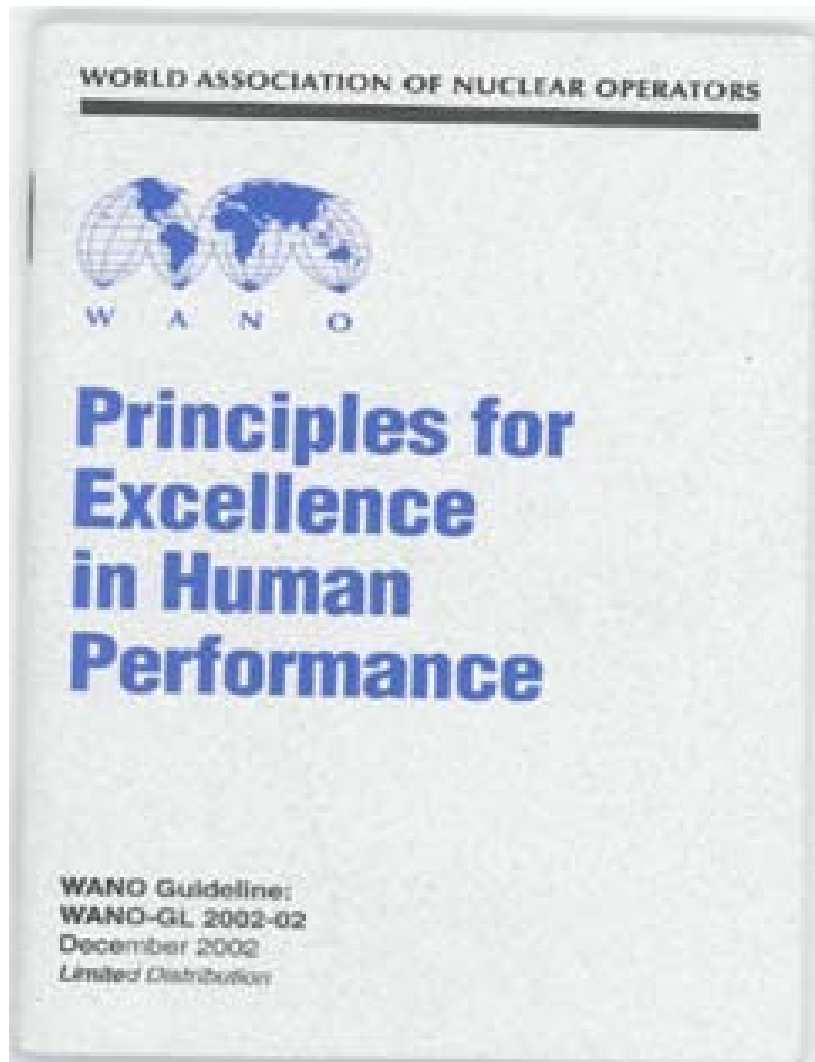


Physical alignment events



**Configuration control issues
Maintenance events
Component failure events**





Even the best people make mistakes.

Error-likely situations are predictable, manageable and preventable.

Individual behaviour is influenced by organisational processes and values.

People achieve high levels of performance based largely on the encouragement and reinforcement received from leaders, peers and subordinates.

Events can be avoided by understanding the reasons why mistakes occur and applying the lessons learned from past events, not from asking “who made the mistake?”



The Traditional View of Human Error

- Human error is a cause of events
- To explain events, you must find where people went wrong, what violations or mistakes they made
- You must find people's inaccurate assessments, wrong decisions, bad judgements
- Complex systems are basically safe
- Unreliable, erratic humans undermine defences, rules and regulations
- To make systems safer, restrict the human contribution by tighter procedures, automation, supervision

The Expanded View of Human Error

- Human error is the effect or symptom of trouble deeper inside a system. Human error is the trigger which exposes a latent condition.
- To explain events, do not try to find where people went wrong
- Instead, find how people's assessments and actions made sense at the time, given the circumstances that surrounded them
- Complex systems are not basically safe – people keep them safe
- Complex systems are trade-offs between multiple irreconcilable goals (e.g. safety and efficiency)
- People are vital in creating safety. They are the only ones who can negotiate between safety and other pressures in actual operating conditions. People have to create safety through practice at all levels of an organisation.



“Leaders need to demonstrate in everything they say and do that Human Performance and Error Prevention is fundamental to nuclear safety.

Enthusiasing own shift or team, promoting and coaching the use of the HU tools in the field is a key part of good nuclear leadership”

***Andy Spurr - Managing Director,
EDF Nuclear Generation***

Thank You