



# Total Reliability News

Edition 1

April 2005

*“Our aspiration is to benchmark in the top quartile for uptime, unit operating costs and unit development costs when compared against similar assets in the same basins or regions”*

Malcolm Brinded, EP Results Quarter 2 2004 Newsletter

Welcome to this, the first EP newsletter on Total Reliability. Over the years, a number of different consultants, each using a slightly different approach, have been used to help EP start the Total Reliability journey.

In mid 2004 the decision was taken, supported by the Production Leadership Team, to remove the dependency on outsourcing such a key activity from these consultants and develop a Total Reliability Standard tailored to how Shell organises and operates its

business. But don't panic! This does not mean throwing out the work you have already done.

Instead the Total Reliability Standard will build on the work and good practice already achieved. Some good results have been achieved in some OpCos whilst others have yet to get started on the journey.

This newsletter, which will be published tri-annually, will contain articles to keep you up to date with:

- what is happening EP-wide on the subject.
- all the latest success stories
- information about additional tools and training as it becomes available.

This means of course that we need your input about what is happening in your part of the business so please email your contributions to:

[allan.grieve@shell.com](mailto:allan.grieve@shell.com)



- at optimal cost
- with no harm to people or the environment
- whilst safeguarding technical integrity

Much has changed with the introduction of the EP Operating Model and Global Processes, Group Policies and Standards. In particular, both the role of Operations and the importance of Maintenance and Integrity Assurance in achieving Operational Excellence have been significantly re-emphasised and strengthened.

This fundamental shift in our business model and the re-emphasis on the core basics of Maintenance and Integrity Assurance has provided the ideal opportunity to update the existing Maintenance Management Guide and develop a common EP approach to Total Reliability. As a result, what was formerly a guideline will now become an EP Standard that is mandatory with the issue of the **EP Maintenance and Integrity Management Standard**.

The EP Production Leadership Team and the Regional Production directors are fully aligned and committed to focus on this single EP approach to Total Reliability.

I compliment the Maintenance and Integrity Community in having the vision, creativity and the passion to drive this approach and deliver the step change required to meet the challenge of the EP Operational Excellence aspiration.

Total Reliability is one way of moving us toward this aspiration. The journey won't be easy or short, but with your commitment and dedication, there is no doubt the we can, and will, become a top quartile EP company.

I very much look forward to joining you in what I believe will become an historic, exciting and rewarding period in Shell's rich and successful history.

Greg Hill on behalf of the EP Production Leadership Team.

Deferments alone currently cost Shell in the Upstream around \$1.6 billion per annum, at a modest \$26 a barrel. The opportunity is huge and can transform our business. As an EP Production Leadership team, one of the five themes we have chosen to deliver Operational Excellence is called Total Reliability, which deals with how we manage and execute Maintenance and Integrity Assurance.

In order to deliver Operational Excellence, we must maximise the availability of our assets:



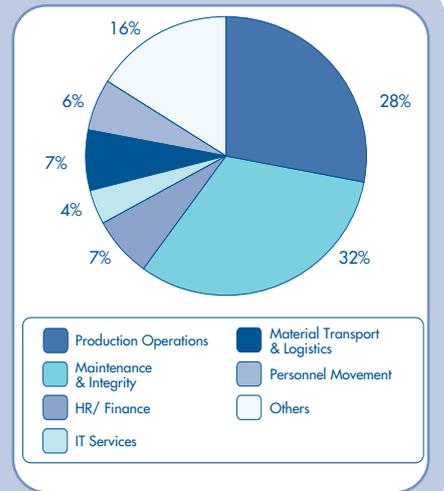
# Total Reliability - Why we need it

There are some trends that are causing concern in the business that must be addressed if we are to achieve our Operational Excellence aspiration

Production operating costs are increasing disproportionately because of maturing fields and market pressures from high oil prices. So the EP Operating Model must be made to work, to deliver savings through process improvements, simplification and standardisation.

The diagram opposite shows the categories of operating costs and you can see that maintenance related costs are the largest single contributor.

Diagram: Categories of Operating Costs.

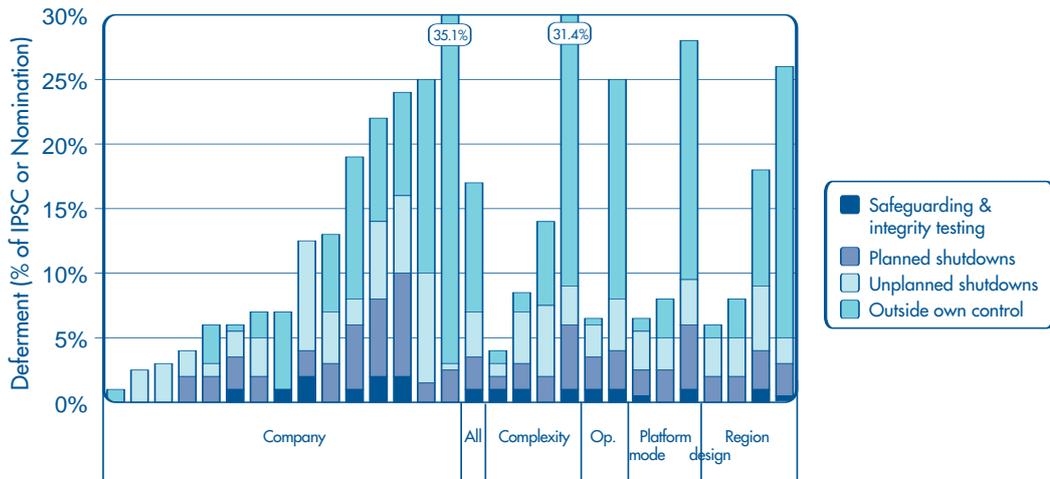


One major target that Maintenance can have a direct impact on is the reduction of deferrals. Surface deferrals in EP

average over 180,000 boe/day. (Source: SGS Annual Upstream Benchmarking Exercise).

Improving reliability and thereby reducing costs and deferrals can have a major impact on reducing production costs.

Categories of Production Deferral



## EP Policy for Total Reliability

*“All of us have a role to play in asset reliability. Each of us has a right and duty to intervene when any operational activity is not in compliance with this Total Reliability Policy”*

Stewart Officer  
EP Discipline Leader for Maintenance and Integrity

We are all committed to:

- Maximise the availability and productivity of our assets;
- At optimal cost, with no harm to people or the environment;
- Whilst safeguarding technical integrity.

In this way we aim to have a reliability performance we can be proud of, to earn the confidence of customers, shareholders and society.

Every Shell OpCo:

- Has a systematic approach to managing asset reliability to ensure

compliance with the law and to achieve continuous performance improvement.

- Sets targets for continuous improvement and measures, appraises and reports reliability performance.
- Promotes a culture of defect elimination and recognises that maintenance and integrity is a core competence for EP and requires contractors to manage reliability in line with this policy.
- Requires joint ventures under its operational control to apply this policy and uses its influence to promote it in other ventures.
- Seeks to share best practices globally.



# New Ways of Working

Some of the best companies in the world have discovered that to be successful, they need to be very flexible and have the ability to change rapidly.

They look beyond:

- past performance
- what satisfies the customer today
- what the best competitors are doing today.

They are guided by the ultimate standards for performance. They anticipate and act before they experience trauma.

So, it is very apparent that the improvements we need will not come from continuing the old ways of working

There is a need to do things differently including having different attitudes and beliefs - a new set of beliefs based on questioning everything that is done:

- Why are we doing this?
- Is this adding to value to the business
- How can we do this better/ faster/ at lower cost?

When we are all doing this, Maintenance and Integrity will be well along its journey to Operational Excellence.

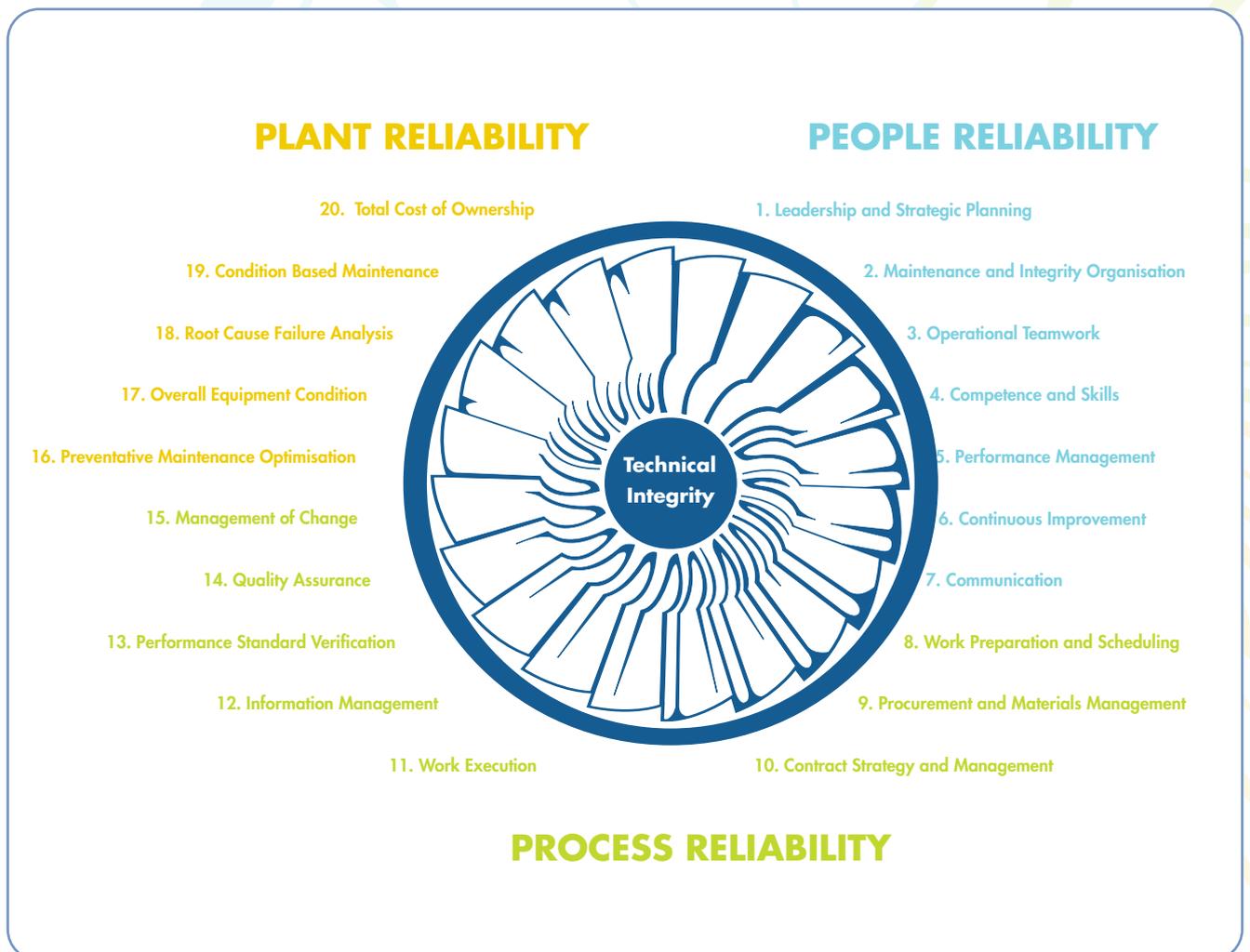
## The Elements of Total Reliability

The ultimate goal of Total Reliability is to ELIMINATE VARIABILITY. Its purpose is to develop reliable **processes** operated by the best **people** in order to produce reliable **plant** and hence give reliable **production**.

The aim is to have 100% reliable production with no unplanned trips and without technical integrity being compromised.

Three of these areas; people, plant and production, comprise twenty Total Reliability Elements which are critical to

success. The elements are deliberately represented schematically to the turbine, because not only is a turbine a key element of equipment but if just one blade is lost then the entire turbine is lost, as is the case with Total Reliability.





# Introducing EP Maintenance and Integrity Management Standard (MIMS):

The EP Maintenance and Integrity Management Standard (MIMS) has been divided into a set of materials and a web portal which is described below.



#### Volume 1- Overview

This Volume sets the scene by describing the Maintenance and Integrity role in achieving Operational Excellence.

#### Volume 2- The Total Reliability Standard

This Volume explains the 20 elements of the Total Reliability Standard used in Operations phase of the life cycle including the performance measurement tool for each activity and how to use it.

#### Volume 3- Role in Operations Readiness and Assurance

This volume explains the contribution of Maintenance and Integrity and the activities required to assure integrity in projects, as well as how the Total Reliability Standard can be used to improve performance.

#### Volume 4- Supporting Tools and Processes

This Volume explains the tools and processes used by the Production Engineering community to achieve Total Reliability throughout the life cycle.

#### Maintenance and Integrity and the EP Business Model:

This document sets out the work of Maintenance and Integrity in the context of the EP Business Model version 4.

Further stand alone documents on Maintenance and Integrity topics will be produced as required.



# The Web Portal

## EP Maintenance and Integrity Management Standard (MIMS)

The Web Portal will be a key means of communicating best practice, disseminating ideas and facilitating problem solving.

Its primary objectives are to:

- act as a the gateway to the Maintenance and Integrity Management Standard
- provide a secure information portal for

the Maintenance and Integrity community.

- provide an effective communications hub for people to share best practice about Maintenance and Integrity, which includes Total Reliability.
- Promote awareness of training services and facilities
- provide a platform to launch effective on-line learning, software tools and

paper-based performance aids.

The portal will become live at the end of April with MIMS Volumes 1, 2 & the EP Business Model available. Other documents will be posted as they become available. You can access the web portal at:

<http://swwhome.shell.com/ep/toe/tr/trhome.html>.

## TR Successes

*"The mind treats a new idea like the body treats a new protein: it rejects it,"*

P.B.Medawar (biologist)

Total Reliability has already been tried in some regions with very impressive results. The first successes with TR were gained by a U.S. based joint venture, Aera Energy.

The figures in the diagrams opposite show the impact that the application of TR methodologies has had on their maintenance costs.

The TR programmes have been extended to SEPCO with impressive results.



One of Aera's asset's, Belridge, won the prestigious annual NAME award (North American Maintenance Excellence) back in 2002. Another one of their assets has now won the award North Midway Sunset (NMWSS). The leadership team feels that all their assets could now pass the award criteria and they are all, as an organisation, well on their way to World Class. Their reliability is going up and their costs are continuing to go down.

They continue to attribute their success to several key things. Along with their relentless pursuit of excellence they will tell you their continual auditing process

(to be known in the future as the annual TR Review) is paramount to improving their processes.

Reflecting on their success Stewart Officer T&OE says, "I know everyone feels they are way too busy and it sounds as if some don't have the appetite for the annual review being developed. But continuous reviewing and elevation of the results with focus on using the review results as a tool for improvement by leadership is key. Best in class organisations use reviewing as a tool for achieving excellence. Even if not all assets feel they are ready there is a need to get the process in place and

develop the behaviors for driving this. It won't be easy but if it was then everyone would be World Class wouldn't they?"





## Draugen - The Heating Medium Pumping Units

On Draugen, the Heating Medium Pumping units had a history of seal and bearing failure, the former being 33 since 1993, with 23 of these since 2001!

A Root Cause Analysis was done and not only was an alignment/ balance problem identified, but a seal oil circulation issue was also recognised. These were rectified and these units have now run for 4 months without a problem.

It may be early days, but against a background of 8 seal failures through 2003, it's certainly looking to be a success and with a conservative estimated annual saving of Nok 752,000 (~90,000 Euros).

## Gannet Platform - North Sea

In this test separator PVV pump, an Equipment Improvement Team found 42 defects were found, including bolts missing from the coupling, the nitrogen cylinder not being secured correctly, the vibration studs missing from the pump and motor, loose deluge pipe work above the motor and the stop/ start station earth bond being broken.



BEFORE



AFTER

## Shell E&P Asia Pacific

Team Vision: To have zero trip on AMPA 3 instrument Fuel Gas supply system. Ampa 3 Fuel gas System was chosen since it had caused spurious trips and major deferment to BSP. There were more than 14 trips recorded in 2004 causing deferment in the region of more than 14km<sup>3</sup> oil and 9Mkm<sup>3</sup> gas. The event commenced on 6th December 2004 and the team completed the task within 5 days in spite of adverse weather conditions. Before the project oil deferred 2004: 2800m<sup>3</sup>; Defects 37; opportunities 35. After, target deferment 0m<sup>3</sup>; defects 4; opportunities 14.



## RB211 Water Wash - David Wass, X- Border Asset.

Across the Brent field, during 2003, waterwashing of the three RB211 turbines caused around 925,000 boe of Deferment. Washing has generally been carried out on an opportunity or time basis, with an average interval between washes (and hence 'pitstop' shutdowns) of around 50 days. The Breakthrough project has developed a programme which assesses both the engine condition

and whether the engine is constrained, and flags up whether a wash is required. Additional outputs include projects to improve the air inlet quality on Bravo, and the purchase of hot wash facilities for Bravo, Charlie and Delta. The benefit of the approach, when fully implemented, will be a reduction in the number of platform wash-related shutdowns. On Bravo and Delta the estimat-

ed overall deferment reduction is around 296,000 boe per year, assuming an 'integrity' limit of 70 days. This benefit has already started to be delivered on Delta. On Brent Charlie work is still ongoing to reassess CAT 1 PMR's which currently require a pitstop every 42 days, and, if successful the condition monitoring approach will also reduce deferment on Charlie.



# Total Reliability Award

You could win this prestigious award!

The purpose of the annual award is to ensure that successes within the Maintenance and Integrity community are recognised, as Allan Grieve says;

**'what gets rewarded, gets repeated.'**

The award will be given to the OpCo demonstrating best in class achievement. So, are you going to be the first recipient?

Here, Allan describes the Total Reliability Review Process which will lead to the award.



assessment of current performance against the 20 elements of Total Reliability. These are the twenty elements shown on the turbine blades.

The culmination of the five Regional independent Total Reliability Reviews will be an EP roll up of all Operating Asset Teams against World Class standards for presentation to PLT in the last quarter of each calendar year. The Maintenance and Integrity Discipline Leadership Team will judge the award each year based on the best performance. So, everyone...let's get cracking, much success and we look forward to seeing the results."

The Total Reliability Review is also an integral part of the T&OE Discipline Health Check and the results from it can be used to provide the data to produce the Health Check.

"The key to the success of Total Reliability is everyone's continuous commitment to improvement and the achievement of the best in class performance. Regular reviews are being applied consistently across EP and are mandatory to ensure best-in-class Maintenance, Integrity and Reliability practices.

The annual Total Reliability Review (TRR) will be conducted across EP Asset Teams in each Region which include an

The results of the review will be used internally within the Regions to share best practices, identify improvement opportunities and set regional improvement goals and plans.

Globally, it will be used to ensure that Maintenance and Integrity is:

- Closing identified performance gaps between best-in-class and current performance
- Sharing and implementing best practices globally
- Delivering on Regional Total Reliability business cases
- Complying with Global Processes and Minimum Standards
- Assuring Asset integrity