SIX STEPS TO SHUTDOWN SUCCESS



STO NORTH AMERICA
Shutdowns & Turnarounds

Oil & Gas iQ
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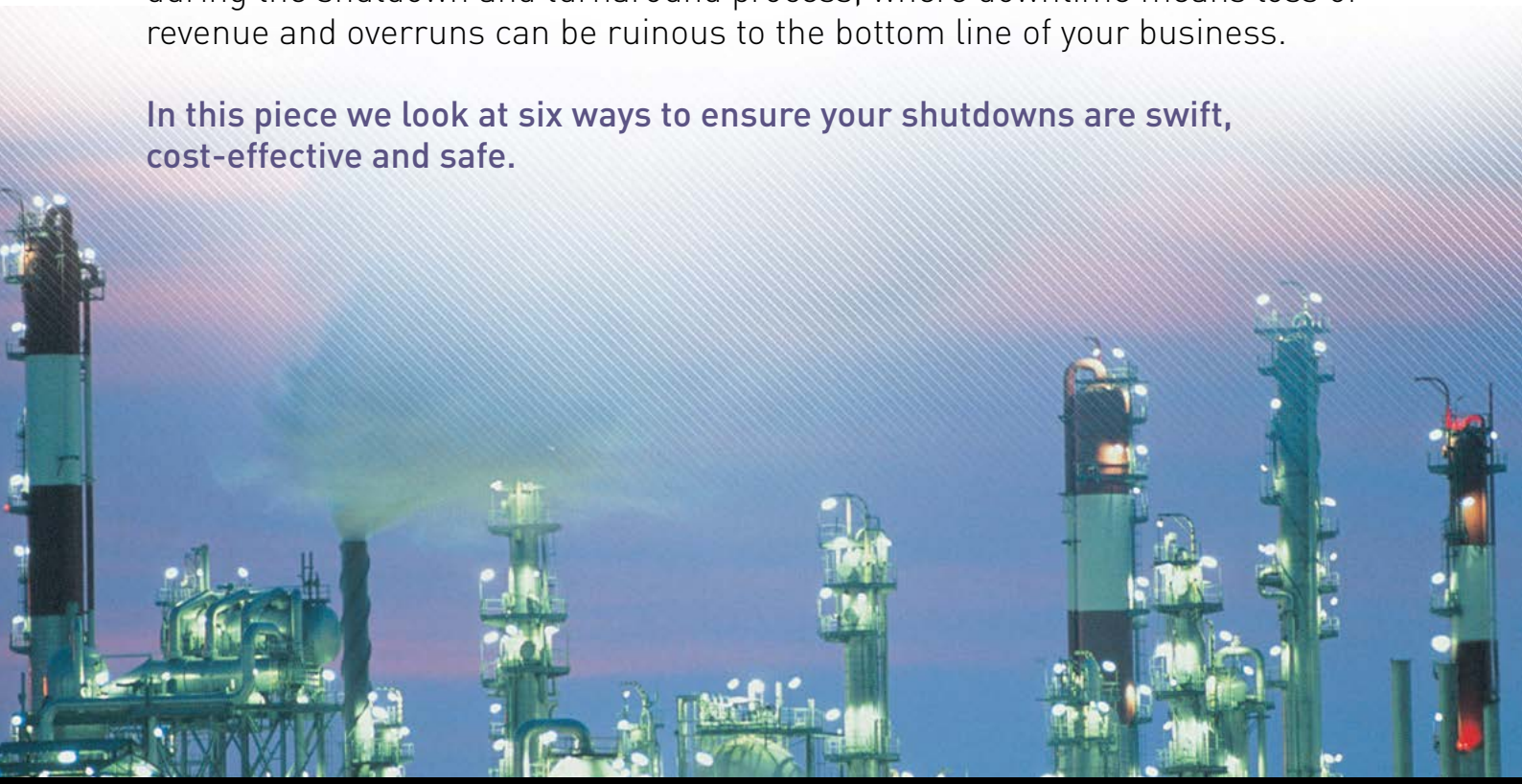
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In 2012, the throughput of the global refining industry stood at 76.2 million barrels per day from some 700 refineries worldwide.

Although recent conditions have been kind to refining margins, 19 refineries have been shuttered across the globe since 2010 and another three are slated to close by the end of 2013.

The refining business is tough, and the toughest period in the life of a plant is during the shutdown and turnaround process, where downtime means loss of revenue and overruns can be ruinous to the bottom line of your business.

In this piece we look at six ways to ensure your shutdowns are swift, cost-effective and safe.



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**September 16 - 18, 2013,
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LESSER ISN'T BETTER – DON'T CUT COSTS

In an industrial plant setting, outage duration is going to be proportional to revenue lost. Time to turnaround for any asset-heavy organisation is critical to the bottom line of the business, so any TAR action needs to be both fast and economical.

One of the major routes to keeping overheads down in times of fiscal volatility is by limiting spending on contracting-in externals. Although this may seem tempting with respect to short-term budget satisfaction, the long-term view should be squarely in focus.

In most walks of business, you often get the quality that you pay for. The shutdowns and turnarounds space is no different in this regard. The best workforce has a higher price point and will be able to accomplish your turnaround in a shorter time span. Given that the turnaround process is the most dangerous time in a plant's lifespan, scrimping in this area is a no-go.



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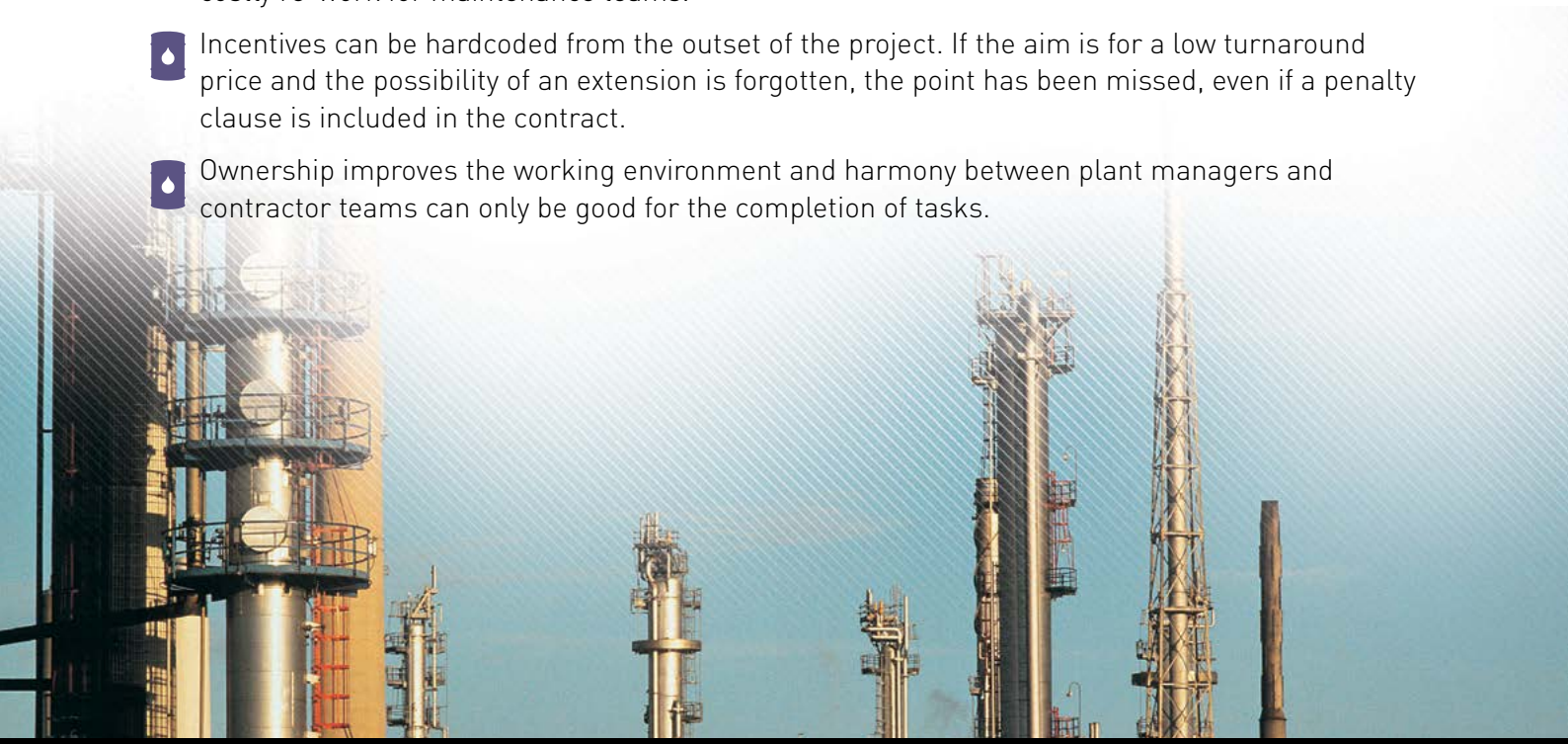
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CONTRACTORS MUST FEEL LIKE IT IS THEIR PROJECT

Shutdown and turnaround work packages were traditionally put together by plant directors in collaboration with a third party. This scheme of work would be handed over to contractors in advance of shutdown commencement and executed by personnel that had little or no input into the planning process.

To get the best out of any project it is necessary for those carrying out the tasks to buy into the mission. Introducing contractors at the beginning of the preparation phase and giving them a primary role in developing work packages to their own strengths is advantageous for the following reasons:

- As active participants in the work plan, contractors will be aligned to the high level of expectation from the company with respect to quality.
- Contractors are well acquainted with the shared consequences of failure that could result in a costly re-work for maintenance teams.
- Incentives can be hardcoded from the outset of the project. If the aim is for a low turnaround price and the possibility of an extension is forgotten, the point has been missed, even if a penalty clause is included in the contract.
- Ownership improves the working environment and harmony between plant managers and contractor teams can only be good for the completion of tasks.



MOVE AWAY FROM PREVENTATIVE MAINTENANCE AND EMBRACE CONDITION MONITORING

While preventative maintenance is a step forward from the traditional practice of reactive maintenance, it is by no means the most efficient or cost-effective system for the current climate in the oil and gas industry.

Companies should move towards a system of reliability-centred maintenance, to make certain maintenance is carried out at the most opportune moment to guarantee performance and reliability is sustained. This type of system also relieves the resource burden created by unnecessary upkeep activities.

For a system of reliability-centred maintenance to function, companies must make the necessary investment in monitoring and analysis equipment. By constantly recording the state of the equipment, organisation will be able to determine the point where maintenance should be carried out.

Condition monitoring has particular benefits for the upstream industry, particularly offshore, due to the high costs associated with access and egress to and from isolated assets. Condition monitoring maximises component life, allowing trends in equipment wear and tear to be tracked, creating an efficient maintenance schedule and reducing downtime by identifying problems before they occur.



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GET DIGITAL – UPGRADE YOUR LEGACY SYSTEMS

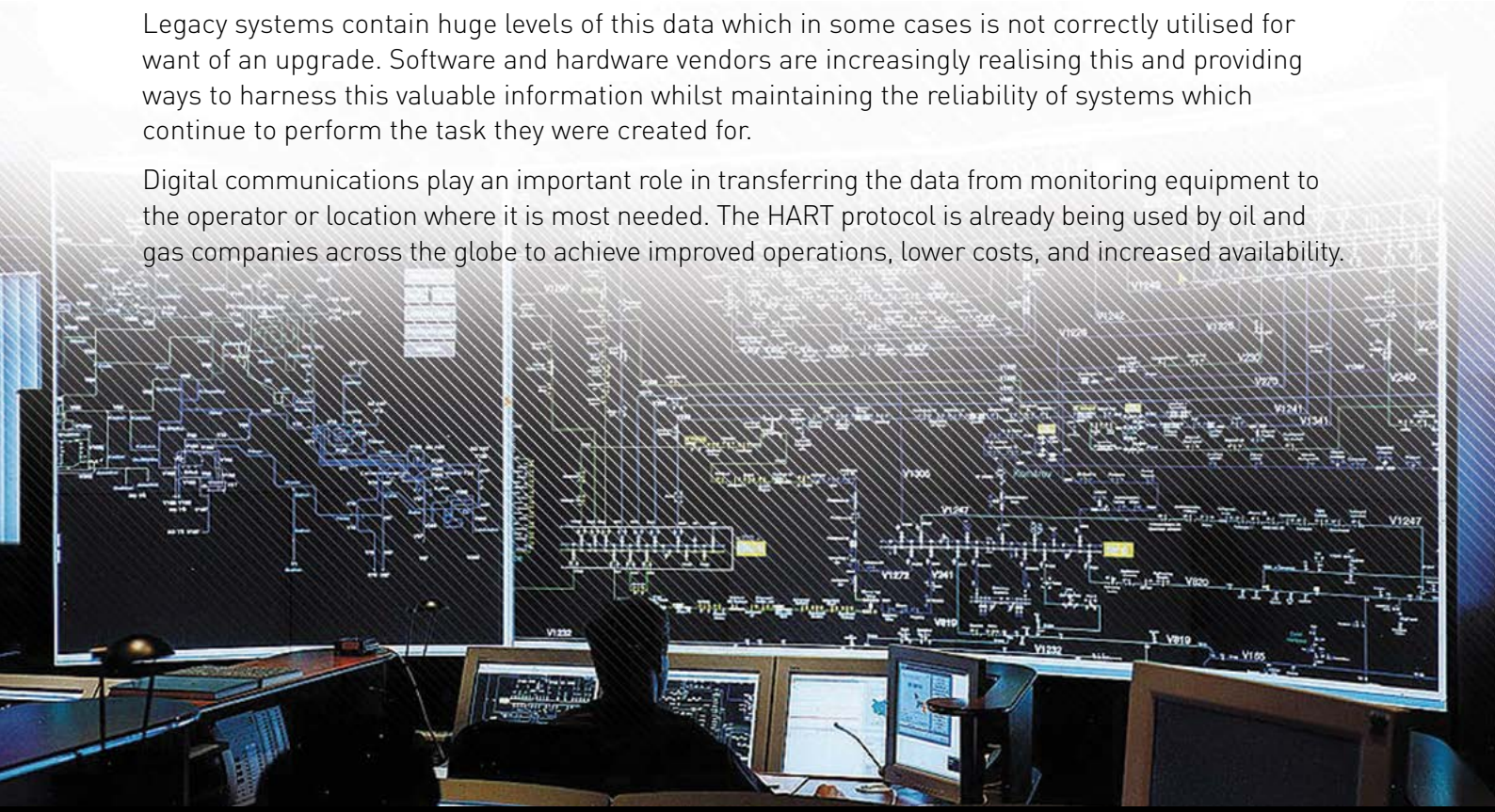
A recent survey showed that data contributes between a quarter and a third of the total value generated each year by the activities of a typical energy company.

Within this, a significant percentage will be unstructured information, including documents, drawings, images, 3D models, and even High Definition Surveying (HDS) which comprises integrated laser scan point clouds and high-resolution photography.

Organising and keeping track of large volumes of this unstructured information from multiple sources, such as suppliers, vendors, and engineering partners is challenging with constant upgrades, revamps, turnarounds, and maintenance changes in the mix.

Legacy systems contain huge levels of this data which in some cases is not correctly utilised for want of an upgrade. Software and hardware vendors are increasingly realising this and providing ways to harness this valuable information whilst maintaining the reliability of systems which continue to perform the task they were created for.

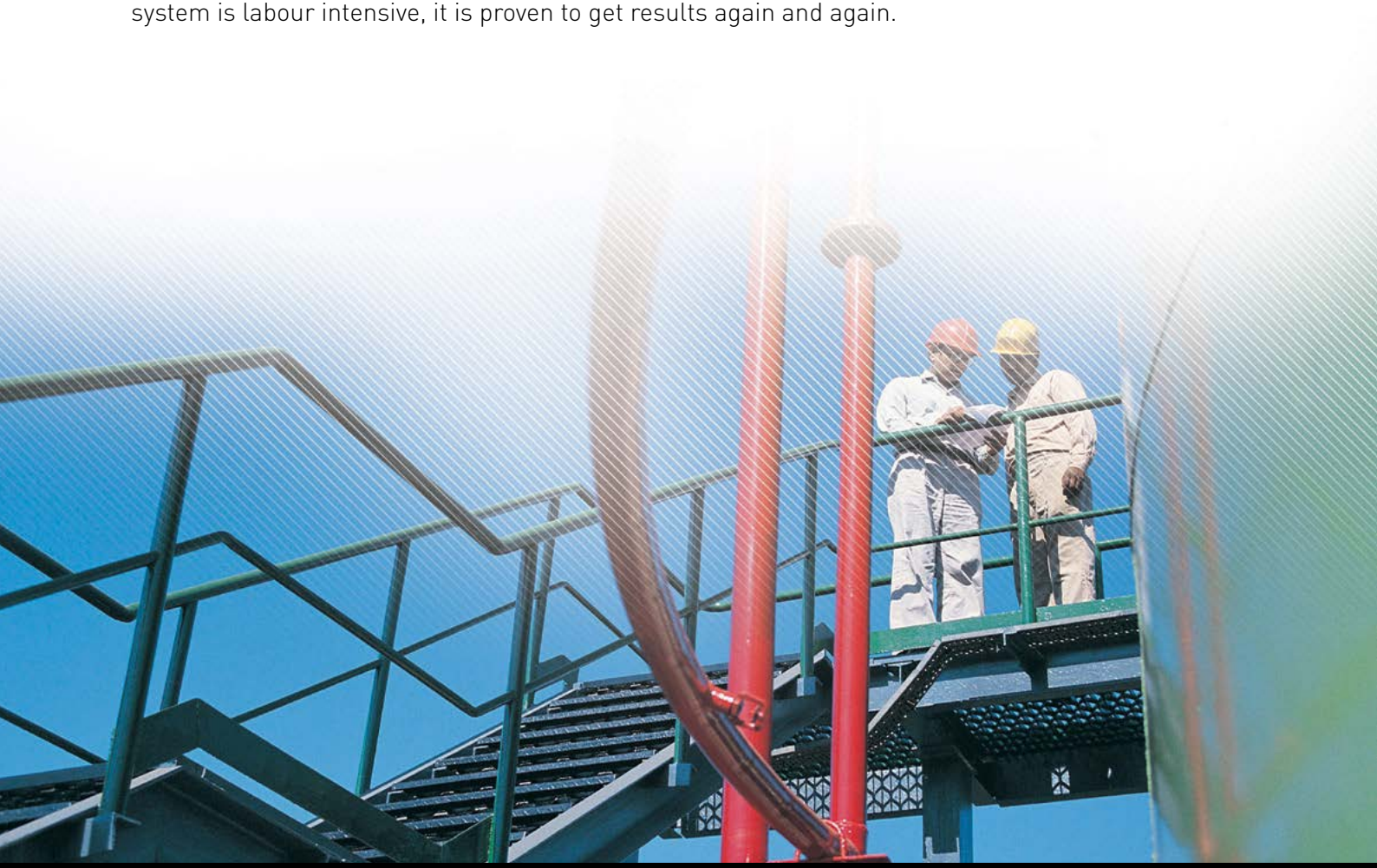
Digital communications play an important role in transferring the data from monitoring equipment to the operator or location where it is most needed. The HART protocol is already being used by oil and gas companies across the globe to achieve improved operations, lower costs, and increased availability.



INSTITUTE A RIGOROUS QUALITY ASSURANCE AND QUALITY CHECK REGIME

Many companies utilise a two part QA/QC tagging system programme in which the foreman takes a tag out and hangs it on the piece of equipment that his co-worker has worked on.

The foreman then inspects the work and signs the tag, returning part one to the QA/QC inspector who then goes out and inspects the work again and signs it off as ready for start-up. Although this system is labour intensive, it is proven to get results again and again.



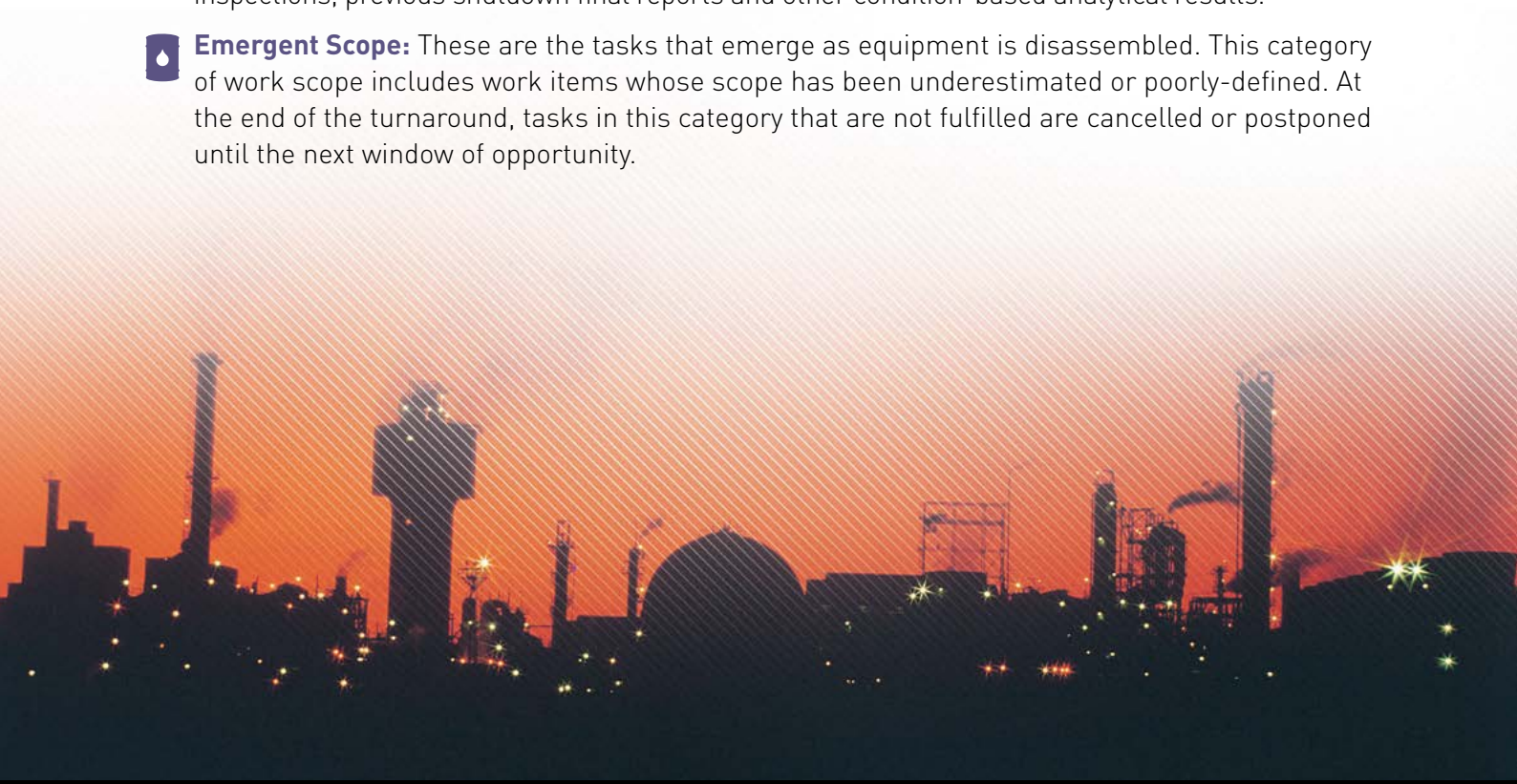
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KEEP SCOPE FIRMLY IN YOUR SIGHTS

Scope can be defined as the combined objectives and requirements necessary to complete a project. One of the most common reasons behind project overruns and failure is the poor definition, documentation or control of the elements that make up the total scope of work, otherwise known as "scope creep".

There are three types of scope:

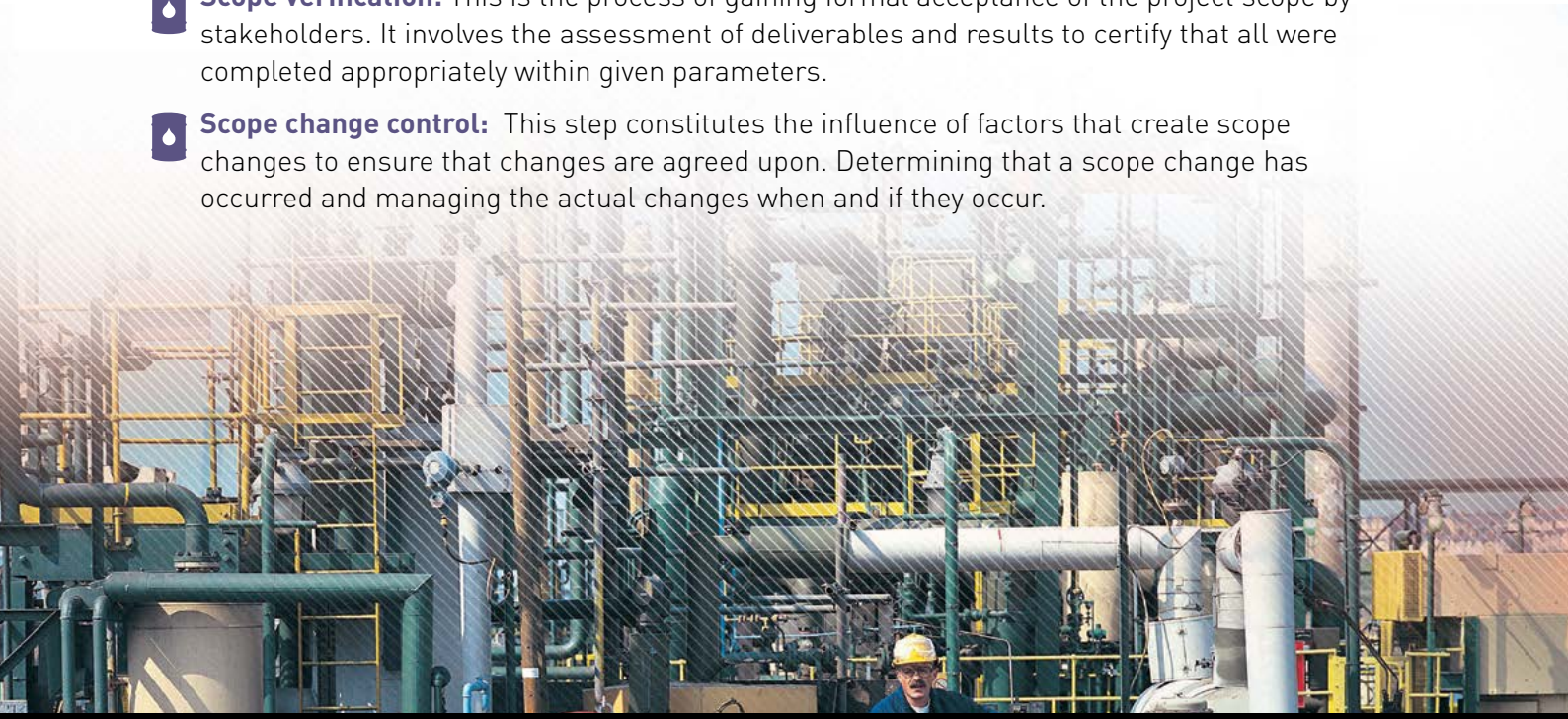
- **Known Scope:** These are tasks that are well-defined, including routine tasks such as maintenance activities like pipe replacement.
- **Anticipated scope:** These tasks are more loosely-defined and based on estimates from inspections, previous shutdown final reports and other condition-based analytical results.
- **Emergent Scope:** These are the tasks that emerge as equipment is disassembled. This category of work scope includes work items whose scope has been underestimated or poorly-defined. At the end of the turnaround, tasks in this category that are not fulfilled are cancelled or postponed until the next window of opportunity.



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Runaway scope and the concomitant missed deadlines and cost overruns can be controlled by stringent adherence to five key pillars of scope management.

- **Scope initiation:** At the project initiation stage, it is wise to draw up a kind of TAR charter, a scope mission statement drawing up concise objectives, enumerating and designating specific tasks for the upcoming event.
- **Scope definition:** This is the subdivision of major project deliverables, identified in the mission statement, into less monolithic, more manageable components. This improves the accuracy of cost, duration, and resource estimates, defines a baseline for performance measurement and control and allows for clear assignation of responsibilities.
- **Scope planning:** This is the process of progressively elaborating and documenting the project scope that produces the product of the project. The developed project scope mission statement is used as the basis for future project decisions.
- **Scope verification:** This is the process of gaining formal acceptance of the project scope by stakeholders. It involves the assessment of deliverables and results to certify that all were completed appropriately within given parameters.
- **Scope change control:** This step constitutes the influence of factors that create scope changes to ensure that changes are agreed upon. Determining that a scope change has occurred and managing the actual changes when and if they occur.



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5 REASONS NOT TO MISS SHUTDOWNS & TURNAROUNDS NORTH AMERICA

Insightful Case Studies: Learn through specific examples of completed turnarounds, delivered by industry leading professionals from BP, RasGas, Qatar Petroleum and Pacificorp.

Inter-industry learning: An in-depth look into turnaround projects in the power, chemical, and steel industries. Hear how T/A projects are planned and executed in these environments, and what lessons can be applied to the oil and gas sector.

International Speaker Panel and Case Studies: Experienced T/A speakers, not only from North America, but also the Middle East and Europe, discussing their key challenges and solutions from an international perspective.

Scope Management Focus Day: Take part in interactive workshop sessions, focusing upon scope management and designed to develop skills and facilitate practical learning. Take away strategies and insights that you can implement into your next shutdown, turnaround, or outage.

Speed Networking: Take advantage of this informal networking session to meet with Turnaround professionals, solution providers and major contractors. Don't forget to bring your business card!

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