Charles Taylor ADJUSTING

Adjusters' Insight

Kaput! Machinery losses occurring in the Engineering and Resources sectors throughout Australia

The Australian Energy and Resources sector has gone from a period of boom to contraction in just a few years. As a result the focus of the industry has rapidly shifted from new-build projects to one where operators are working hard to optimise efficient production from their existing plants. Insurers have seen a corresponding shift, with the focus moving from multi-billion dollar single project contractors' all risks (CAR) policies, to that of Industrial Special Risks and/or Machinery Breakdown policies with the respective attaching Business Interruption aspects.

In this environment the role of the specialist engineering loss adjuster is essential. Andrew Hodkinson, Regional Head – Australia & New Zealand and Nigel Lloyd, Engineering Adjuster of Charles Taylor Adjusting, explore the changing environment and provide insights into the role of the loss adjuster. Adjusters can pinpoint the cause of a failure and identify clearly to insurers whether the failure is insured and if so the extent of insurance cover.

Just a few years ago, the Australian Energy and Resources sectors were in unprecedented boom times. China's demand for iron ore to fuel its post-recession construction boom was near enough insatiable. The oil price rhetoric had been unchanged for as long as anyone cared to remember; peak oil, limited oil reserves, transitional fuels to consider such as LNG and so on.

Accordingly, construction Projects were rampant amongst both industry giants and junior entities alike in the bid to find and extract more resources to meet the demand. Unfortunately as more of these Projects came online (both in Australia and overseas) the supply of iron ore skyrocketed, meeting a declining Chinese demand around 2014 and causing a price slump. Almost simultaneously the advent of United States shale oil and the ensuing market saturation caused the oil price to crash. The only bright spots that remained appeared to be miners involved with precious metals.

With profit margins decimated and the long term prognosis looking fairly bleak, construction projects in the conception or front end engineering design (FEED) stages were hastily scrapped as they became marginal in a falling commodities price environment. This was however not economically viable for projects already in the advanced stages of construction and hope for a commodity price rebound or long term view provided some solace. Fast-forward to the present position some two to three years down the track and the last of the mega projects are coming to a close.

Welcome to the post-boom era of the Australian resources industry.

Charles Taylor ADJUSTING

Shift in Risk

Today, rather than constructing new assets, Insureds will become increasingly focussed on the optimisation of existing projects, some of which now have massive production levels. The common theme throughout all industries, be it mining, oil and gas, processing, manufacturing, or virtually anything else, is the reliance on machinery. The failure of a critical piece of equipment usually has an immediate impact on the Insured's ability to operate, leading to a business interruption loss.

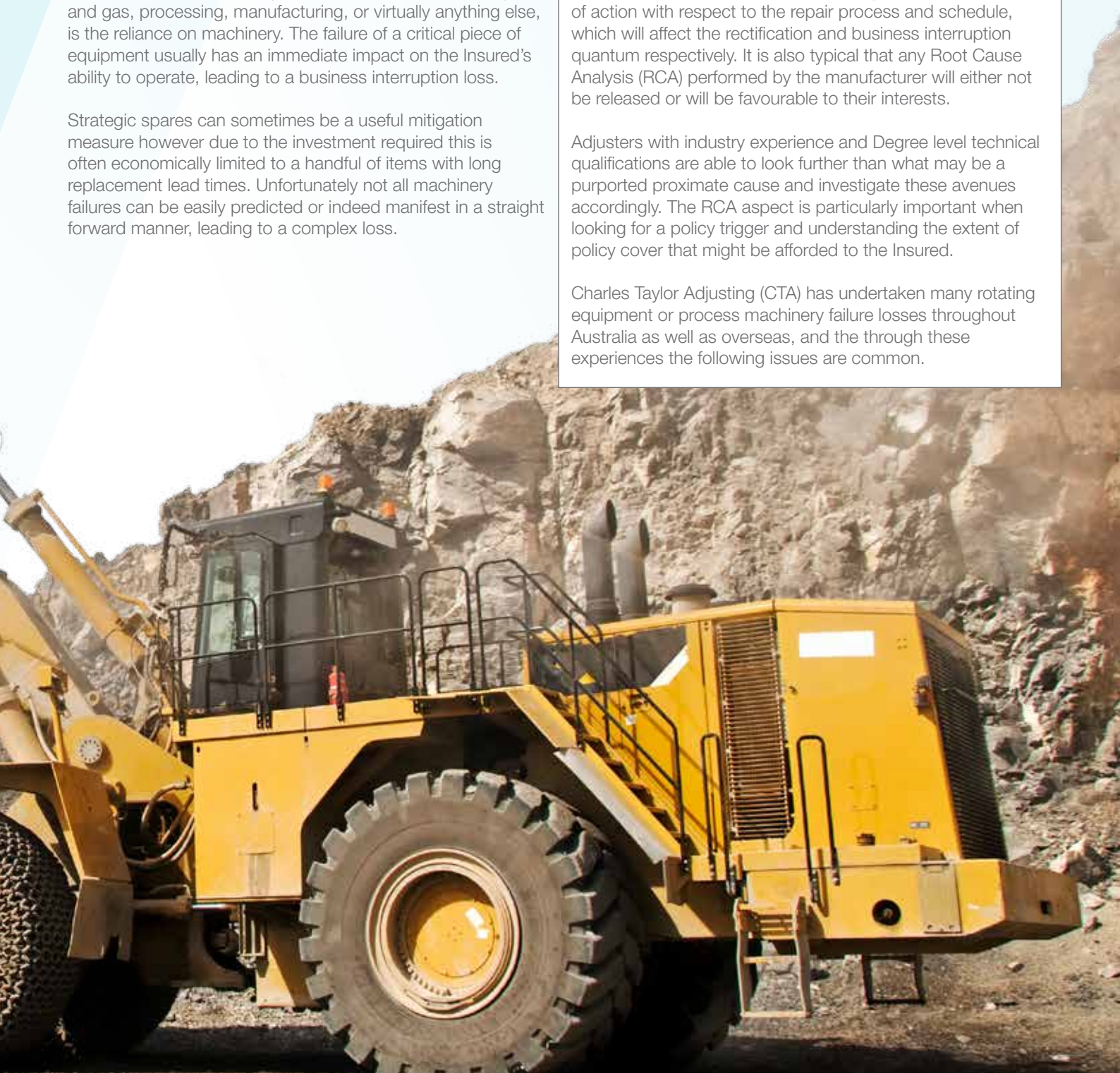
Strategic spares can sometimes be a useful mitigation measure however due to the investment required this is often economically limited to a handful of items with long replacement lead times. Unfortunately not all machinery failures can be easily predicted or indeed manifest in a straight forward manner, leading to a complex loss.

Role of the Loss Adjuster

The role of a loss adjuster in a machinery failure claim is critical and multifaceted. Often the machine in question will be specialised and proprietary which can lead to the supplier or manufacturer of the machine attempting to dictate the course of action with respect to the repair process and schedule, which will affect the rectification and business interruption quantum respectively. It is also typical that any Root Cause Analysis (RCA) performed by the manufacturer will either not be released or will be favourable to their interests.

Adjusters with industry experience and Degree level technical qualifications are able to look further than what may be a purported proximate cause and investigate these avenues accordingly. The RCA aspect is particularly important when looking for a policy trigger and understanding the extent of policy cover that might be afforded to the Insured.

Charles Taylor Adjusting (CTA) has undertaken many rotating equipment or process machinery failure losses throughout Australia as well as overseas, and the through these experiences the following issues are common.



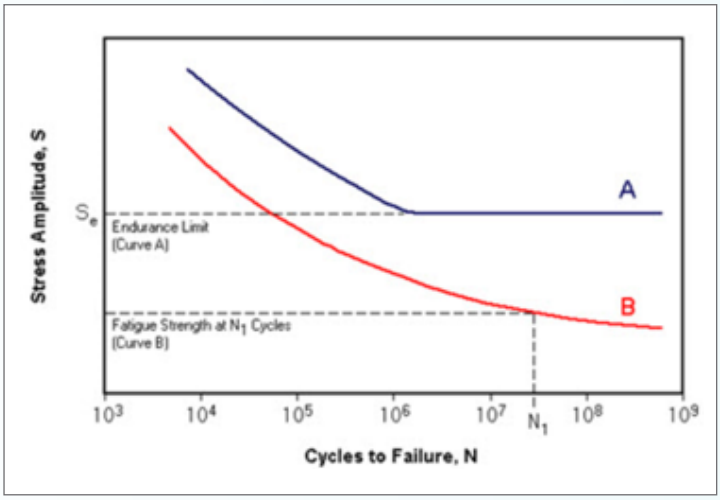
Charles Taylor ADJUSTING

Scenario 1: Deficient or Overloaded?

Consider a scenario in which an Insured advises of cracking to a vibrating screen used to size ore. Data from the Insured's weigh station shows that the screen has experienced periods of marginal overloading; accordingly the manufacturer suggests that the Insured is overloading the machine and causing these cracks to occur.

In the above scenario we are dealing with equipment that is subject to high-frequency cyclical loading which immediately warrants consideration of material fatigue. Succinctly, the concept of fatigue in metals is that for a nominal applied load (i.e. stress), the metal will withstand only so many cycles before it fails.

This is typically plotted in a curve of applied stress and equivalent cycles to failure. A representative curve is provided below. Carbon based steels such as Material A have a "fatigue limit" which represents a stress level below which the material can be cycled indefinitely. A vibrating screen is almost certainly designed to limit operational stress below this limit.



Accordingly, the manufacturers' claim in our example should be examined against the period in which the screen has been overloaded. A brief period of slight overloading with relatively few cycles will have no discernible effect on the screen.

That being the case, a prudent adjuster would be looking for another cause. Cyclic loading is also highly conducive to crack propagation; prior to cracks being observable they originate as microscopic defects in the parent metal structure. A vibrating structure should therefore be engineered to be as homogeneous as possible which involves heat-relieving the structure, grinding and polishing all welds, and filleting all sharp edges.

If it were observed that cracks were emanating only from welds, or only from other sharp edges, there would be good reason to suggest that the proximate cause of the loss was a design issue rather than an overloading issue and further analysis could be performed accordingly.

Industry Procedures, Norms, and Standards

Through formal qualifications and industry experience prior to adjusting roles, Engineering Adjusters are familiar with acceptable industry procedures relating to the design and maintenance of equipment. This can be an important first step in distinguishing between a loss that is sudden and unforeseen, or one which is stemming from a lack of due diligence.

The above experience is also important in the audit process. Australian workers are fortunate to operate in an industry that, by law, puts an emphasis on safety. This can make an apparently routine task take what may appear to be an inordinately long period of time. Hot works in particular can require the workers performing the task to undergo a site specific induction and engage several additional personnel as fire watch.

Most processing plants will specify multiple code compliances to avoid hydrocarbon leaks, presence of ignition sources, unexpected chemical attack, expansion and contraction and the list goes on. Indeed there are various standards that exist both in Australia and Overseas which can be drawn upon for guidance in the design.

CTA Engineers are particularly familiar with Australian Standards relating to Engineering Design. These Standards allow the objective distinction between a design that is merely sub-par and one that is categorically deficient. Australian Standards are guidelines and not legal documents, however they are often referenced in legislation (making them mandatory) or incorporated into contracts. They are often drafted such that historical experience is used and the necessary safety factors incorporated.

CTA has come across previous rotating equipment failures where designs have been demonstrated to not to adhere to sound engineering practice or relevant standards, yet the machine in its early weeks of operation appears 'fine'.

Scenario 2: Deficient or Negligent?

Consider a scenario in which a third party contractor attends upon a generator belonging to the Insured, isolates it from the remote fuel supply, performs maintenance to it, and then demobilises shortly thereafter. The Insured attends site the following day to find that overnight a significant fuel leak has occurred causing contamination. It is noted that the third party has configured the fuel supply incorrectly prior to demobilising.

The third party alleges that the root cause of the loss is due to the generator's inherently deficient design which allows it to be left in such a configuration, lacking a fail-safe to prevent overdrawing of fuel. The counter-position is that the design is fine and the third party is negligent because of an omission in their work to correctly reinstate the fuel valves. The outcome hinges on whether the design of the generator meets Australian Standards.

Breakdown Losses

Breakdown policies are intrinsically linked to the trigger of an independent, unforeseen, and sudden failure of equipment which requires subsequent repair before normal operation can be resumed.

Both Breakdown and Equipment will be defined within the policy and in practice work to constrain the policy away from consumables. Operator abuse is not a breakdown, nor is the use of a machine outside of its design capabilities. If a machine has been accidentally used outside of its design capabilities, this is still not a breakdown and would more correctly be viewed as a peril claim involving operator error.

A common area of interest relates to the competing interaction of the "wear and tear, gradual deterioration" type exclusions in machinery breakdown policies compared to a material defect which causes an accelerated failure. Sometimes this can be obvious, such as a gearbox with a design life of 10 years failing within 1 year. A prudent adjuster will look closely at the material structure of the gears, the lubrication of the gears, and so forth.

Scenario 3: Wear and Tear or Breakdown?

Consider that the same gearbox discussed above sheds a tooth from a pinion gear after 5 years' service into its notional 10 year design life. Further investigations find that the remaining teeth on all gears are severely worn and exhibiting signs of imminent failure.

The Insured may maintain in this scenario that the gearbox

Damage to blades during operation

was adequately serviced in accordance with industry standards (notwithstanding that visual signs of degradation were missed). From their perspective the loss is "sudden and unforeseen" given the gearbox has failed prematurely.

The prudent adjuster would be wise to examine the operating conditions of the particular site over its history, compared to the nominal design parameters. This could involve a review of ambient temperature, airborne particles, oil reclamation procedures, whether the gearbox is run in reverse (if not, should it have been, and if so, should it have been?) and so forth.

Charles Taylor ADJUSTING

Charles Taylor Adjusting (CTA) Expertise

CTA has engineering expertise based throughout all Australian offices, including qualified Mechanical, Materials, Civil / Structural, and Geotechnical Engineers with backgrounds ranging from “big picture” Project Engineering / Construction right through to detailed design work.

Our team hold Adjusting qualifications and are members of the Australian Institute of Chartered Loss Adjusters (AICLA), the Australian & New Zealand Institute of Insurance and Finance (ANZIIF), or other UK-based professional bodies of equivalent or higher standards.

Our Engineering Adjusters predominantly deal with complex and difficult engineering losses and are able to investigate and understand the involved issues and subject to requirements appoint the right engineering experts under specific briefs.

We ensure outcomes are concisely reported to Insurers to match their requirements in documenting the circumstances of the loss in a clear and logical manner, allowing them to reach a conclusion in respect to policy response.

For further information, please contact:

Nigel Lloyd
Engineering and Resources Loss Adjuster
Nigel.lloyd@ctplc.com
Office : +61 8 9321 2022

Andrew Hodkinson
Senior Engineering Resources Loss Adjuster and
Regional Head – Australia & New Zealand
Andrew.hodkinson@ctplc.com
Office : +61 8 9321 2022

About Charles Taylor Adjusting

CTA is one of the leading loss adjusting businesses in the market. We provide loss adjusting services across energy, marine, aviation, property, casualty and special risks along with average adjusting services for ship owners. The business primarily focuses on larger and more complex commercial losses arising from major insured incidents and claims. CTA is a business of Charles Taylor Plc (www.ctplc.com) which is quoted on the London Stock Exchange (CTR).

Charles Taylor plc is a leading provider of professional services to clients across the global insurance market. The Group has been providing services since 1884 and today employs over 1,700 staff in 72 offices spread across 29 countries in the UK, the Americas, Asia Pacific, Europe the Middle East and Africa.

The Group offers services, principally on a fee-based model and operates through three businesses – Management, Adjusting and Insurance Support Services. It also own insurers in run-off. Charles Taylor’s vision is to become the professional services provider of choice to the global insurance market.

Our Offices

Charles Taylor has 72 offices across 29 countries, **Asia Pacific** Balikpapan, Beijing, Brisbane, Hong Kong, Jakarta, Melbourne, Mumbai, Perth, Selangor, Seoul, Shanghai, Singapore, Surabaya, Sydney, Taipei, Tokyo. **Europe** 15 UK offices (including London, Glasgow, Liverpool, Ringwood & Chelmsford), Brussels, Paris, Piraeus, Rome **Middle East** Doha, Dubai, Jeddah, Riyadh. **Africa** Cape Town **Americas** Atlanta, Bogota, Calgary, Dallas, Halifax, Houston, Lima, Mexico City, Miami, New York, Rio de Janeiro, St John’s, Toronto, Vancouver.

www.ctplc.com/adjusting