



**Common Interest Workgroup (CIWG) Report
on**

Rotable Spares Management

9/12/2008

at

East Fremantle Yacht Club

Documents stored @ http://www.sirfrt.com.au/imrtwiki/index.php/Rotables_Management

ATTENDEES

Michael	White	Alcoa - Pinjarra Refinery
Camelia	Hudson	Barrick Gold
Dave	Davies	Barrick Gold
David	Sandon	CSBP
Kym	Seidel	Fortescue Metals Group
Vivian	Groesslinger	Iluka Resources
Rob	Fraser	Iluka Resources
Jorge	Soares	Newmont Asia Pacific
Nick	Palmer	Nickel West - Kwinana
Randall	Martin	Nickel West - Ravensthorpe
Mike	Healy	Tiwest - Kwinana
Adrian	Padfield	Tiwest Joint Venture
Roy	Thyssen	Verve Energy - Kwinana
Ian	Ramsdale	Verve Energy - Muja
Bernie	Costa	Water Corporation
Tim	Barr	Woodside Energy
Grant	Andrews	Woodside Energy
Peter	Latch	Worsley Alumina
Steve	Butcher	Worsley Alumina
Darren	Strudwick	Worsley Alumina
Bill	Brown	RCR Engineering
Mark	Tate	IMRt WA - Facilitator

AGENDA

8.00 am - Registration and Coffee

8.15 am - Welcomes & Introductions

8.35 am - SIRF Rt Overview

8.45 am - Rotables Management Systems

- Is the CMMS or inventory systems used effectively?
 - Its it used well?
 - How Can it be improved?
- What are your most important equipment types for Rotable Management?
 - How do you classify them?
 - Who performs this task?
 - Is this info stored in your CMMS?
- What roles are dedicated to Rotables?

9:40 am - Review

10:00 am - Morning Tea

10:30 am - Removal, Inspection & Scope of Work

- What identification/tagging systems do you use for rotables?
- How do you specify Strip & Inspect/Overhaul requirements?
- What information do you specify for overhaul reports?
- *Compare Scopes of Work and ITP's.*

11:40 am - Review

12:00 noon - Lunch

12:30 pm - Repair & Storage

- What do you do to ensure repairs are being performed correctly?
 - E.G. ITP hold points, NATA testing etc..
 - What certificates/signoffs are required?
- What other QA is carried out on rotables;
 - At Suppliers
 - At receipt by stores?
 - At installation?
- What approaches are use to ensure rotatable items are stored correctly?

1:40 pm - Review

2:00 pm - General Topics

- What Rotable Management KPI's are used?
- How are reliability improvement ideas implemented and change control managed?
- What systems are used to manage costs from Rotables?
- Who are your best overhaul service providers (in-house/external)?

2:40 pm - Review

3:00 pm - Wrap-up & Close

Rotables Management Systems

- Is the CMMS or inventory systems used effectively?
- Its it used well?
- How Can it be improved?

CSBP

- Not getting failure history from Work Orders to put into system, so as all agreed “Garbage in – Garbage out”
- Can’t store historic data (info) properly, which makes it hard to
- Rio (Pilbara) have a doc system that links to their CMMS. It is good for keeping docs related to work orders and Scopes of Work

Alcoa Pinjarra

- CMMS used as well as it should
- They are now the main Workshop for Kwinana and Wagerup as well
- Doing 90% of ALL repairs in house

Water Corporation

- All pumps have a location/position for history so that they can be tracked
- Every equipment Serial Number is in the inventory system
- All repair work contracted to PSN
- Issues
 - Would like to have all pumps tested before installation. They have had a few installed that have failed upon commissioning. Mainly long term storage items
 - Can’t track individual items in current system

Nickel West Ravensthorpe

- SAP not good for history tracking
- Flow chart
- Have a fitter scheduled for the last day of each of each swing to collect rotables

Worsley Alumina

- Just going through an Upgrade of SAP
- Have a rotatable assistant – collects rotables and starts the repair process

Iluka

- Had problems getting Rotables back to the right place, but now performance manage fitters/techs to bring gear back into the correct place

Nickel West Kwinana

- Supply Planner checks where plant items are or when they are not back in repair hold down yard
- They have a manual which is used to ensure consistency.

Verve Energy Muja

- Use Ellipse (Mincom) and the RIMS module
- Works well
- Tracks well

Rotables Management Systems

- What are your most important equipment types for Rotable Management?
- How do you classify them?
- Who performs this task?
- Is this info stored in your CMMS?

Summary

Most had a process to determine Equipment Criticality and it was fed back into their CMMS.

Woodside

- Performed by the Reliability Engineer using a 5x5 matrix with considerations for
 - Operational Impact
 - Criticality Check
 - Safety
- Also include equipment lead times in the review process

Nickel West Kwinana

- Have a well documented procedure for classifying plant. It is reviewed by the Reliability Engineer
- They use a Top 10 failures list to initiate reviews

Nickel West Ravensthorpe

- The Reliability Engineer and the Inventory Control Officers review the Equipment Criticalities
- Also include item lead times in their criticality review model

FMG

- Nothing as of yet, as they are just getting set up.

Rotables Management Systems

- What roles are dedicated to Rotables?

Worsley Alumina

- Managed by the Commercial Team and has 6 dedicated people.

Verve Energy Kwinana

- One dedicated person to the role

CSBP

- One dedicated person to the role

Tiwest

- Multi site Rotables Inspectors for most items
- A Rotables Coordinator at each site
- Sites trip and clean
- Statutory items & Heat Exchangers managed by Engineers

Nickel West Kwinana

- Refer Flow chart
- Off Site Rotables coordinator – Strip/Assess & workout cause of failure

Iluka

- All repairs by RCR at this stage
- Repair to new – not normally part repairs
- Minimal history in system from inspection reports
- Supply push the button for rest of repairs

Water Corporation

- PSN do all repairs and Rotable collection
- Feedback via reports
- RCA & Review process

Removal, Inspection & Scope of Work

- What identification/tagging systems do you use for rotables? (See Samples >> [LINK](#))

CSBP

- Rotable tag
- Equipment tag
- Decontamination Tag
 - User (Fitter) decontaminates the Equipment

Tiwest

- Detailed Procedure on how to use the tags
- Decontamination Tag Green + MSDS with items
 - Not always done
 - Tags fell off
- Information tag
- Inspection tag
- Rotable Scrapped tag
- Repair Order tag

Alcoa Pinjarra

- Rotables Tag
- No decontamination tag

Water Corporation

- No tag but use an A4 form that slides into a protective sleeve
 - With history data
- Orange info tag – with a few details

Nickel West Ravensthorpe

- Repairable Tag
- Decontamination Tag

Woodside

- Serviceable Tag
- Repair Tag
- Decontamination Tag – Offshore items
- Certified Tag (For Certified Equipment only)

Barrick

- 9 different tags across the 9 sites.
- Are trying to standardise what is being used.

Nickel West Kwinana

- Clean procedure
- Tag for Process material
- OSR tag (tear off)
- Green Repair
- New Equipment Tag
- Item to be Scrapped Tag
- Damaged Tag

Newmont

- Many tags and process is currently under review

Iluka

- Goods Despatch (also includes cleaning)

Verve Energy Muja

- Tag rotatable spore

Worsley Alumina

- Orange stick on Rotable Spares Envelope (NEW)
- Orange warehouse tag

FMG

- PO to Stores or Vender
- Comes back with vendor no. on brass tag

Removal, Inspection & Scope of Work

- How do you specify Strip & Inspect/Overhaul requirements?

CSBP

- RFQ Process (Request for Scope) A P.O. without the dollars shown

Worsley Alumina

- Strip & Assessment

Iluka

- P.O. to vendor (RCR) to strip & assess
- Quote provided. Managed by Supply team

FMG

- Purchase Order (P.O.)

Woodside

- RFQ No & then P.O.

Barrick

- RFQ Manual
- Then P.O.
- Standard Acron Sites

Water Corporation

- Contracted to PSN

Nickel West Ravensthorpe

- Requisition then P.O. to quote

Nickel West Kwinana

- P.O. for quote

Removal, Inspection & Scope of Work

- What information do you specify for overhaul reports?

Summary

- Many asked for Photo's to be sent through showing damage.
- Reference to useability (i.e. how much life they believe is left)
- Cost Comparison New vs Repair
 - Based on history
 - Other < 65% Life left.
- Consider lead time in signoff
- Failure parts back if its a scrapped item (Nickel West)
- Lead time on items or large costs can cause extra quotes by another repairer
- Dual Repairer's to quote to keep them competitive
- Bearing data from SoW given to Vibration Analysts (Worsley Alumina)
- All correspondence attached to PO (Nickel West)
- Certificate with hard copy placed equipment file (Tiwest)

Removal, Inspection & Scope of Work

- Compare Scopes of Work and ITP's

Refer to samples at http://www.sirfrt.com.au/imrtwiki/index.php/Rotables_Management

Summary

- Major repairers have Scopes of Works and drag out specs for specific sites when required.
- Biggest query or difference between sites seems to be on paint specs.

Repair & Storage

- What do you do to ensure repairs are being performed correctly?
 - E.G. ITP hold points, NATA testing etc..
 - What certificates/signoffs are required?
- What other QA is carried out on rotables;
 - At Suppliers
 - At receipt by stores?
 - At installation?
- What approaches are use to ensure rotatable items are stored correctly? (See Photo's >> [LINK](#))

Nickel West Kwinana

- Certified Pressure Valves - NATA
- ITP's – Integrity Engineer checks all certified and classified equipment
- Inspect for write offs
- Engineer is the backup, SKF, NDT etc.
- List and QA specs on all valves

Newmont

- A bit harder on remote sites but trying to get some standards setup
- Some equipment transported on frames

Nickel West Ravensthorpe

- White ants corrosion, use Plastic (*Enviropeel*) to help with salt corrosions issues
- Having frames built for all rotables
- All Ceramic seated valves on frames
- Engineer doing reviews on Electric Motor rotations – Looking at implementing a colour tag program like the Electrical Tagging ¼ testing model.

Iluka

- Mainly left to RCR Engineering as their repairer.
- Have an Open book approach with RCR
- General inspection by Maintenance Coordinator

Woodside

- input ex Aust via BIE
- Inspections @ Brambles before being sent up North
- Have a thorough QA profile
 - Repair Report
 - Test certificates etc (xray)

- Material Certificates for all 316 SS items
- Storage dictated on PO Terms and Conditions

Noted that **Underwrap** , a company that does wrapping, is available to completely wrap vessels and equipment, provides a great service.

Verve Energy Kwinana

- Heaters on specific items to reduce moisture
- Rotation of Electrical Motors by Electrical team using the PM process

Tiwest

- PM to rotate motors by Electricians
- Going back to external paid storage (including ongoing care plans eg. Demisters on N2) as internal management of the system has not worked properly.
- \$ allowed for in budget for ITPs to be created and updated

Barrick

- Got a car upholster to make covers for some of their equipment.
- Just about every item has its own frame

Verve Energy Muja

- all received certificates and documents
 - Scanned into doc system
 - Copy, stays with equipment
- Will send an engineer to oversee repairs where needed

Worsley Alumina

- Now get vendor to quote on a frame until all equipment has frames
 - Designed by vendor
 - Engineer approved

CSBP

- Use vendor for NDT and leave it in their hands
- ITP's in place and inspected by David at relevant Hold Points
- Not many storage frames, building this up
- G/box's pre commissioned,
- Pumps hydro tested

FMG

- Use photo's prior to dispatch
- Workshop commission
- Punch list and sign off

Alcoa

- Pearlstreet do the testing on certain equipment
- Some strategic issues (outside storage)

Water Corporation

- Have a list that specifies what else must come back (i.e. Other parts used with the item)
- Photo on outside of packed and protected equipment so that you can see what's inside

Nickel West Ravensthorpe

- Perform full RCA by Engineer and Maintenance Coordinator

General Topics

- What Rotable Management KPI's are used?
 - DI FOT (%) *Deliver in full on time*
 - Time to quote
 - NCR

Nickel West Kwinana

- Out of Store – to offsite (Time)
- Items to be repaired under warranty (Qty)
- New item installation (Qty)

RCR

- I&A Continuous Improvement (Qty per month)

KPI's that could be used (*Ideas noted during CIWG*)

- Defects identified during tests (% or Qty)
- Reliability after Installation (% or Qty)
- Vibration Analysis post Overhaul vs baseline
- Forward loading of repairs (Trend)

Forward Load:

- No one had a KPI on how many items in the process being repaired (LOAD) to identify of the workload going up
- Some look at upcoming lists and work out (communicate) what is going to be needed

General Topics

- How are reliability improvement ideas implemented and change control managed?

CSBP

- Goes to Reliability Engineer and follows the business process

Alcoa

- Area Engineer and follows the business process
-

Water Corporation

- Hope to pick it up with level of service provided by PSN Water

Nickel West Ravensthorpe

- To Engineers
- Change Management process

Barrick

- Through the Continuous Improvement team
- Reported monthly at Head Office
- A good mix in Continuous Improvement team

Tiwest

- duration and cont reviews (top 10 list)
- To engineers or project teer
- With repairs
- Process change request process
- No formal improvement process in place

Nickel West Kwinan

- Engineers review all data regularly
- Investigate cause and seek reasons for failure
- Implement change

Newmont

- No quite well developed on some sites
- Via engineers
- “Reliability” not yet established

Iluka

- Have an offsite engineer (RCR) who helps, often save us a fair bit of money
- Own CI database and CI program

Woodside

- Change control process
-

Verve Energy Muja

- Mechanical service group manage it
- Formal change process

Verve Energy Kwinana

- Anyone can suggest a better way
- Engineering as a back up or for Technical support
- Formal improvement process
- Some gaps in the process at times

Worsley Alumina

- Have a dedicated Reliability Engineer
- Good contact and support from vendors
- Get them to support improvement
- Formal assessment of vendors
- Have a Change process
- Use a Trial register

FMG

- Have a Change process
- Strip reports feed failure modes back to business

General Topics

- What systems are used to manage costs from Rotables?

Worsley Alumina

- Their SAP screen shows costs for all 3 cost centres plus relevant spend history
- Areas measure cost weekly (mant only)

CSBP

- Folder with costs in them to review

Tiwest

- EBB (Equipment Based Budget) reviews out of reporting tools

Nickel West Kwinana

- Monthly reviews by SV

General Topics

- Who are your best overhaul service providers (in-house/external)?

CSBP

- All external and have good relationships

Alcoa Pinjarra

- 95% - Including all the Wagerup & Kwinana repairs

Water Corporation

- PSN Water are the specialist repairer

Nickel West Ravensthorpe

- 85% offsite

Woodside

- Relief and PSV's internal, all other items external
- Honeywell manage their Control System ONSITE

Barrick

- Some done on-site due to costs (refurbishments @ Darlot)
 - Treated in house like a vendor

Nickel West Kwinana

- everything outsourced

Newmont

- Some in house
- Others out sourced, especially specialised items

Iluka

- Most offsite to RCR
- Breakdown onsite
- Some repairs kept on site for training apprentices

Verve Energy Muja

- Some onsite
- Some offsite
- Management don't want to lose skills onsite, so keep some things for practise

Tiwest

- 20% Kwinana. The workshop is treated as a vendor
- Works well on Failure Modes (in CMMS)
- Feed back into Reliability group for improvement revue
- Some components repaired onsite
 - Pumps

Verve Energy Kwinana

- 60% offsite
- Boiler feed pumps – fitters go to the repairers and do the fitting to help keep their hand in (Veem)

Worsley Alumina

- 75-80% off site
- All pumps done onsite

FMG

- All offsite as the mainly have large components
- For Major machine repairs send apprentice to repairer to get experience

Meeting Closed at 3:40 PM