

Annotation from a Maintainer's Perspective

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When multi-level tagging, make the top tag the primary tag (item, activity etc) and lower tag for secondary tags like unsure, , noise and abbreviation.

0.1 Abbreviations and common terms

0.1.1 Abbreviations

- BCSD: ?
- BFR: Borefields, water levels, specific bore sampling, inspections etc
- Bore Overview: SCADA interface has an issue/is not working
- CCE: A type of pump?
- CU: Copperboil
- DCS: Distributed Control System. Where all the sensor signals go.
- HAZ: Hazard, or type of pump, depending on context
- Interchange Bore: Activity to entirely remove old bore and replace with new
- JDI: Just do it (probably doesn't need a tag)
- LCH: Could be Leach? (area of BHP NW)
- LVDT: ??
- MJO: Major Overhaul
- MJS: Major service
- MNS: Minor Service
- NRV: Non-return valve
- PLC: Programmable logic controller
- PRT: Pump Test and Repair Facility
- PSV: Pressuve Safety Valve.
- PTR: (misspelt) Pump Test and Repair Facility
- RTU: Remote Terminal Unit
- SCE: Safety critical element

- SPR: WQ Sampling weekly general GWTP's Reservoirs, artesian bores
- TOL ??
- U/S: ?? (May be underspeed)
- VSD: Variable Speed Drive or FFF Drive
- WQMS: Water Quality Management System

0.1.2 Common terms

- Gland seal: function
- Sample point restriction: a blockage. [sample point]: item, [restriction]: observed state
- Revert item_i: revert is a commodity
- 90 taps: 90 is the attribute value, taps is the attribute desc (and likewise for other values)

Table 1: Entity categories (maintainer-centric), Part 1

Category	Description	Examples
Item	A maintainable item.	pump, motor, engine, air conditioner, valve
Consumable_or_commodity		
Consumable_or_commodity / Consumable	Entities that are replaced and not repaired.	oil, grease, water, filters, gasket. Only label as consumable when 100% sure it is consumable and not maintainable - if not sure, tag as Item.
Consumable_or_commodity / Commodity	A commodity, i.e. a desirable product.	nickel
Consumable_or_commodity / Waste_biproduct	An undesirable/intermediate product.	waste water. dust, tailings, spillage
= Activity	An action done by an agent.	repair, replace, check
Observed_state	The observed state of an item.	broken, cracked, corroded, u/s (unserviceable), required, needs, dull, hot, noisy, failed (when used as an adjective, e.g. "replace failed pump") . It can also be used to describe observations such as leaking, burst, vibrating etc that are associated with impacts to delivery of the item's function. Safe as in safe repair. Graffiti considered as observed state. Needs or requires (observed state) checked (activity). Outage. "to be"
Negation	A term that negates the following term(s).	not, isn't, can't, often used in conjunction with function, e.g. not pumping.
Location	Where an item is, either absolutely or relative to another item.	
Location/Absolute_loc	An absolute location	pumping station
Location/Relative_loc	A relative location	top, above, below, near, on, at
Specifier	An adjective that specifies an item, i.e. could differentiate it from other similar items.	extra, main, spare, new, old, auxiliary, accessory, reserve, orange (and other colours, if not being used as an observed state), 'drive' when used in the context of tyres. Trip (specifier) when combined with trip hazard. Different (specifier) as in different periods of time. [electrical] service, [mechanical] service, [stat] test
Action	An action done by an item.	
Action/Function	An intended function. Functions are the result of deliberate engineering design intent.	pumping, tramming, lifting, comms. 'suction' for suction line, 'discharge' for discharge valve. 'gland seal'. 'id' tag
Action/Malfunction	An unintended function. Malfunctions are equivalent to a disposition to undesirable behaviour. First ask if this is an 'observed state' or an 'attribute value/attribute_desc' pair e.g. low pressure.	overheating, unavailable, failed (when used in verb form, e.g. 'motor failed'), failure, fault, bug (software), tripping

Table 2: Entity categories (maintainer-centric), Part 2

Attribute	An attribute of an item.	
Attribute/Attribute_desc	The descriptor (name) of an attribute	temperature, air pressure, pressure, mass, length, colour, function, operation, adjustment, taps
Attribute/Attribute_value	The value of an attribute.	35w, 36kg, high, low
Agent	A person, organisation, or individual.	operator, electrician, Jack, Sarah, Caterpillar
Cardinality	Numerical values or terms describing members of a set.	two, none, some, any, all, both, no
Time	When an activity occurs, either absolutely or relative in time to another activity.	weekly, monthly, in a month's time, earlier, after, 28/06/2009, shut down
Identifier	An identifier of an item.	
Identifier - Item_ID	An alphanumeric identifier of an item.	65ab, g643a
Identifier - Make	The make of an item, i.e. the organisation that built it.	bredle, komatsu
Unsure	To be used when the annotator is unsure how to tag a particular entity.	
Typo	A typo, e.g. a mistyped word or a word that was not tokenised correctly.	bukcet, replaceandrepair
Abbreviation	An abbreviated term.	ac, d/charge
Code	A code, i.e. an acronym, which is not known to be an item or other entity type	BCSD, JDI

Table 3: Roy Hill Object Type Mapping Table	
Abbreviation from FLOC	OBJECT_TYPE from Description.3
AYS	Analyser
BLT	Belts
BRK	Brake
CHU	Chute
CPL	Coupling
CTRL	Instrument and Control Systems
CVR	Conveyors
DRV	Drive Assembly
ELE	Conveyors
ELEC	Instrument and Control Systems
GBX	Gearbox
GTU	Gravity Take-Up
HST	Hoist/Winch
IDL	Idlers
LUB	Lubrication System
MDT	Metal Detector
MEC	Conveyors
MECH	Mechanical Components
MGT	Magnet
MNR	Magnet Monorail
MTR	Motor
PIPE	Piping
PLY	Pulleys
POW	Lighting and Power
SCP	Scrapers
SFTY	Safety Systems
STRC	Structure
WTM	Weightometer

Table 4: Roy Hill Activity Type Mapping Table

Maint	Activ	Type	Meaning
		ADJ	Adjustment To Asset
		CA	Corrective Action
		CAL	Calibrate
		CMN	Condition Monitoring
		FAB	Fabricate
		FT	Functional Testing
		INS	Inspection
		MOD	Modifications
		NDT	Non Destructive Test
		PDM	Predictive Maintenance
		PRO	Projects
		REG	Regulatory
		REW	Rework
		RPL	Replace
		RPT	Report
		RTF	Run To Failure
		SFT	Safety
		SVC	Service
		SVY	Survey
		TST	Test

Table 5: BHP Kwinana Refinery Abbreviations and Codes

Abbreviation/Code	Meaning
BM	Breakdown Maintenance
BOM	Bill of Materials
CCE	Critical Control Execution
CFL	Copper Free Liquor (Type of Process)
CM	Conveyor Maintenance
CMI	Certified Master Inspector
CMSD	Conveyor Maintenance Shut Down
DTO	Dosed Thickener Overflow (Type of Process)
EWP	Elevated Work Platform
FRP	Fibre Reinforced Plastic
FSD	Furnace Shutdown
GPO	General Power Outlet
HA	Hazardous Area
MCWT	Main Cooling Water Tower
MFL	Metal Free Liquor
MJ	Major Job
MP	Medium Pressure
MSD	Major Shutdown
MVR	Machine Vapour Re-compression
NDE	Non Drive End
NDT	Non Destructive Testing
NF	Nano Filtration
NRV	Non Return Valve
O/H	Overhaul
OSR	Off Site Repair
PB	Pushbutton
PBH	Peter Brotherhood
PCC	Plant Control Center
PLF	Pressure Filter Leaves
PSA	Pressure Swing Absorption Plant
PSV	Pressure Safety Valve
PTW	Permit to Work
RV	Relief Valve
Scaf	Scaffold requirement
SOW	Statement of Work

Table 6: BHP Kalgoorlie Furnace Abbreviations and Codes

Abbreviation/Code	Meaning
BBC	Brown Boveri and Cie (OEM)
B/E	Bucket Elevator
BFWP	Boiler Feed Water Pump
Buhler	Fan (OEM)
CMSD	Conveyour Maintenance Shut Down
C/R	Coke and Revert (System in furnace)
C/T	Cross Travel (Aisle Crane Cross Travel)
ERO	Emergency Roll Out
Flux	Product
Fuches	OEM
GRAN	Matte Granulation
HGF	Hot Gas Fan
IMP	Improve
INC	Incident
IOP	Input Open Permissive
IGV	Inlet Guide Vane
ITC	Interim Temporary Control
JE	Part of a furnace taphole “jacket” assembly
JF	Part of a furnace taphole “jacket” assembly
JP	Part of a furnace taphole “jacket” assembly
FKP	Fuller Kinion Pump (Dust transfer)
LC	Canister Empty
LVDI	Linear Variable Differential Transformer
MAC	Main Air Compressor
MCC	Motor Control Center
Modulode	Pneumatic Dust Handling system
PB	Push Button
P and I	Plug and Insert
PLC	Programmable Logic Controller
Rhino Horn	Hook on the very end of the boom on a Franna crane
RJS	Reverse Jet Scrubber
SE	Shift Electrician
SES	Specialised Engineering Services
SF	Sonic Frequency (name of one of the dry precipitators)
SS	Sub Station
ST	Shift Technician
SVC	Service
TAPS	Event ie How many times a matte taphole has been opened
T/C	Thermo Couple
TR	Transformer
U/S	Uptake Shaft
WHB	Waist Heat Boiler