Comos used for the operation on the Gjøa production platform

03 December 2015

COMOS in Engie
Consist of 2 modules

- TDL (Technical Data Library)
  - Tag info
  - Technical information, drawings, P&ID, etc
- CMMS (Computerized Maintenance Management System)
  - Maintenance program
- Software version: 9.2, update 6001

COMOS/TDL

- Statoil was the operator for the development of the field including construction of the Gjøa platform
- In 2010 GDF SUEZ became operator of the Gjøa field
- Migration of approx. 120.000 documents from Statoil system PIM to COMOS done in 2010 (in average 2 files pr. document)
- All information was non-intelligent (pdf files, Word files, Excel files etc.)
- We have re-drawn approx. 600 P&IDs and 5000 Instrument Loops to gain COMOS intelligence

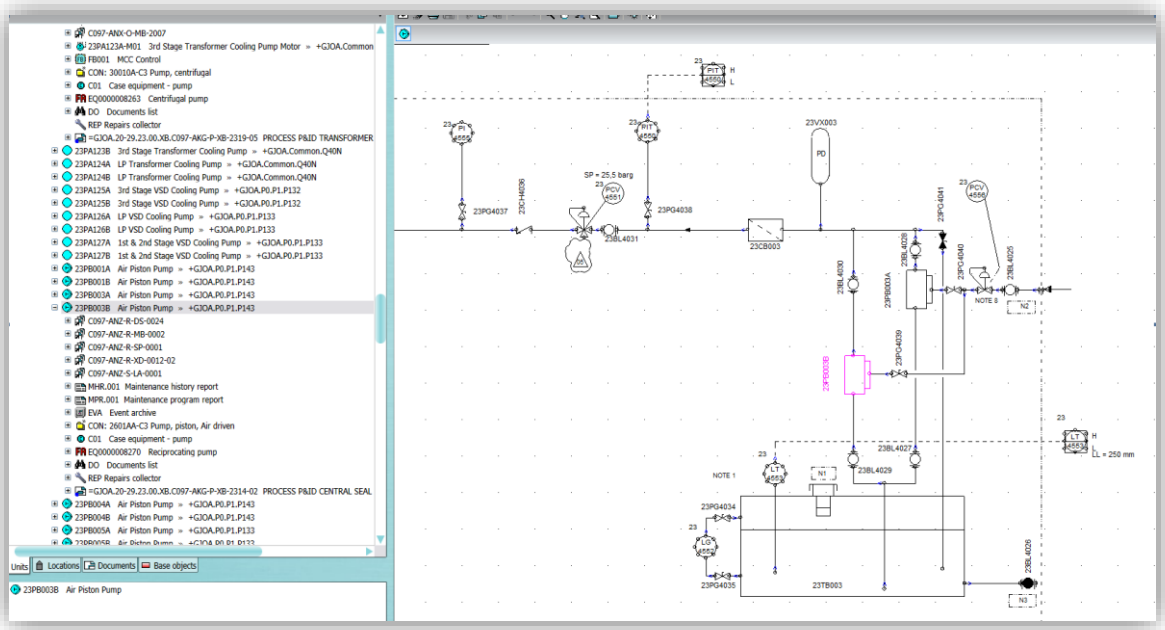
COMOS/TDL

- We have added typical Document Control functionalities:
  - Revision control (COMOS native has version control)
  - Transmittal creation
  - Document numbering creation
  - Bulk export/import of files/tag and metadata to/from contractors
  - Link documents to Work Order and Purchase Order
  - Link doc/doc and doc/tag
  - Etc. etc.
- Redline mark-ups are routed through workflows
  - Update 2D cad drawings
  - PDMS (3D model)
  - Safety critical documents are handled in special workflow (faster updating process)
- Commenting rounds on documents are done by using workflows

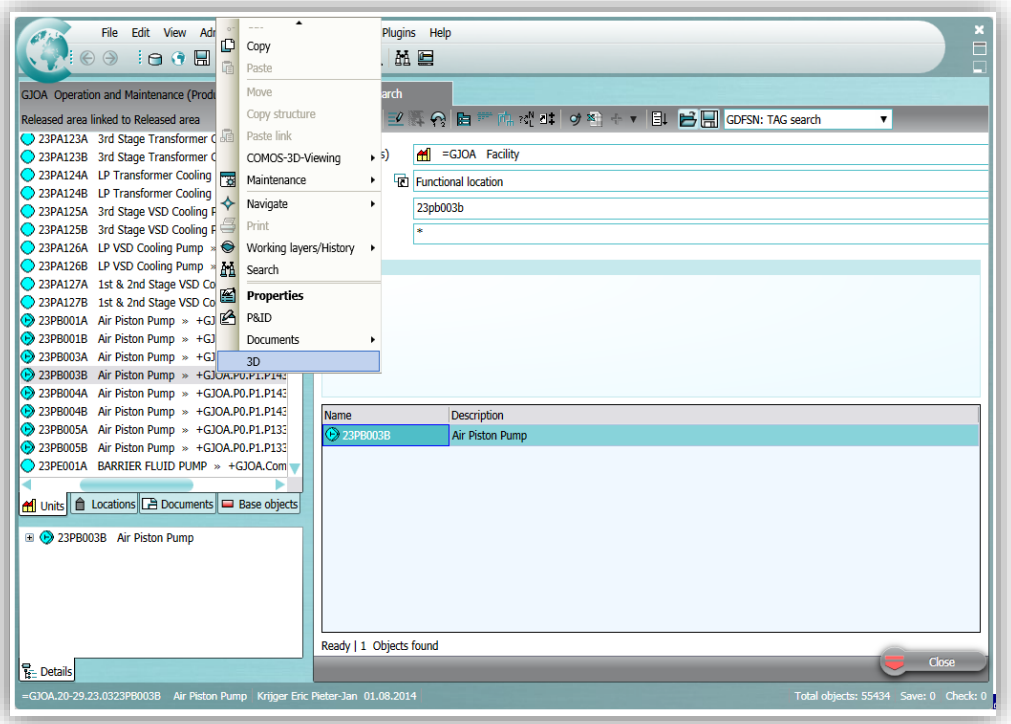
COMOS/TDL

- Our modification contractor work directly in COMOS:
  - Updating of P&IDs
  - Updating of existing and creation of new instrument loops
- Tag info is updated via import routines
- We use Walkinside for viewing purpose of the 3D model
  - Right click on a tag/document and you are automatically routed into Walkinside
  - Walkinside navigates automatically to where the tag is located on the platform

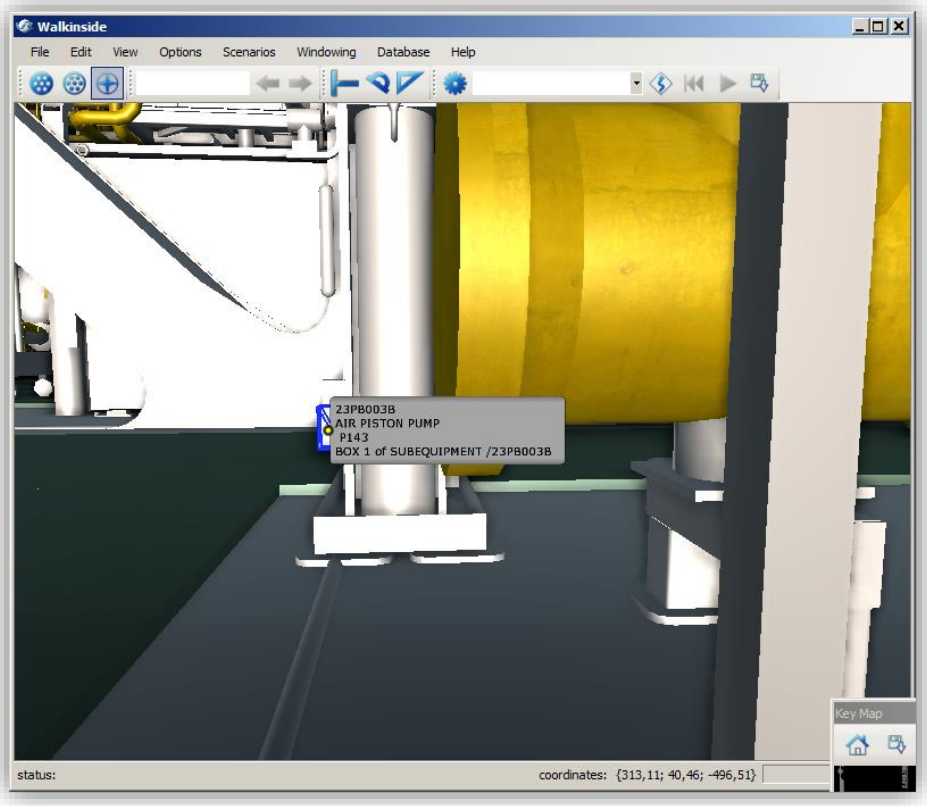
Example COMOS – P&ID -> Walkinside



Example COMOS – P&ID -> Walkinside



Example COMOS – P&ID -> Walkinside



THE ACTIVITIES REGULATIONS

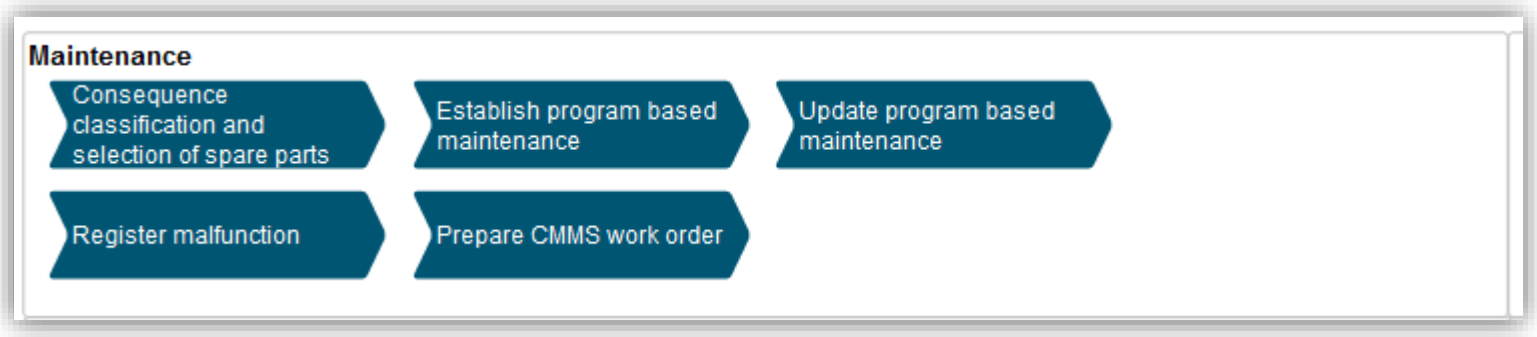
PETROLEUM SAFETY AUTHORITY NORWAY

CHAPTER IX
MAINTENANCE

Section 45
Maintenance

The responsible party shall ensure that facilities or parts thereof are maintained, so that they are capable of carrying out their intended functions in all phases of their lifetime.

Management system



COMOS/CMMS (Computerized Maintenance Management System)

- CMMS functionality build on top of TDL
- Main system for technical dept. and operations dept. (in addition we use special tools for conditioning monitoring like Bentley Nevada and Turbowatch)
- Main functionality
  - Consequence classification on tag
  - Equipment handling, spare part list
  - Maintenance program
  - Event handling
  - Safe Work system (Work permit, SJA)
  - Electrical Notification system
  - Valve and blinding list

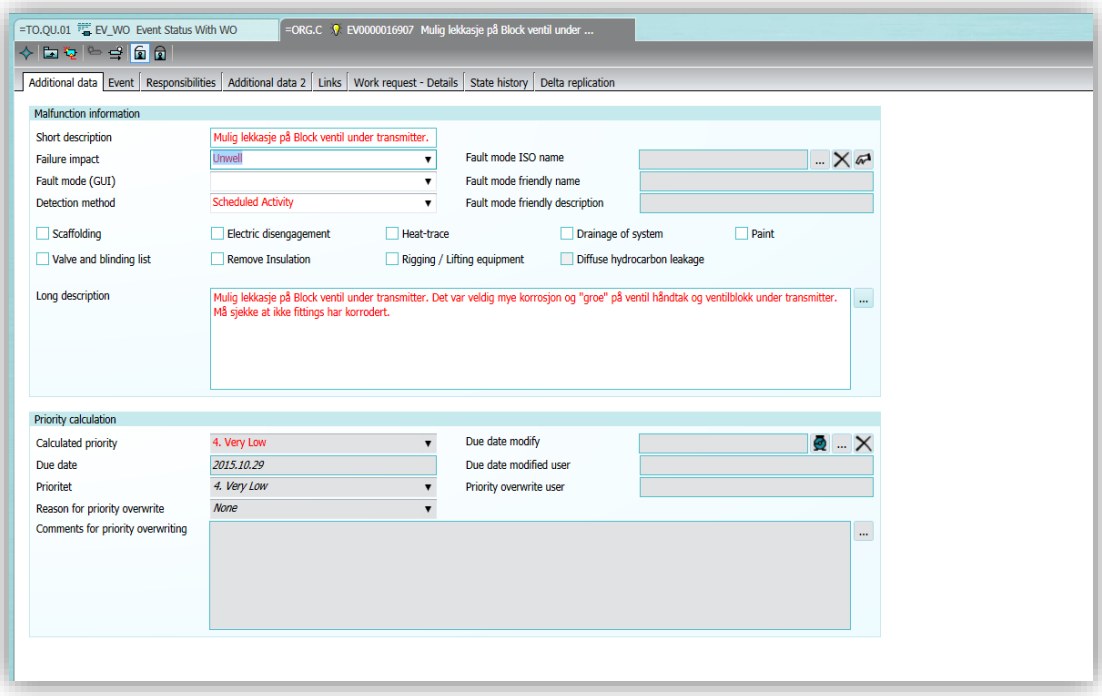
COMOS/CMMS (Computerized Maintenance Management System)

- Handle 130 000 Tags
  - Consequence classification on tag level
  - Equipment handling, spare part list linking based on material master from SAP
- 70 000 Work orders yearly (both PM and CM)

PM = Preventive Maintenance
CM = Conditioned based Maintenance

- 18 000 Events until now (5 years)
  - Failure reporting, with priority calculation
  - Temporary repairs
  - Changes/ updates to the maintenance program
  - Modification proposal
- Events
  - EV01 = Malfunctions
  - EV02 = Temporary repair
  - EV04 = PM program changes
  - EV05 = Modification proposals

EV01


=TO.QU.01 EV_WO Event Status With WO
=ORG.C EV0000016907 Mulig lekkasje på Block ventil under ...
Additional data
Event
Responsibilities
Additional data 2
Links
Work request - Details
State history
Delta replication
Malfunction information
Short description
Mulig lekkasje på Block ventil under transmitter.
Failure impact
Unwell
Fault mode (GUI)
Detection method
Scheduled Activity
Fault mode ISO name
Fault mode friendly name
Fault mode friendly description
Scaffolding
Electric disengagement
Heat-trace
Drainage of system
Paint
Valve and blinding list
Remove Insulation
Rigging / Lifting equipment
Diffuse hydrocarbon leakage
Long description
Mulig lekkasje på Block ventil under transmitter. Det var veldig mye korrosjon og "groe" på ventil håndtak og ventilblokk under transmitter.
Må sjekke at ikke fittings har korrodert.
Priority calculation
Calculated priority
4. Very Low
Due date
2015.10.29
Prioritet
4. Very Low
Reason for priority overwrite
None
Comments for priority overwriting
Due date modify
Due date modified user
Priority overwrite user

COMOS/CMMS
Interfaces to other systems

- SAP
  - SAP HR, for creation of new users
  - SAP logistic, COMOS works as a purchasing front end against SAP
  - all material needed for executing maintenance work is created from COMOS
  - the Logistic process can be tract from COMOS
  - COMOS users do not need SAP access to follow delivery's, done via schedule tasks triggered from COMOS
- IPL (Integrated Planning)
  - all work orders are created in COMOS
  - exported to IPL, for detail scheduling
- Data warehouse makes COMOS data available for other systems
  - KPI reporting
  - Barrier panel
- Connect@Plant
  - Access to Technical IT system via work permit system

COMOS/CMMS

- Work orders
- Maintenance program including Inspections
  - Use of concept (similar equipment tried similar) and library function
  - Maintenance history and maintenance program report below tag, for easy overview
- Corrective Work based on failure events
- Modification Work Order based on modification proposal events

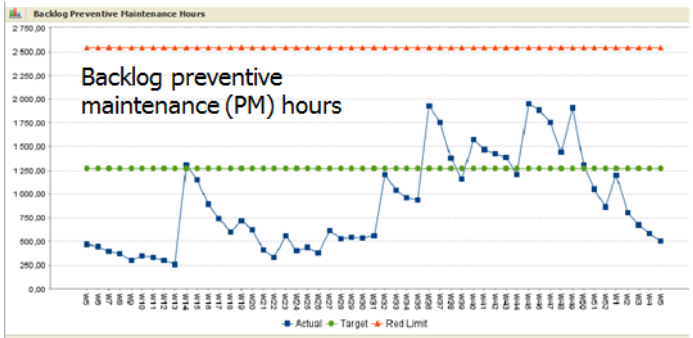
KPI (Key Performance Indicators)

Scorecard

Operations

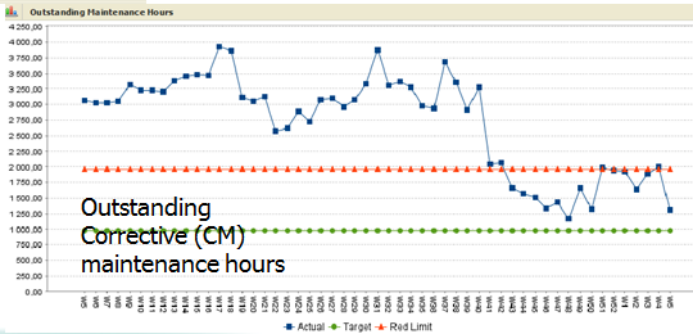
	Actual		Target		Status	Trend
Maintenance						
Outstanding Maintenance Hours	1 418		982			
Backlog Preventive Maintenance	610		1 268			
Performance Target Integrity Level High HSE Preventive Maintenance						
Performance Target Integrity Level High HSE Corrective Maintenance						
Performance Target Integrity Level All Tags Preventive Maintenance						
Performance Target Integrity Level All Tags Corrective Maintenance						
Maintenance Execution Factor PM YTD	81	%	85	%		
Maintenance Execution Factor CM YTD	55	%	85	%		

KPI (Key Performance Indicators)



Sum :

Red limit : 1 month of work
Green limit : 2 weeks of work



Thank you for listening.

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