

GENERAL SPECIFICATION

Field Operations

GS EP EXP 207

Installation description structure

07	10/2012	Update following the EP reorganisation
06	01/2012	Update System/Units for subsea facilities & Turbine Driven Rotating Equipment Functional Breakdown
05	10/2008	Update System /Units and where to find Class/Characteristics
04	01/2006	Update Classes & characteristics; Subsea added
03	10/2005	Addition of "EP" root to GS identification
02	10/2003	Change system & unit code
01	06/2003	Review of systems, units, classes and characteristics
00	12/2000	Initial
Rev.	Date	Purpose of the revision

Owning entity: OPS/EXP	Managing entity: OPS/EXP
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Foreword

As the client subsidiary needs to manage its maintenance activities, one of the main Maintenance Engineering (ME) and Inspection Engineering (IE) tasks during a project phase is to issue an exhaustive equipment list and organise them in an equipment database.

As the Company operates a Computerised Maintenance & Inspection Management System (CMIMS) it is essential that all maintained items of the future facilities are accurately identified and properly structured.

Therefore, a breakdown of the facilities will be done according to a hierarchical model from the subsidiary down to the individual objects.

This breakdown is compulsory in order to plan, organise and analyse the Maintenance & Inspection works in the CMIMS. It will also allow the users to get information at any level such as:

- Equipment list and description.
- Planned maintenance and inspection activities.
- Equipment maintenance and inspection history.
- Maintenance & Inspection cost
- Spare part consumption etc.

The breakdown described herein has been designed to suit a classical technical object pyramid

It distinguishes between objects as functional locations (identified by a tag) and the installed items of equipment (identified by a specific number given by the CMIMS).

Functional location and equipment are specific terms of the CMIMS both used to describe equipment or groups of equipment of facilities as detailed thereafter.

The breakdown of the installations may be loaded in the Maintenance module of a CMIMS tool with the help of standard data loading templates.

The main CMIMS tools used by Company are UNISUP or SALSA based on SAP R/3 tool, PM module. All examples below come from these tools.

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1. Scope

The objectives of this specification are:

- To provide the requirements for building the pyramid (installations description) to be loaded in the CMIMS by Maintenance & Inspection engineering.
- To standardise the database structure, classes and characteristics of equipment at a corporate level in order to have standard Maintenance & Inspection reports allowing cost comparison whenever possible.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the effective date of this document.

Reference	Title
Not applicable	

Total General Specifications

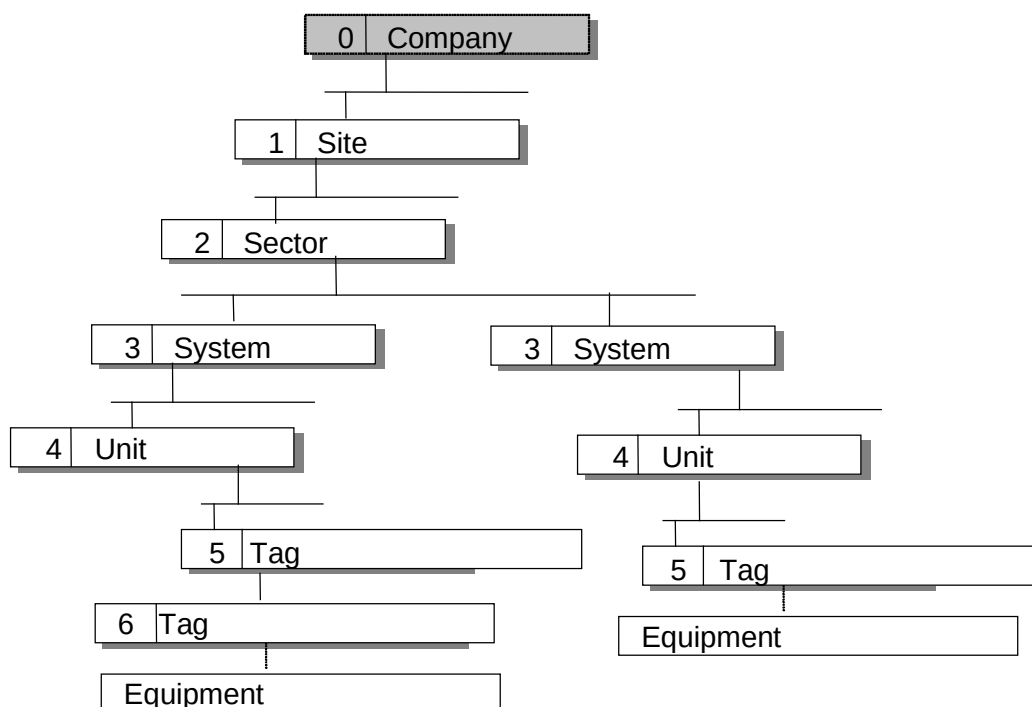
Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published in the applicable yearly collection.

Reference	Title
GS EP EXP 205	Requirements to MIE Team for spare parts
GS EP EXP 221	Data formats for UNISUP/SALSA PM loading
GS EP EXP 501	Equipment and piping Numbering
GS EP INS 102	Instrumentation identification

3. Pyramid concept

Production installations are broken down in the CMIMS according to a tree-structure of functional locations (Pyramid concept).

Structure of the Pyramid



The pyramid structure is developed according to six types of levels:

- Level 0: **Company (subsidiary). Not in FL code.**
- Level 1: **Site.**
- Level 2: **Sector.**
- Level 3: **System.**
- Level 4: **Unit.**
- Level 5: **Tag.**

The relationships between each level are “parent-child” type.

The break down is used for several aspects:

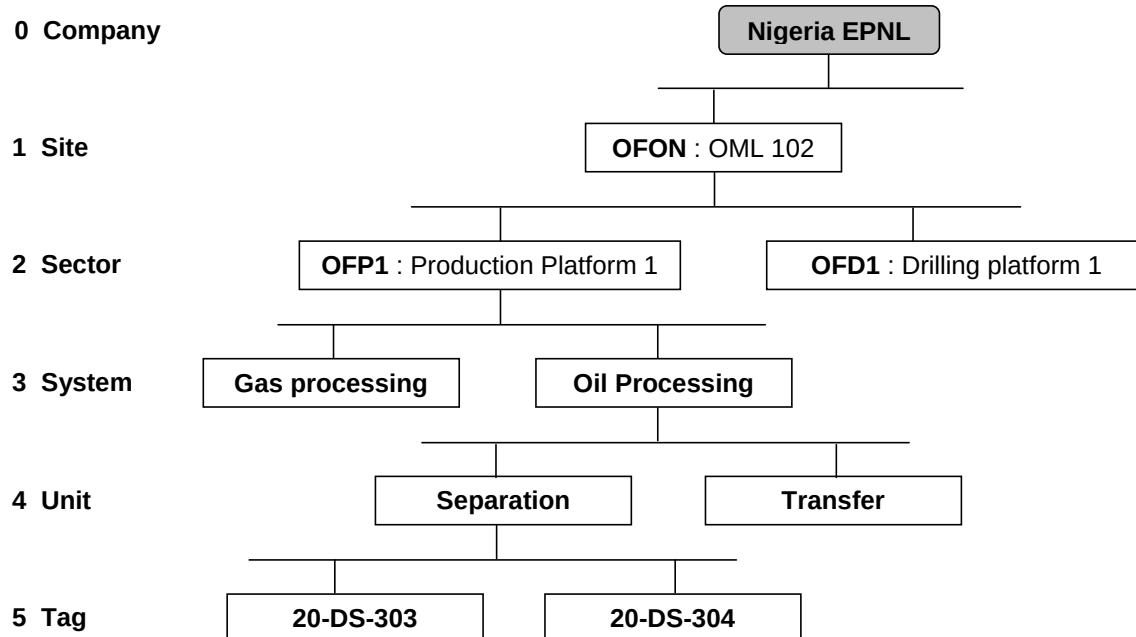
- Operation (tagging) if **GS EP EXP 501** is applied.
- Maintenance & Inspection (Work order, reporting, spare allocation, etc.).
- Commissioning (Partially when applicable).

The definition of the pyramid levels given hereafter is made to suit the main Maintenance & Inspection accounting systems.

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When it is necessary to link Functional locations that are described in different hierarchies it is possible to link those using functionality “Object links” within the CMIMS. In the case of Pressure Safety Valves (PSVs) this is a requirement in order to allow various reports to run within the reporting tool Business Warehouse (BW).

Example of a site breakdown from Nigeria (UNISUP i.e.; PM module).



4. CMIMS entity break down definition

4.1 Level 0: Company

This is the name of the operating Company e.g. TOTAL E&P INDONESIA, TOTAL E&P NEDERLAND B.V, TOTAL AUSTRAL, etc.

4.2 Level 1: Site

The Site is a set of installations included in the same operations entity. This is a geographical area where existing facilities are to be maintained.

A site may be delimited by the facilities maintained by a Maintenance & Inspection team.

There is the possibility of having several sites for which production and process facilities are maintained by the same team based in a central area. This is the case for an onshore terminal with a Maintenance & Inspection service doing interventions on several offshore sites.

The site code is given by Company

Examples:

OML100 (Nigeria), San Roque (Argentina), Khuff (Abu Dhabi), Handil (Indonesia), Dunbar (UK), Nkossa (Congo), Girassol (Angola), etc.

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4.3 Level 2: Sector

The Sector is a set of systems situated in a single geographical location. It consists of multiple process or utility systems.

In offshore situation, it corresponds to installation (Processing centre platform, production satellite, Living quarter platform, FPSO, Subsea facilities, etc.).

For Subsea facilities, the Sector SUB shall be selected. It includes Umbilicals, Flow lines, Risers, Wells and Manifolds.

In onshore situation, it corresponds to area such as cluster, small plant like a production centre.

In case of large plant like LNG gas plant a sector can cover number of systems having enough operational autonomy like train of gas treatment, common utilities, etc.

The sector code is given by Company

Examples:

- Production

Concerns the surface and subsurface production facilities:

⇒ Platform: AFD1 (Afia drilling platform 1, Nigeria), MWP-A (Multi well platform A, Indonesia), CDP1 (Norway), Cluster Saint-Faust 4 (Lacq), etc.

⇒ The wells and all enhanced recovery systems (gas lift, water injection, tertiary recovery) in a satellite.

⇒ Subsea facilities (SUB DALIA, Angola)

- Process

Concerns the facilities downstream of the well heads i.e. piping, separators, treatment, transfer, utilities, safety, etc. Example: PPA (Peciko process area, Senipah, Indonesia), KPP (Khuff Gas Process Platform, TABK, Abu Dhabi), ODP1 (Odudu production platform 1, Nigeria), D-NKP (Nkossa production barge, Congo), "Unités communes Ouest" (Lacq), etc.

All associated facilities, such as power generation only used for water injection, can be included in this Sector.

A "General Production shut down" often corresponds to a sector.

- Living Quarters

Concerns all "domestic" facilities such as living quarters, offices, workshops, warehouse, laboratory, mess, etc. It can be part of a platform (Alwyn), or a building on shore. Example: LQ (Bekapai, Indonesia), AMQ (Amenam living quarters, Nigeria), etc.

- Transport

Concerns sea lines or pipelines between sites.

- Drilling

Concerns equipment located on a rig or drilling platform which Maintenance & Inspection is performed by the Maintenance & Inspection team.

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4.4 Level 3: System

The System is a set of unit handling a process or utility function mainly on a particular product/fluid (oil processing, water injection, electrical power, etc.).

The respect of the system break down is mandatory as it is used for accounting reporting on maintenance and inspection activities.

The list with description of the standard Systems is found in **Appendix 1**.

Remark: To avoid any confusion for equipment handling several fluids for the assignment to a system, it is considered that:

- The selection of the system is always dictated by the main process fluid handled by the equipment concerned e.g.:
 - Oil heater: Production Oil system.
 - Glycol contactor: Gas production system.
- For exchangers the system (fluid) is the one passing through the main stream (i.e. the one to be heated or cooled down)
- For separators:
 - First stage separator: according to the upstream (fluid coming from Oil or Gas wells).
 - Second and third stage separators: system to be selected according to the main flux (generally Oil).

Besides the concept of "system fluid" it has been created a system "Common Facilities" to gather all Units which have no process functions such as Lifting, HVAC, Structures, etc.

4.5 Level 4: Unit

The Unit is a set of equipment handling the same main fluid and/or dedicated to a specific process function. The term of process function shall be considered in its large meaning (e.g. the process functions of the Electricity system are power generation, power distribution, lighting).

In case of ambiguity to assign a unit to a system one should ask the question: If the unit is shut down, which system is affected? The unit will belong to the main affected system.

A Unit is a portion of installation that has a maximum of operational autonomy. It is also an entity that could be commissioned.

Detail description:

The description of the units is given in **Appendix 2**.

A list of units by system is found in **Appendix 3**.

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4.6 Level 5: Tag

The Tag represents a unique functional identification within a Company whose maintenance and inspection history and costs are to be retained.

A tag is created according to the following rules:

- It can be broken down into a set of more detailed tags defined at the lower "description level".
- All components of the installation must belong to just one tag at one description level (Only one "parent tag").
- Any item subject to maintenance, inspection or certification must be tagged (pumps, vessels, lifting, PSV, etc.).

Tags are defined mainly during the engineering phase according to the rules fixed within **GS EP EXP 501**. It is the identification of any item as designated on project documents (PID's, etc).

For some Items (piping, structure, electrical, common part of instrumentation system, etc), a specific Tag for a group of equipment may be issued by the Maintenance and Inspection engineering.

In general, the tags are built using the platform identification, the type of equipment and the function number separated by dashes. Example: 10-KB-301.

4.6.1 Complex items

For a complex item, a main tag can be broken down in sub tags. For instance:

- A complete pump can be broken down into the driving machine (motor) and the driven machine (pump).
- Break down to reflect FAME+ structure. This is the case for multipart vessels (e.g. V101-Water phase, V101-Oil phase...); tubular heat exchangers, plate exchangers etc. due to different corrosion problems from one liquid phase to another.

The number of break down levels including the main tag should not exceed 4.

If possible, the sub-tags should repeat the parent tag. Example:

SITE/FPSOA/CRS/HVAC/KX9019A and SITE/FPSOA/CRS/HVAC/KX9019A-ELEC-DRAWER

4.6.2 Turbine driven rotating equipment

This part covers the following Critical Machines functions' relevant of the different technologies:

- Turbo-generator.
- Turbo-compressor.
- Turbo-pump.

The functional breakdown is divided into an obligatory description and recommended description.

The ordering of the breakdown is obligatory or recommended as well.

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The different models of breakdown are detailed in **Appendix 5**.

4.6.3 Pipelines and piping

A pipeline is considered as a functional location, and thus it should have a tag.

For piping, Tags used in the CMIMS are corresponding to the Groups of Piping that are defined prior any FAME+ assessment; grouping is made according to the rules that are described into the user manual "FAME+ Implementation Guidance", where the numbering scheme (TAG) for Groups of Piping is defined. In addition, it is recommended that the individual lines are described as sub-Tags into the pyramid; this is to have the list of lines (Asset register) within the CMIMS.

Official tags (PID, etc) will be used if existing.

4.6.4 Piping accessories

Manual or motorised valves will be described in functional locations when necessary, and will then be tagged.

The criteria of presence in the breakdown is the use for maintenance interventions follow up (creation of work order and planning, preventive and/or inspection plan), cost follow up (man-hours, spare parts), or history follow-up.

4.6.5 Manual valve tagging

A manual valve spare strategy should be in place allowing the Maintenance team to make the correct decisions during the Operational phase of the Asset. The manual valve spare strategy falls into 2 categories; manual valves tagged on a main Functional Location, or grouped at a generic level "Generic HV". The criteria for deciding which option is best suited are based on a number of factors (criticality, cost, lead time delivery, size and uniqueness)

For manual valves not tagged, Contractor shall affect to them a sufficient definition/description (with information on system, units, piping number, etc.) to be able to locate quickly the valves on the Process. These valves can be added in the "Generic HV" Level.

Manual valves belonging to main equipments or packages (battery limits clearly defined) shall be attached to these main equipments or package.

Manual valves installed on the process, not located in the battery limit of main equipment or packages, shall be attached to the SYSTEM / UNIT.

Examples are given in **Appendix 4**.

4.6.6 Remark for Instrumentation

Instrumentation is included in the CMIMS.

Loops (INLP) are included for referencing Work order on Tag. All loops are included into the database.

The Tag of the loop will fit the format described in the **GS EP INS 102**, and is generally issued from the Instrument list.

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Instruments located in the control room or control panel but dedicated to a specific functional location are attached to the concerned tag, the others being attached to the tag CR (Control Room).

Maintenance engineering has to check that the instrument Tag is not in conflict with another functional location Tag.

4.7 Equipment (Asset)

To describe a technical object in the CMIMS, a tag is necessary and in some cases, equipment should also be added.

An equipment represents a unique physical component that can be installed on a tag for which it ensures the required function. The equipment is the only way to manage repair or replacement.

An equipment should be declared according to the following rules:

- Its location may change during its lifetime.
- Historical records of movements (installation and removal) need to be kept for technical, economic or regulatory reasons.

Examples: PSV, safety instrument, gas turbines, engines, submersible pumps etc.

4.8 Classification

In the CMIMS, tags and equipment may be classified in order to:

- Assign characteristics: A typical list of characteristics is assigned to each class.
- Prepare typical maintenance or inspection procedures.
- Facilitate the search functions.
- Group, for reporting, similar objects which have no hierarchical link within the pyramid.

NB! If a Functional Location tag has an equipment, both the tag and the equipment have to be classified with the same class!

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4.8.1 Functional Location Tags / Equipment Classes and Sub-classes

Class	Class Description	Sub-Class	Sub-Class Description	FL Recommended	EQ Management	Subsea Applicable	Class Group	FAME+ Relevant
MOT	Electrical Motors	MOT-HV	High Voltage Electrical Motor	X	M			
MOT	Electrical Motors	MOT-LV	Low Voltage Electrical Motor	X	O	X		
MOT	Electrical Motors	MOT-VAR	Variable Speed Electrical Motors	X	M			
NAVD	Navigation Aid / Meteo	NAVD-BEAC	Radio Beacon	X				
NAVD	Navigation Aid / Meteo	NAVD-LGHT	Navigation Lighting	X				
NAVD	Navigation Aid / Meteo	NAVD-METEO	Meteo Station	X				
NAVD	Navigation Aid / Meteo	NAVD-RAD	Radar	X				
NAVD	Navigation Aid / Meteo	NAVD-SOUND	Horn	X				
PIPE	Piping	PIPE-FAR	Flame Arrestor	X		X	Inspection	
PIPE	Piping	PIPE-FLARE	Flare Tip	X			Inspection	
PIPE	Piping	PIPE-HUBINTS	Hub Interface Subsea	X			Inspection	
PIPE	Piping	PIPE-HYDJMPS	Hydraulic Jumper Subsea	X			Inspection	
PIPE	Piping	PIPE-MISC	Piping Accessory	X		X	Inspection	
PIPE	Piping	PIPE-PIP	Piping	X		X	Inspection	X
PIPE	Piping	PIPE-SEALPLTS	Seal Plate Hydraulic Subsea	X			Inspection	
PLNE	Pipeline	PLNE-BUND	Pipeline Bundle	X			Inspection	
PLNE	Pipeline	PLNE-FLEX	Pipeline Flexible	X	O	X	Inspection	
PLNE	Pipeline	PLNE-RIG	Pipeline Rigid	X		X	Inspection	
PLNE	Pipeline	PLNE-SLED	Pipeline Sled	X		X	Inspection	
PLNE	Pipeline	PLNE-SPOOL	Spools and jumpers	X		X	Inspection	
PSD	Pressure Safety Devices	PSD-BVLV	Breather Valves	X			Inspection	
PSD	Pressure Safety Devices	PSD-PSV	Pressure Safety Valves	X	M	X	Inspection	X
PSD	Pressure Safety Devices	PSD-RDISC	Rupture Disc	X		X	Inspection	
PUMP	Pumps	PUMP-CENT	Horizontal / Vertical Centrifugal Pump	X	M			
PUMP	Pumps	PUMP-ESP	Electrical Submersible Pump	X	M			
PUMP	Pumps	PUMP-MISC	Miscellaneous Pump	X	M	X		
PUMP	Pumps	PUMP-REC	Reciprocating Pump	X	M	X		
PUMP	Pumps	PUMP-ROD	Rod Pump	X	M			
PUMP	Pumps	PUMP-SCRW	Screw Pump	X	M			
PUMP	Pumps	PUMP-VOL	Volumetric Pump	X	M			
PUMP	Pumps	PUMP-WSCENT	Well Subsurface Centrifugal Pump	X	M			

Extract from file GS_EP_EXP_207_Classes(v20xx.y).xls

- The **X** in column “FL Mandatory” indicates the classes for which a tag must be declared in the CMIMS. For the other classes it is up to the Company to decide whether to declare a tag or not.
- The column “EQ Management” indicates the classes for which an equipment must be declared in the CMIMS (M) and for which an equipment can be declared. For the other classes it is up to the Company to decide whether to declare equipment or not.
- For the column “EQ Management”, the following rule is applicable:
 - M** indicates that equipment **must** be declared for the class in the CMIMS.
 - O** indicates that equipment **can** be declared for the class in the CMIMS.
 - Blank** indicates that equipment **should not** be declared for the class in the CMIMS.

The complete list of classes and sub-classes is found in the file GS_EP_EXP_207_Classes(v20xx.y).xls.

4.8.2 List of characteristics for each sub class

Class	Sub-Class	Characteristic	Description	FL	EQ
PUMP			Pumps		
	PUMP-CENT		Horizontal / Vertical Centrifugal Pump		
		TO_0003600	Suction Flange Diameter &Class		O
		TO_0003700	Discharg Flange Diameter&Class		O
		TO_0004500	Lubricating Oil Tank Capacity		M
		TO_0008800	Rated Flow rate		M
		TO_0010600	Impellers Diameter		O
		TO_0014300	Fluid		M
		TO_0016400	Required Suction Height (NPSH)		M
		TO_0019400	Weight		O
		TO_0029000	Number of Stages		O
		TO_0029500	Number of Impellers		O
		TO_0033200	Suction Pressure		M
		TO_0034000	Discharge Pressure		M
		TO_0038600	Rated Power		M
		TO_0040600	Lubricating Oil Type		M
		TO_0045400	Rotation Direction		O
		TO_0049000	Discharge Temperature		M
		TO_0054600	Type / Technology		M
		TO_0054700	Coupling Type		O
		TO_0058100	SealType		O
		TO_0059900	Rated Speed		M
		TO_R000100	Type of Equipment		O
		TO_R000200	Associated P&ID Number		M
		TO_R000300	Data Sheet Reference		O

Extract from file GS_EP_EXP_207_Classification(v20xx.y).xls

The following legend is applicable:

- **M** indicates that the characteristic is Mandatory; this means the characteristic must be managed within CMIMS.
- **O** indicates that the characteristic is Optional but recommended.
- **Blank** in "FL" and "EQ" columns indicates that it is up to the Company to decide whether or not to declare the characteristic for the object.

The complete list of characteristics per sub-class is found in the file **GS_EP_EXP_207_Classification(v20xx.y).xls**.

Contact Company to get a copy of the last version of these files.

Common Characteristics

All Classes and Sub Classes shall have the following Common / Embedded Characteristics:

- Type of Equipment, Optional.
- Associated P&ID Number, Mandatory.
- Data sheet reference, Optional.

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Remark: In UNISUP/SALSA, the following data are not declared in the classification as they belong to the Master Data of Functional Location or Equipment.

- Manufacturer.
- Model number (Type).
- Manufacturer Serial Number.
- Manufacturer Part Number.
- Construction date (year).
- Start-up date.

Production impact (see [GS EP EXP 221](#) criticality item ABC indicator: V,C,S).

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Appendix 1

Appendix 1 Description and Abbreviations of Systems

Code	SYSTEM	Description
COF	Common Facilities	Topsides utilities, Subsea distribution systems (umbilicals, umbilical distribution modules)
CRS	Critical & Safety Systems	Main critical and safety equipment
DRL	Drilling	Drilling facilities
ELE	Electric Energy	All general equipment for electrical production and distribution.
EXT	Hydrocarbon extraction	Equipment from crude oil/gas well to the treatment units (treatment <u>excluded</u>)
GAS	Produced Gas processing	Equipment dedicated to treat and evacuate, dispose or inject gas production
HSG	Housing & Others	Housing, building, structure and miscellaneous
LNG	Liquefied Natural Gas	Equipment dedicated to LNG processes
NGL	Produced gas liquid processing	Equipment dedicated to treat and evacuate NGL
OIL	Produced liquid processing	Equipment dedicated to treat and evacuate Oil production.
WAT	Water processing	Equipment dedicated to treat, evacuate or inject water

NGL and LNG

Definitions (from Campbell Gas Conditioning and Processing):

- NGL

Natural Gas Liquids (NGL) consists of hydrocarbon components in a produced gas stream which can be extracted and sold in their respective market.

Examples: Ethane (C₂), Propane (C₃), Butanes (iC₄ and nC₄), Natural Gasoline (C₅)

- LNG

Liquid Natural Gas; If the effluent gas from an NGL plant is totally liquefied, it is called Liquid Natural Gas (LNG)

Utility equipment

There are two kinds of utility equipment, those performing a general service and the ones dedicated to a specific service.

Consequently, some utility equipment may belong either to a Unit linked to Common Facilities (COF) or to a specific piece of equipment.

For instance, the main crane on a platform belongs to the Unit Lifting attached to the system Common Facility (COF)

Appendix 2 Description and Abbreviations of Units

UNIT/Sub-system	Code	Description
Living quarters / Catering / Offices / Civil buildings / Sewage	ACCOM	Equipment within accommodations (kitchen, laundry, mess, refrigerated cabinet) , catering , sewage, civil building, etc.
Instrument Air / Gas - Hydraulic power	AIR	Air compressors, dryers, air receiver, filters, cooler, instrument-gas generation and distribution, hydraulic power generation
Airstrip (including refuelling)	AIRST	Airstrip for onshore installation including refuelling equipment.
Auxiliaries power generation / distribution (UPS, 48 / 24 / 12 Vcc)	APWG	UPS , 48 - 24 - 12 Vcc power generation and distribution
Blow Out Prevention	BOP	BOP, hydraulic units,
Bulk & cements	BULK	Cement Tanks, pumps,
Cathodic protection	CATPR	Monitoring, anode
Chemical storage & injection (including methanol)	CHEM	Storage & injection/ pumps and network (including methanol)
Refrigeration	CHIL	Refrigeration for gas liquefaction.
Gas Compression	COMP	Gas compressor (LP, MP, HP for gas-lift , injection , transfer or export) with associated auxiliaries such as fuel gas, scrubber, cooler, etc.
Sub sea / Surface Control & Supervision	CONT	Control room, PLC and computers, key boards, mimic panel, marshalling cabinet, telemetry, etc.
Cooling gas	COOLG	Cooling gas distribution (Propane & MR loops)
Cooling water	COOLW	Cooling water generation and distribution (out of exchanger)
Corrosion monitoring	CORR	Corrosion monitoring equipment , coupons, probes,
Defrost gas	DEFRO	Defrosting gas (utility)
Dehydration / Sweetening	DEHYD	Amine unit, hot oil system. Process unit for gas sweetening. Vessels, filters, units for mercury and mercaptan removal from gas. Glycol contactor and glycol regeneration package, molecular sieves.
Closed drains / Open drains	DRAIN	Drain network and drums
Drilling equipment	DRILL	Derrick, Winch, Rotary table,

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Appendix 2

UNIT/Sub-system	Code	Description
Electro chlorination	ELCL	Production of chlorinated water from sea water
Emergency power generation / distribution	EPWG	Emergency power generation units and distribution
Earthing	ERTH	Earthing network and related monitoring
Extraction Wells	EWELL	Wells - Flow line – manifold – riser - Well pumps, individual well metering
Gas export/Metering	EXP	Export /Enrichment (to reach the specification) / pig trap / metering
Fuel gas	FG	Scrubber, filter, superheater and distribution
Gas disposal (acid gas, flare, vent)	FLARE	Flare, liquid burner, burn pit, KO drum, scrubber, pump, catch pit, vent, acid gas incineration
Fuel oil / diesel oil (including storage / distribution)	FO	Storage tank, circulation pump, distribution system
Fractionation	FRACT	LPG separation equipment, turbo expanders, Joule Thomson valve, etc
Fire fighting generation / Distribution	FWAT	Fire pumps (main pumps and jockey pumps), diesel oil day tank (for the diesel engine), deluge system, hydrants.
Liquid extraction	GLEX	Exchanger, scrubber, pumps, Joule Thomson valve and turbo expander.
Hot water generation and distribution	HEATL	Heating unit (water, steam) generation to exchanger (Boiler, water pump, tank, diesel oil tank.). It includes the network, but not the exchanger
Helideck (including Kerosene)	HELID	Structure and specific device linked to helideck management. Tank and pump for kerosene
High Integrity Protection System	HIPS	For installations were the HIPS equipment are grouped in one specific part of the structure
Hot oil generation and distribution	HTOIL	Hot oil generation to exchanger (Boiler, water pump, tank, diesel oil tank.). It includes the network, but not the exchanger
HVAC	HVAC	Individual or centralised AC unit, fan coils, dampers, heaters, extract fan etc.
Gas Import / metering	IMP	Gas Import / metering (for LNG Plants, Gas terminals etc.)
Inert gas / Nitrogen generation and distribution	INERT	Generator package and associated equipment and instrumentation.
Insulation / trace Heating	INSUL	All lagging on pipes and vessels, and heat tracing.

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UNIT/Sub-system	Code	Description
Industrial water / generation and distribution	INWAT	Circulation pumps, piping network, Equipment dedicated to Irrigation water etc
Injection well	IWELL	Well - Flowline – manifold – riser – in-line Tee.
Laboratory	LABO	Laboratory equipment.
NGL extraction (including Liquid extraction)	LEX	Columns, Joule Thompson valve, Reboilers, Glycol unit + exchanger, scrubber, pumps.
Lifting equipment	LIFT	Pedestal crane, runway beam, overhead travelling crane, winch, chain block, winch, jib, forklift, mobile crane, elevator, etc.
Lighting	LIGHT	All lighting fittings and bulbs.
Export / Off loading	LOAD	Pumps (booster, export, loading), pig trap. Loading arms, loading buoys, floating flexible hoses.
Material Off-loading Area	MATOL	Material Off-loading Area including Off-loading Equipment (Cranes, trucks, etc.)
Metering	METER	Metering skid, prover loop, settling tank. The Unit Meter is used for the fiscal metering
Slug catcher, main / test separation & metering	MSEP	Slug catcher , main separation, test & main metering (not included individual well metering)
Mud	MUD	Mud Tanks, pumps,
Navaid	NAV	Navaid lighting, fog horns, batteries.
Technical rooms	OFF	Office equipment and technical rooms.
Oily water processing	OWAT	API basins, tanks skimmers, pumps (oil and water) flottator, agitator, coalescer, filter, sump tank and disposal tube pump, cyclone, flash drum. Rotary cyclones.
Power distribution (HV, LV)	PWD	All switchboards and associated devices such as switches, breakers , transformers, cables, etc
Main Power generation	PWG	Electrical generator package (normal) with associated auxiliaries.
Safety / Evacuation equipment	SAFE	Life boats, life rafts, twin agent skid, extinguishers etc.
Subsea Distribution System	SDS	Umbilicals, umbilical distribution modules,... including subsea power distribution, hydraulic power, chemical injection
Separation / Heating / Cooling (including manifold)	SEP	Production separator, condensate pumps (the condensate pumps of the last stage separator are within the Transfer Unit). Water pumps, cooling and heating exchanger

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Appendix 2

UNIT/Sub-system	Code	Description
ESD and Fire & gas	SESD	PLC and computers for fire and gas, ESD, alarm annunciation, junction boxes, marshalling cabinet, fire and gas detectors, fire and gas cabinet, etc.
Sulphur recovery / Sulphur storage and export	SREC	Coalescers, converters, furnaces, sulphur tanks, export devices, etc.
Dehydration / Desalting / Stabilisation (including Stripping)	STAB	Stabilisation column, cooler, heater, stripping, desalting drum, boosting pumps
Special Tools	STOOL	Special tools (ROV special tools, etc.)
Storage	STORE	Tank, surge tank and pump, sump.
Structures / Mooring / Ballast	STRUC	Jacket, decks, handrails, gratings, boat landing, risers, etc -Civil: building , roads, fences, etc.- Mooring: Anchoring devices, chain reels, etc -Ballast: Pumps, Strainers
Sweetening (Mercaptan, Mercury , H ₂ S, CO ₂ , RSH)	SWEET	Amine unit, Vessels, filters, machines for mercury and mercaptan removal from gas/Glycol contactor and glycol regeneration package,
Communication / Telecom	TELE	Antenna, MTU, speakers, telephones, fax, modem, PABX, public address, etc.
Transfer	TRANS	Pump (for liquid), pig trap, header
Soft water	UPWAT	Storage tank, pumps, cooler, water maker and associated chemical injection.
Water lifting (including water production wells , transfer lines)	WATLF	water production well, Lift pumps, risers, packages, tanks for water lifting for industrial or domestic use
Water treatment (Sulphur removal / de-oxygenation)	WDEOX	Columns, vacuum pumps, etc for injection water/Removal of sulphates for water injection
Filtration (main and preliminary)	WFLT	Filters, pumps, exchangers, etc... for water filtration.
Water injection (including pumps , metering , headers)	WINJ	Pumps, metering, header
Workshop / warehouse	WW	Workshop and warehouse equipment (machine tools, test bench etc.) except lifting equipment.

Remark for Instrumentation: Instrument dedicated to operation of a unit is included into the unit. All instruments for general purpose (VDU, Printer, Mimic panel, etc.) are included in the unit Control.

Appendix 3 Assignment of standard unit to system

Syst	Unit	Unit name
COF	CHEM	Chemical storage & injection (including methanol)
COF	COOLG	Cooling gas
COF	COOLW	Cooling water
COF	CORR	Corrosion monitoring
COF	DEFRO	Defrost gas
COF	FG	Fuel gas
COF	FO	Fuel oil/diesel oil (including storage / distribution)
COF	HEATL	Hot water generation and distribution
COF	HTOIL	Hot oil generation and distribution
COF	INERT	Inert gas / Nitrogen generation and distribution
COF	INSUL	Insulation / trace Heating
COF	INWAT	Industrial water / generation and distribution
COF	LIFT	Lifting equipment
COF	SDS	Subsea Distribution System
CRS	AIR	Instrument Air / Gas - Hydraulic power – Subsea Hydraulic Power Unit
CRS	APWG	Auxiliaries power generation / distribution (UPS , 48 / 24 / 12 Vcc)
CRS	CONT	Sub sea/Surface Control & Supervision
CRS	EPWG	Emergency power generation / distribution
CRS	FWAT	Fire fighting generation/Distribution
CRS	HIPS	High Integrity Protection Systems (HIPS)
CRS	HVAC	HVAC
CRS	SAFE	Safety/Evacuation equipment
CRS	SESD	ESD and Fire & gas
CRS	TELE	Communication/Telecom
DRL	BOP	Blow Out Prevention ,BOP, hydraulic units.
DRL	BULK	Bulk & cements ,Tanks, pumps,
DRL	DRILL	Drilling equipment Derrick, Winch, Rotary table
DRL	MUD	Drilling Mud
ELE	ERTH	Earthing

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Appendix 3

Syst	Unit	Unit name
ELE	LIGHT	Lighting
ELE	NAV	Navaid
ELE	PWD	Power distribution (HV , LV)
ELE	PWG	Main Power generation
EXT	EWELL	Extraction Wells / Flowline / manifold / riser/ Pumping/well metering/ Kill-line
EXT	MSEP	Slug catcher , main / test separation & metering
EXT	TRANS	Transfer
GAS	COMP	Gas Compression
GAS	DEHYD	Dehydration / Sweetening
GAS	EXP	Gas export / metering
GAS	FLARE	Gas disposal (acid gas , flare , vent)
GAS	GLEX	Gas Liquid extraction including Exchanger, scrubber, pumps, LPG separation equipment, turbo expanders, Joule Thompson valve, etc.
GAS	IMP	Gas Import / metering (for LNG Plants, Gas terminals etc.)
GAS	IWELL	Injection well / Flow line / Riser / In-line Tee
GAS	SREC	Sulphur recovery / Sulphur storage and export
GAS	TRANS	Transfer
HSG	ACCOM	Living quarters / Catering / Offices / Civil buildings / Sewage
HSG	AIRST	Airstrip (including refuelling)
HSG	CATPR	Cathodic protection
HSG	HELID	Helideck (including Kerosene)
HSG	LABO	Laboratory
HSG	MATOL	Material Off-loading Area (
HSG	OFF	Technical rooms
HSG	STOOL	Special Tools (ROV)
HSG	STRUC	Structures / Mooring / Ballast
HSG	UPWAT	Soft water
HSG	WW	Workshop/warehouse
LNG	CHIL	Refrigeration / Liquefaction
LNG	LEX	Liquid extraction including LPG separation equipment, turbo expanders, Columns, Joule Thompson valve, Reboilers, Glycol unit + exchanger, scrubber, pumps.

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Appendix 3

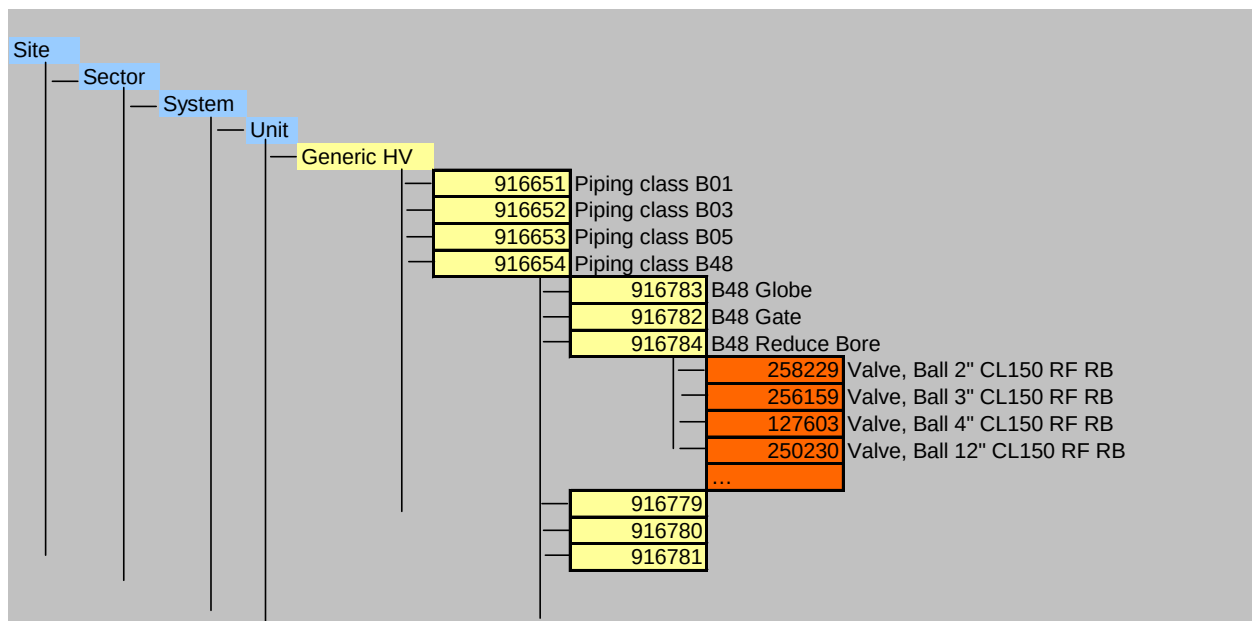
Syst	Unit	Unit name
LNG	LOAD	Export / Off loading
LNG	METER	Metering
LNG	STORE	Storage / LNG tanks/ Boiled off gas treatment
NGL	CHIL	Refrigeration
NGL	DEHYD	Dehydration/Sweetening
NGL	FRACT	Fractionation
NGL	LEX	Liquid extraction including LPG separation equipment, turbo expanders, Columns, Joule Thompson valve, Reboilers, Glycol unit + exchanger, scrubber, pumps.
NGL	LOAD	Export/Off loading
NGL	METER	Metering
NGL	SREC	Sulphur recovery / Sulphur storage and export
NGL	STORE	Storage
OIL	DRAIN	Closed drains /Open drains
OIL	LOAD	Export/Off loading
OIL	METER	Metering
OIL	OWAT	Oily water processing
OIL	SEP	Separation / Heating / Cooling (including manifold)
OIL	STAB	Dehydration / Desalting/Stabilisation (including Stripping)
OIL	STORE	Storage
OIL	SWEET	Sweetening (Mercaptan , Mercury , H ₂ S, CO ₂ , RSH)
OIL	TRANS	Transfer
WAT	ELCL	Electro chlorination
WAT	IWELL	Injection well / Flow line / Riser / In-line Tee
WAT	WATLF	Water lifting (including water production wells , transfer lines)
WAT	WDEOX	Water treatment (Sulphur removal/de-oxygenation)
WAT	WFLT	Filtration (main and preliminary)
WAT	WINJ	Water injection (including pumps , metering , headers)

Appendix 4 Hierarchy breakdown for Manual valves

Manual valve renewal

If the valve strategy should be to renew the complete valve, this valve, depending on the specific needs of the Asset can be either held as stock or non-stock and can be identified easily in SAP using an Asset based approach 'Piping Specification: Bills Of Materials' as shown below.

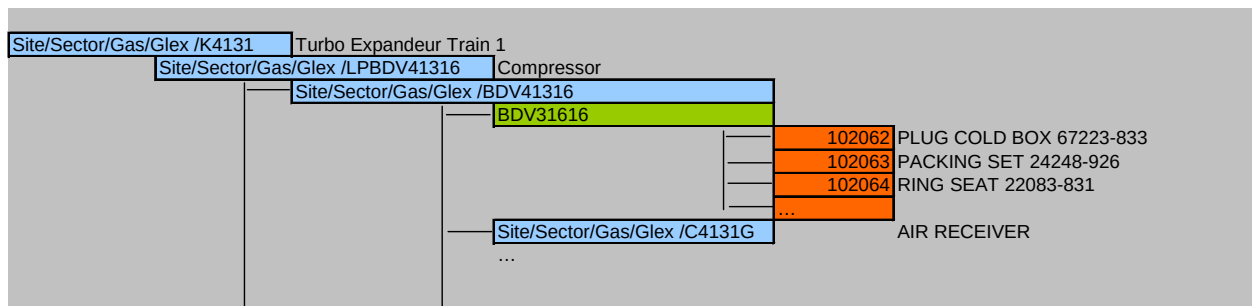
Example in UNISUP/SALSA



Manual valve overhaul

Valves that require overhauls require a full set of spares be identified in SAP with material numbers (stock or non stock) and assigned to a specific Bill of Material and not to the 'Piping Specification: Bills Of Materials'

Example in UNISUP/SALSA



Appendix 5 Turbine Driven Rotating Equipment Functional Breakdown

1. Presentation of the breakdown

The functional breakdown presented is divided into an obligatory description and recommended description.

The ordering of the breakdown is obligatory or recommended as well.

The different models of breakdown are delivered by Company in an Excel file **GS_EP_EXP_207_TDR_Breakdown_Model(v20xx.y).xls**

1.1. Breakdown models structure

You'll find in the excel file 6 breakdown models, ordered and structured in order to be as similar to what would be expected in UNISUP/SALSA. The 6 breakdowns concern the three types of turbomachines (3 for an industrial turbine drive and 3 for an aeroderivative turbine drive).

351	TURRBOGEN INDUS	TURRBOCOMP INDUS	TURRBOPUMP INDUS	TURRBOGEN AERO	TURRBOCOMP AERO	TURRBOPUMP AERO
-----	-----------------	------------------	------------------	----------------	-----------------	-----------------

The type of turbomachine concerned is specified on the page marker and at the top of each page. This title represents the turbomachine package FL declaration, in other words, the first level FL declaration.

	A	B	C	D	E	F	G	H
1	TURBOGENERATOR (INDUSTRIAL TURBINE)							
2								
3	1	2	3	4	5	6	Declaration status	Comments
4	Gas Turbine						TAG obligatory	
42	Power transmission system						TAG obligatory	

Columns A through F: illustrate the different levels of the breakdown and how it is structured as well.

1	2	3	4	5	6	A	B	C	D	E	F
1											TURBOGENERATO
2											
3	1	2	3	4	5	6					
4	Gas Turbine										
5											Gas turbine description according to OEM breakdown
6											Gas turbine Elements
7											Maintenance kits
8											Kits
9											Flexible hoses
10											Valves
11											Valves that have to be declared
12											Solenoid valves
13											Ball valve
14											Check valves

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Column G: illustrates what type of description it is. The choices are limited to:

DESCRIPTION STATUS
TAG obligatory
TAG recommended
Equipment recommended
Assembly recommended
Assembly or articles recommended
Articles recommended

The explanation of each status is specified below in the description of the breakdown.

Column H: is open for comments.

A	B	C	D	E	F	G	H
TURBOGENERATOR (INDUSTRIAL TURBINE)							
1	2	3	4	5	6	Declaration status	Comments
Gas Turbine						TAG obligatory	
	Gas turbine description according to OEM breakdown					Assembly recommended	
	Gas turbine Elements					Articles recommended	
	Maintenance kits					Assembly recommended	
	KRS					Articles recommended	
	Flexible hoses					TAG recommended	GS EP EXP 211
	Valves					TAG recommended	GS EP EXP 211, GM EP EXP 230, GM EP EXP Machine Parameters
	Valves that have to be declared					TAG recommended	GS EP EXP 211
	Solenoid valves					Assembly or Articles recommended	
	Ball valve					Assembly or Articles recommended	
	Check valves					Assembly or Articles recommended	

1.2. Breakdown organisation

1.2.1. Obligatory

The obligatory breakdown includes three levels of Functional location declaration:

1. The turbomachine (title of the page).
2. The machines and main auxiliaries.
3. The mandatory elements of the machine.

These FL declarations are coloured in dark blue in the breakdown models and have a declaration status of: TAG obligatory.

As specified above the ordering of this breakdown is obligatory as well.

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Ex:

TURBOGENERATOR (INDUSTRIAL TURBINE)							
1	2	3	4	5	6	Declaration status	Comments
Gas Turbine						TAG obligatory	
	Air inlet system					TAG obligatory	
	Exhaust gas system					TAG obligatory	
	Starting system					TAG obligatory	
	Coupling and guard					TAG obligatory	
Power transmission system						TAG obligatory	
	Gearbox					TAG obligatory	
	Auxiliary Gearbox					TAG obligatory	
	Coupling and guard					TAG obligatory	
Generator						TAG obligatory	
	Excitation System					TAG obligatory	
	Cooler					TAG obligatory	
	Pressurisation system					TAG obligatory	
Mineral Oil System						TAG obligatory	
Fuel gas system						TAG obligatory	
Liquid fuel system						TAG obligatory	
Enclosure and air ventilation I/O						TAG obligatory	
Water washing system						TAG obligatory	
Fire and gas fighting system						TAG obligatory	
	Gas detection system					TAG obligatory	
	Fire detection system					TAG obligatory	
	Extinction system					TAG obligatory	
Waste Heat Recovery Unit						TAG obligatory	If part of the design
	Damper					TAG obligatory	
	Fans & electric motor					TAG obligatory	

These FL declarations of the Breakdown have to be taken into account if they exist in the design.

1.2.2. Recommended

The recommended breakdown goes from level 2 to level 7 of the breakdown. It includes FL, Equipment, Sub-assemblies and articles recommendation.

The principle of this recommended breakdown is that the parts specified should at least appear in a turbomachine breakdown but **are not limited to what is specified**.

The colour code for the recommended breakdown is:

COLOUR CODE	DESCRIPTION STATUS
	TAG recommended
	Equipment recommended
	Assembly recommended
	Articles recommended
	Assembly or articles recommended

The last category "Assembly or articles recommended" depends on the quantity of elements that have to be specified. The principle is to try to group them into sub-assemblies below a FL code or an equipment in order to have a user-friendly listing.

Ex:

Gas Turbine	
Gas turbine description according to OEM breakdown	
Gas turbine Elements	
Maintenance kits	
Kits	
Flexible hoses	
Valves	
Valves that have to be declared	
Solenoid valves	
Ball valve	
Check valves	
Instrumentation	
Instrumentation that must be declared	
Temperature	
Pressure	
Vibrations	
Speed	
switches	
Specific Tools	
Specific tools that must be declared	
specific tools elements	
Air inlet system	
Filters	
Expansion joint	
Air filters	
Exhaust gas system	
Expansion joint	
Exhaust gas system	
Starting system	
Starting motor	
Starting motor	
Starting motor, bearings, bolts, nuts	

1.2.3. Breakdown good practices

In order for this breakdown to be as standardized as possible, some principles concerning the obligatory and recommended breakdown have been established.

1.2.3.1. Obligatory

METIER	GOOD PRACTICE
MECHANICAL	A coupling is attached to the driving machine.
INSTRUMENTATION	UCP is attached to its unit.
ELECTRICAL	MCC is attached to its unit.

1.2.3.2. Recommended

METIER	GOOD PRACTICE
MECHANICAL	The Sub-assembly breakdown must follow the OEM breakdown.
INSTRUMENTATION	Instruments listed in Appendix 6 should not be declared. Instruments should be declared if they are considered

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	as important according to the referential and are physically not part of the machine. If not they should be listed under sub-assemblies of the machine.
ELECTRICAL	Same principles for electrical equipments as for instrumentation.
INSPECTION	The inspection aspects declaration of a turbomachine must answer to the referential

1.2.4. Functional locations Breakdown good practices:

Not all tagged elements need to be declared as functional location in CMIMS.

The elements referred as “tags exclusion” in **Appendix 6** do not need to be declared as functional locations and can only be listed as articles organized as relevant through sub-assemblies.

Ex:

☐	DAL/FPSOT/GAS/COMP /6-KY-4200A	Turbocompressor TEST		
☐	☒ DAL/FPSOT/GAS/COMP /6-YD-4200A	Gas Turbine TEST		
☐	☒ DAL/FPSOT/GAS/COMP /6-YD-4200A-GG	Gas Generator		
☐	☒ 30002875	Gas Generator	A090	
☐	☒ DAL/FPSOT/GAS/COMP /6-YD-4200A-GG-FLX	Flexible Hoses		4313616
☐	☒ DAL/FPSOT/GAS/COMP /6-YD-4200A-GG-VALV	Valves		
☐	☒ DAL/FPSOT/GAS/COMP /6-YD-4200A-GG-INS	Instrumentation, Gas Generator		4321931
☐	☒ 4321928	Temperature	I	1 ASS
☐	☒ 4321944	Flame	I	1 ASS
☐	☒ 4321945	Pressure	I	1 ASS
☐	☒ 4321946	Speed	I	1 ASS
☐	☒ 4321947	Vibration	I	1 ASS
☐	☒ DAL/FPSOT/GAS/COMP /6-PT-42568A	PRES. TRANS. I, POWER TURBINE C&S AIR		4321950

1.2.5. Equipment

An equipment is an element of the machine that has to have the maintenance and inspection life traced independently of its function. An equipment will be a machine assembly that can be refurbished or exchanged by an identical machine assembly during the life of the machine as specified in 4.5.

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Ex:

☐	☐	DAL/FPSOT/GAS/COMP /6-KY-4200A	Turbocompressor TEST			
☐	☐	☐	DAL/FPSOT/GAS/COMP /6-YD-4200A	Gas Turbine TEST		
☐	☐	☐	DAL/FPSOT/GAS/COMP /6-YD-4200A-GG	Gas Generator		
☐	☐	☐	☐	30002875	Gas Generator	A090
☐	☐	☐	☐	1359750	TURBINE, GAS PGT25+ MULTISHAFT 31364KW	L 1 PCE
☐	☐	☐	☐	4313633	NOZZLE ASSEMBLY	I 1 ASS
☐	☐	☐	☐	4313632	CASE ASSEMBLY	I 1 ASS
☐	☐	☐	☐	4313626	COMPRESSOR FRAME	I 1 ASS
☐	☐	☐	☐	4313625	COMPRESSOR SECTION	I 1 ASS
☐	☐	☐	☐	4313612	GEAR BOX	I 1 ASS
☐	☐	☐	☐	4313611	FUEL SYSTEM	I 1 ASS

1.2.6. Sub-assemblies

The breakdown into sub-assemblies must correspond to the Original Equipment Manufacturer's (OEM) breakdown corresponding to the breakdown of articles presented in the SPL file (ref **GS EP EXP 205**). The name of the sub-assembly must correspond to the one given in the OEM's breakdown.

1.2.6.1. Sub-assemblies Breakdown Good Practices:

A sub-assembly must always be linked to a functional location or an equipment. So there can only be one level of sub-assemblies below the functional location.

Ex:

☐	☐	DAL/FPSOT/GAS/COMP /6-ZC-4200A	Power transmission system TEST			
☐	☐	☐	DAL/FPSOT/GAS/COMP /6-ZC-4200A-MULT	Gearbox, Compressor		4321943
☐	☐	☐	☐	1358198	GEARBOX, COMPLETE TYPE: TX45/1C 9363 RPM L	1 PCE
☐	☐	☐	☐	4321941	Gearbox assembly	I 1 ASS

☐	☐	DAL/FPSOT/GAS/COMP /6-KB-4210-20A	Compressor 1st & 2nd stages TEST			
☐	☐	☐	DAL/FPSOT/GAS/COMP /6-KB-4210-20A-BUND	Compressor, 1st & 2nd Stages		4321966
☐	☐	☐	☐	1356809	COMPRESSOR, HIGH PRESS. COMPLETE RC7-6B L	1 PCE
☐	☐	☐	☐	4321961	Rotor	I 1 ASS
☐	☐	☐	☐	4321962	Bearings	I 1 ASS
☐	☐	☐	☐	4321963	Aerodynamic assembly	I 1 ASS
☐	☐	☐	☐	1356964	AERODYNAMIC, HP1 ELEMENT ASSEMB. COMPLET L	1 PCE
☐	☐	☐	☐	1356963	LABYRINTH, ON IMPELLER 1 MAT.:ALUMINIUM L	1 PCE
☐	☐	☐	☐	1356962	LABYRINTH, ON IMPELLER 2 MATER ALUMINIUM L	1 PCE
☐	☐	☐	☐	1356961	LABYRINTH, ON IMPELLER 3 MAT. ALUMINIUM L	1 PCE
☐	☐	☐	☐	1356960	LABYRINTH, FOR INTER BALANCING DRUM ALUM L	1 PCE

A Sub-assembly must contain at least 2 articles and shall be limited to 15 articles.

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☐	☐	☐	☐	4321963	Aerodynamic assembly	I	1	ASS
☐	☐	☐	☐	1356964	AERODYNAMIC, HP1 ELEMENT ASSEMB. COMPLET L		1	PCE
☐	☐	☐	☐	1356963	LABYRINTH, ON IMPELLER 1 MAT.:ALUMINIUM L		1	PCE
☐	☐	☐	☐	1356962	LABYRINTH, ON IMPELLER 2 MATER ALUMINIUM L		1	PCE
☐	☐	☐	☐	1356961	LABYRINTH, ON IMPELLER 3 MAT. ALUMINIUM L		1	PCE
☐	☐	☐	☐	1356960	LABYRINTH, FOR INTER BALANCING DRUM ALUM L		1	PCE

1.2.7. Articles

The definition of the article for specific entity article must be as precise as possible.

1.2.7.1. Articles Breakdown Good Practices

The main article must be directly affiliated to its functional location or equipment.

Ex:

☐	☐	☐	☐	DAL/FPSOT/GAS/COMP /6-ZC-4200A	Power transmission system TEST			
☐	☐	☐	☐	DAL/FPSOT/GAS/COMP /6-ZC-4200A-MULT	Gearbox, Compressor		4321943	
☐	☐	☐	☐	1358198	GEARBOX, COMPLETE TYPE: TX45/1C 9363 RPM L		1	PCE
☐	☐	☐	☐	4321941	Gearbox assembly	I	1	ASS

Appendix 6 Turbine Driven Rotating Equipment: Tags exclusions

The elements listed in the three following sections must not be declared in the company CMIMS. However, these lists are not exhaustive and the user cannot consider that the articles below are the only ones.

Soft tags list (tags for software)

S.NO	TAG NUMBER	TAG DESCRIPTION	COMMENTS
1	BA	INDICATOR,FLAME DETECTION	
2	FQI	FLOW TOTALIZING INDICATOR	
3	FQIR	FLOW TOTALIZING INDICATOR RECORDER	
4	FAH	FLOW ALARM HIGH	
5	FAL	FLOW ALARM LOW	
6	FI	FLOW INDICATOR	
7	FR	FLOW RECORDER	IT DEPENDS (TO BE STUDIED)
8	GDAH	GAS DETECTOR ALARM HIGH	
9	GDAHH	GAS DETECTOR ALARM HIGH HIGH	
10	ILAH	LEVEL ALARM HIGH	
11	ILAL	LEVEL ALARM LOW	
12	ILI	INTERFACE LEVEL INDICATOR	
13	LAHH	LEVEL ALARM HIGH HIGH	
14	LALL	LEVEL ALARM LOW LOW	
15	LI	LEVEL INDICATOR	
16	PAG	PAGA SOUNDER & FLASHING LIGHT	
17	PAH	PRESSURE ALARM HIGH	
18	PAHH	PRESSURE ALARM HIGH HIGH	
19	PAL	PRESSURE ALARM LOW	
20	PALL	PRESSURE ALARM LOW LOW	
21	PDAHH	PRESSURE DIFFERENTIAL ALARM HIGH HIGH	
22	PR	PRESSURE RECORDER	IT DEPENDS (TO BE STUDIED)
23	TAH	TEMPERATURE ALARM HIGH	
24	TAHH	TEMPERATURE ALARM HIGH HIGH	
25	TAL	TEMPERATURE ALARM LOW	
26	TALL	TEMPERATURE ALARM LOW LOW	
27	TR	TEMPERATURE RECORDER	IT DEPENDS (TO BE STUDIED)
28	UA	ESD TRIP STATUS	
29	XA	DISCREPANCY ALARM	
30	XAH	INTRUSION DETECTOR ALARM	
31	XL	RESET STATUS	
32	XS	ESD TRIP COMMAND	
33	ZI	POSITION INDICATION	
34	ZL	VALVE OPEN/OPEN INDICATION	
35	ZLC	VALVE CLOSE INDICATION	
36	ZLO	VALVE OPEN INDICATION	

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Appendix 6
Physical tags part of control panel functional locations

S.NO	TAG NUMBER	DESCRIPTION	COMMENTS
1	FV	FLOW CONTROL VALVE	IT DEPENDS (TO BE STUDIED)
2	HI	HAND POSITION INDICATOR	
3	HIC	HAND INDICATING CONTROLLER	IT DEPENDS (TO BE STUDIED)
4	HS	HAND SWITCH	
5	HSA	SIGNAL, OPEN CLOSE COMMAND	
6	HSC	INCHING TEST SWITCH	
7	HY	CONVERTOR I/H	IT DEPENDS (TO BE STUDIED)
8	HV	HAND CONTROL VALVE	
9	PB	PUSH BUTTON	IT DEPENDS (TO BE STUDIED)
10	POV	PILOT OPERATED VALVE	IT DEPENDS (TO BE STUDIED)
11	PSL	PRESSURE OVERRIDEN SWITCH	IT DEPENDS (TO BE STUDIED)
12	PSLL	PRESSURE SWITCH LOW LOW	IT DEPENDS (TO BE STUDIED)
13	RO	RESTRICTION ORIFICE	IT DEPENDS (TO BE STUDIED)
14	SOV	SOLENOID VALVE	IT DEPENDS (TO BE STUDIED)
15	TSHL	TEMPERATURE SWITCH HIGH LOW	
16	ZS	POSITION SWITCH	IT DEPENDS (TO BE STUDIED)
17	ZSC	POSITION SWITCH CLOSE	
18	ZSO	POSITION SWITCH OPEN	

Physical tags existing in field but not to be created as functional locations

S.NO	TAG NUMBER	DESCRIPTION
1	PDI	PRESSURE DIFFERENTIAL INDICATOR
2	PI	PRESSURE INDICATOR
3	LE	LEVEL ELEMENT
4	PE	PRESSURE ELEMENT
5	TE	TEMPERATURE ELEMENT
6	TI	TEMPERATURE INDICATOR
7	LIGHTING	LIGHTING
8	PG	PRESSURE GAUGE
9	TG	TEMPERATURE GAUGE
10	TW	THERMOWELL
11	PAGA	ALARM VISUAL
12	EARTHING	EARTHING