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**HEXAGON**

# Smart Instrumentation and SDx

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Koushik Ganguly, SI PO

November 12, 2024

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# Agenda

- What is new with Integration2.0.
- SI Workflows with SDx2.
- SPEC\_UDFs mapping in I2.0 - Open Discussion.
- SDx2 in brief.

# Smart Instrumentation with Integration2.0

## What it is?

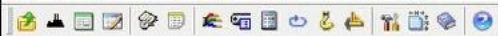
- With Integration 2.0, sharing SI data such as loops, tags, panels, cables, etc along with their properties and relations with SDx2 is continuous and automatic.
- Documents are also shared as objects and can be both continuous shared and manually shared.
- Configurable scheduler where user can set the frequency of refreshing SDx2 data with SI data.

## What are the differences between I2.0 (SDx2) and I1.0 (SPF) ?

- I1.0 is document based, I2.0 is objects based.
- Documents are also shared as objects.
- Data is shared continuously. No manual task is requested for sharing data.
- SDx2 is purely SaaS based.
- Supports Integration for tool's greenfield projects.

## Workflows:

- Continuous share – SI Data & Documents.
- Manual share documents.
- Share status dashboards.



Search



Domain Explorer

Domain Explorer

- Domain Explorer
  - New Refinery
    - Crude Area
      - Crude unit 1**
        - Functional Requirement
        - Loops
        - Loop Layouts
        - Instruments
        - Specification Forms
        - Electrical Tags
        - Uncoupled CS Tags
        - Panels by Category
        - Cables
      - Panels by Location
      - Panels by Category
      - Cables
      - Cross Cables
      - Drawings
      - Telecom Equipment
      - Process Equipment
      - Lines
      - Fieldbus Segments
      - Hook-Ups
      - P&IDs
      - Controllers
      - Drawing Block Types
      - Electrical Equipment
      - Test Equipment

List Count:9

Domain Explorer

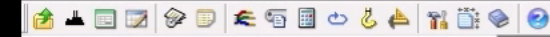
Reference Explorer

Reference Explorer

- Reference Explorer
  - Panels
  - Cables
  - Wiring Equipment
  - Hook-Up Item Libraries
  - Macros
  - Typical Loops
  - Typical Instruments
  - Queries

List Count:8

Reference Explorer



Search

Domain Explorer

- Domain Explorer
  - New Refinery
    - Crude Area
      - Crude unit 1
        - Functional Requirement
        - Loops
          - 101-A -001
          - 101-F -100
          - 101-F -102
          - 101-F -1550
          - 101-F -1551
          - 101-F -1552
          - 101-F -201
          - 101-F -2212
          - 101-F -2214
          - 101-F -300
          - 101-F -400
          - 101-F -500
          - 101-F -51
          - 101-F -52
          - 101-F -53
          - 101-F -54
          - 101-F -55
          - 101-F -56
          - 101-F -57
          - 101-F -58
          - 101-F -905
          - 101-F -906
          - 101-F -907
          - 101-F -908
          - 101-F -909
          - 101-F -910
          - 101-F -919
          - 101-H -101

List Count: Domain Explorer

Reference Explorer

- Reference Explorer
  - Panels
  - Cables
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  - Typical Loops
  - Typical Instruments
  - Queries

List Count:8 Reference Explorer

Domain Explorer%1182

Domain Explorer

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        - Process Equipment
        - Lines
        - Fieldbus Segments
        - Hook-Ups
        - P&IDs
        - Controllers
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        - Electrical Equipment
        - Test Equipment

List Count:

Domain Explorer %1182



Reference Explorer%1805

# SPEC\_UDFs mapping in I2.0 - Open Discussion

Example:

- In form 1, attribute Actuator type is the SPEC\_UDF C166 attribute name.
- In form 2, attribute Actuator type is the SPEC\_UDF C30 attribute name.
- In form 3, attribute Actuator type is the SPEC\_UDF C200 attribute name.

In Integration1.0 the mapping was based in DB fields, therefore we need to modify the forms so that in all the forms actuator type has the same UDF.

In I2.0 we plan that the mapping will be based on SPEC\_DD fields (which are the fields headers), then the SI admin will do a single mapping for “Actuator Type”). SI will do an internal conversion between this attribute value to the correct DB field. All the user need to do is to make sure that the fields that he need to share have a value in SPEC\_DD (header)

# SDx2 In brief

- Hexagon's advanced, SaaS based solution for engineering, operations and maintenance purpose.
- Standardized, continuous (also supports manual) sharing of information from our design tools (S3D, SPID, SI and SEL) in HxGN SDx2.
- Passing through a correlation and consolidation process, linking up all the related information and building/updating a consolidated view (i.e., what users see when navigating or looking at hotspotted models/drawings).
- Opening the above for third-parties to use the APIs to do the same; pairing this with the ability to bring in many other data sources and put them through the same process.
- CFIHOS data model support.
  
- HxGN SDx2 comprises the following solution areas:
  - Asset Lifecycle Data and Information Management.
  - Asset Modelling and Visualization (digital twin).
  - Engineering Change Management.
  - Work Packaging.
  - Document Management and Document Control.
  - Design Review and Issue Management.



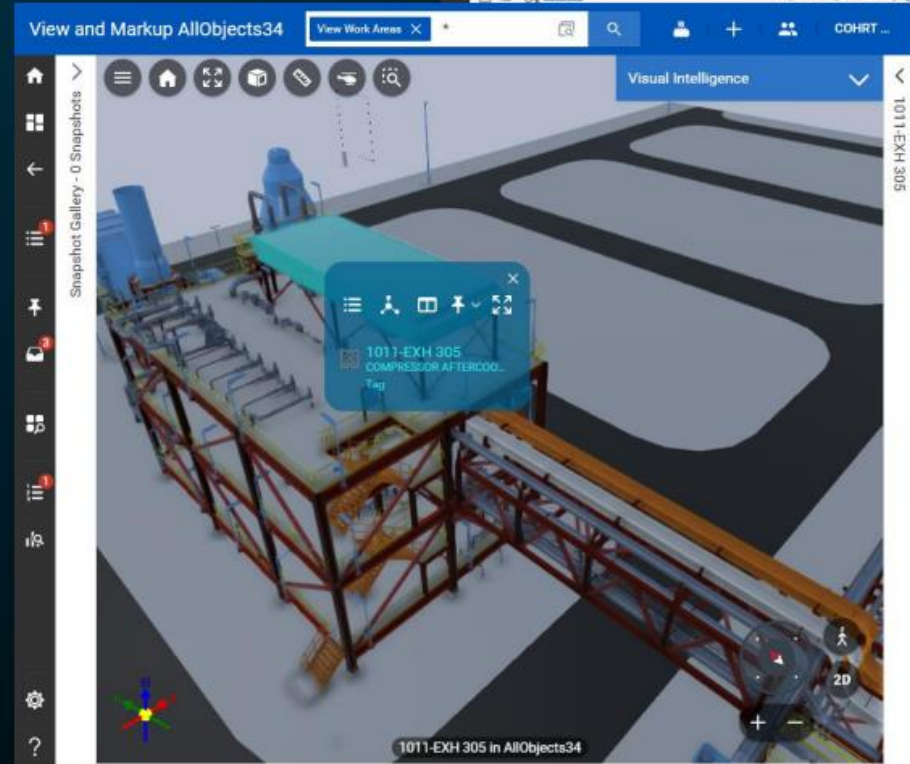
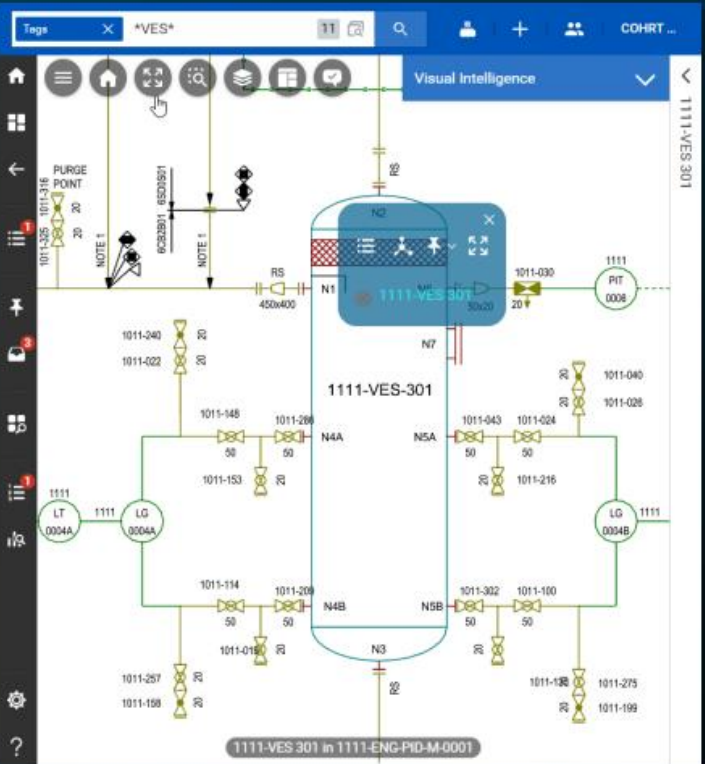
# Detailed and granular Tags/Components, Relationships, Properties

This screenshot shows the 'Feature sets' menu in the software. It includes a search bar and several categories of features:

- Assets** and **Models** (with search icons)
- All Items** and **Tags** (with search icons)
- Inconsistent Equipment Components**, **Inconsistent Equipments**, and **Inconsistent Instrument Loops** (with search icons)
- Inconsistent Instruments**, **Inconsistent Pipelines**, and **Inconsistent Piping Components** (with search icons)
- Inconsistent Ports** and **Inconsistent Tags** (with search icons)

This screenshot displays a table titled 'Results: Tags' with the following columns: Name, Description, Config, Class, Type 1, Type 2, Type 3, Cor., Dry., Ap., ApproveStatus, Creation User, and Creation Date. The table lists various components such as 'PR\_OUTBACK\_PROJ1', 'LEGEND SHEET', and 'Equipment'.

Name	Description	Config	Class	Type 1	Type 2	Type 3	Cor.	Dry.	Ap.	ApproveStatus	Creation User	Creation Date
0000-000		PR_OUTBACK_PROJ1	Piping Compon...	In-line Fil...	Flanges	Ball Range						
0000-009		PR_OUTBACK_PROJ1	Piping Compon...	Piping Valve	Linear Valv...	Globe valve						
0000-022		PR_OUTBACK_PROJ1	Piping Compon...	Piping Valve	Linear Valv...	Globe valve						
0000-189		PR_OUTBACK_PROJ1	Piping Compon...	Piping Valve	Angle valve							
0000-187	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Fluid trans...	Fan						
0000-186	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Process ve...	Liquid str...						
0000-120	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Solid separ...	Filter						
0000-121	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Process ve...	Low press...						
0000-122	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Process eq...	Electric m...						
0000-123	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Process ve...	Liquid str...						
0000-124	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Process ve...	Liquid str...						
0000-128	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Heat transf...	Air-cooled ...						
0000-129	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Fluid trans...	Compressor						
0000-126	LEGEND SHEET	PR_OUTBACK_PROJ1	Equipment	Process E...	Process ve...	Column						
0000-198		PR_OUTBACK_PROJ1	Piping Compon...	Piping Valve	Linear Valv...	Gate valve						
0000-201		PR_OUTBACK_PROJ1	Piping Compon...	Piping Valve	Sway valves							
0000-202		PR_OUTBACK_PROJ1	Piping Compon...	Piping Valve	Linear Valv...	Float valve						
0000-212		PR_OUTBACK_PROJ1	Piping Compon...	In-line Fil...	Flanges	Ball Range						



This screenshot shows a table of documents or files, likely generated from a software application. The table has columns for Name, Description, and Document. The list includes various engineering documents and plans.

Name	Description	Document
1011-ENG-DWG-SS-0001_01	Required Description	
1011-ENG-DWG-SS-0001_01	Interactively revised in SDx	
1011-ENG-DWG-SS-0002_01	Required Description	
1011EquipPlan	Required Description	
1011EquipPlan	Required Description	
101A-1011A-AI-441-01	Required Description	
101A-1011A-G-229-01	Required Description	
101A-1011A-G-232-01	Required Description	
300000-10-ENG-DWG-I-0001_01	Required Description	
300000-10-ENG-DWG-I-0002_01	Required Description	
L-PipingPlan	Required Description	

# Data (In-) Consistency Overview

View 1011-VES 301 in AllObjs1

QUERY OUTBACK\_PROJ1
+ CREATE OUTBACK\_PROJ1
ROLE 4 Selected
COHRT ...

1011-VES 301

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Actions

- Create Change Request (...)
- Export Data
- History
- Relationship Builder...
- Update...
- View Data Inconsistencies
- View Item in Active Draw...

Relationships

Tags with Inconsistencies

Grouped by Tag Class

3 groups

- Instrument 27 items
- Piping Component 5 items
- Equipment 3 items

Inconsistency Report for 1011-VES 301

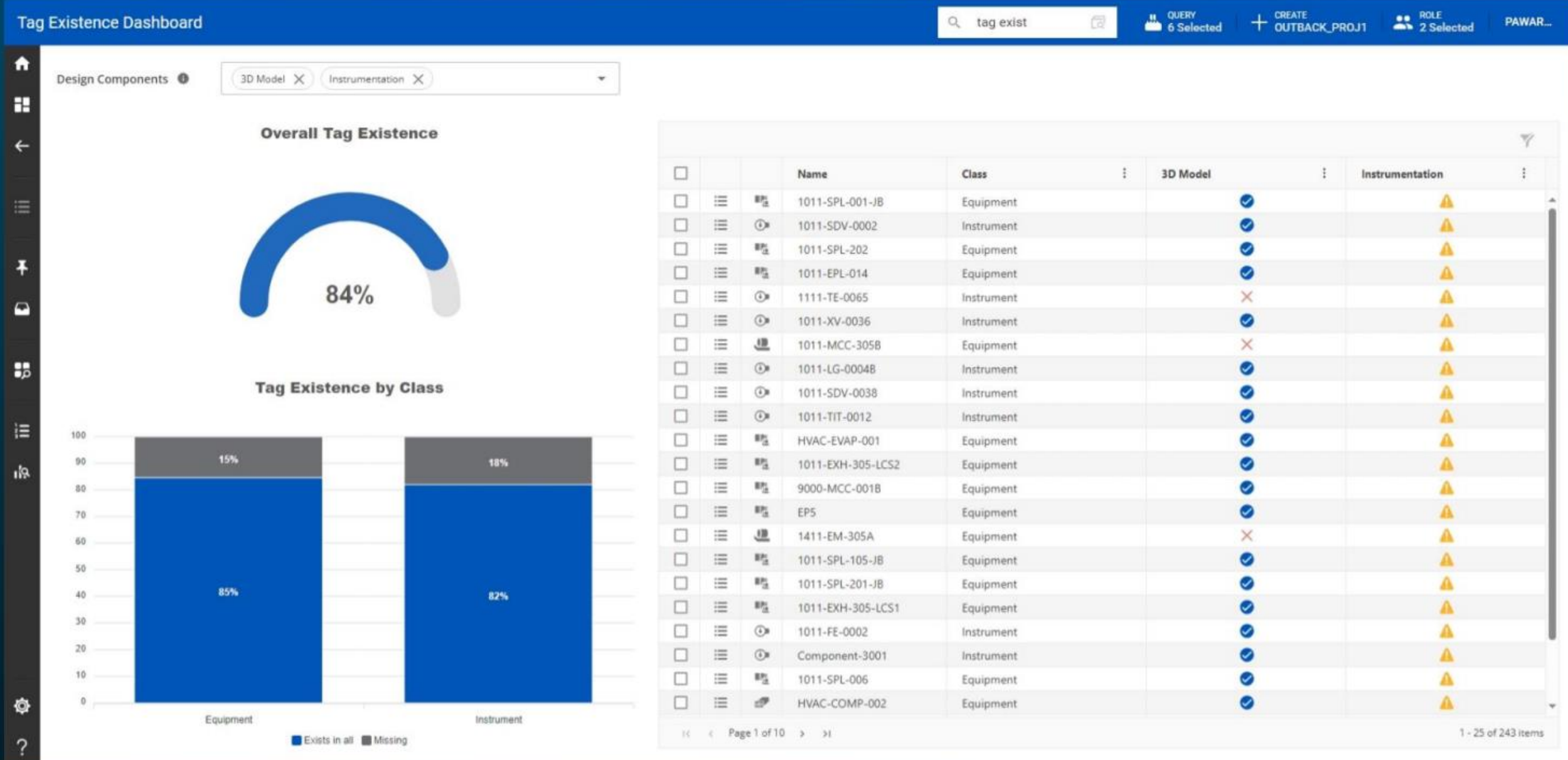
Property	Consolidated	3D	P&ID
Vessel Internal Diameter	1,600 mm	<Not Applicable>	1,600 mm
Tangent Tangent Length	5,000 mm	<Not Applicable>	5,000 mm
Tag Type Description	Narrow 1 diameter, 1 chamber, elliptical head v...		Narrow 1 diameter, 1 chamber, elliptical head v...
Tag Type	Item	Item	Item
Tag Sequence Number	301	<Not Applicable>	301
Tag Prefix	VES	<Not Applicable>	VES
Tag Class	Equipment	Equipment	Equipment
Specific Type4	Elliptical head vertical drum	Vertical drum	Elliptical head vertical drum
Specific Type3	Liquids storage vessel	Liquids storage vessel	Liquids storage vessel
Specific Type2	Process vessel	Process vessel	Process vessel
Specific Type1	Process equipment	Process equipment	Process equipment
Part Number	SVVWSE210-E	SVVWSE210-E	
Nozzles	1011-VES 301//Noz/N1,1011-VES 301//Noz/N...	N4A,N4B,N5A,N5B,N6,N7	
Name	1011-VES 301	1011-VES-301	1011-VES-301
Long Material Description	SUCTION SCRUBBER	<Not Applicable>	SUCTION SCRUBBER
Is Typical	False	<Not Applicable>	False
Insulation Type	None	None	None
Insulation Requirement	None	None	None
Insulation Purpose	None	None	None

LEGEND

1 - 25 of 35 items

CLOSE

# Tag and Object Existence Overview – what tool shared data on what





Questions?