



Badrakh Energy LLC
Zuuvch-Ovoo Uranium Project
H376512

Technical Specification
Engineering Management
Asset Tagging and Identification

Technical Specification

Asset Tagging and Identification

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1. Introduction

This Asset Tagging and Identification Specification has been developed to provide a standard for numbering to be applied to the Zuuvch-Ovoo Uranium Project.

By establishing a standard numbering system, a more consistent configuration of the Hatch Project Delivery Systems can be achieved. This will also ensure that all expected attributes for numbering are available in each of the various Hatch applications.

This should be read in conjunction with the project controls project numbering procedures manual, which details the different non-asset-based coding structures and how they apply to Hatch projects, along with the document management numbering procedure that details the coding structures to apply to documentation and drawings.

This Asset Tagging and Identification Specification is based on the standard Hatch PLP template, with modifications detailed below that have been incorporated into the specification.

2. Scope

This scheme includes numbering formats for all items that have been identified as requiring tagging on a process plant or normally be expected to be tagged in the execution of a project. Additional schemes such as the tagging of buildings and rooms have been included to identify electrical loads within facilities for inclusion in electrical load lists.

2.1 Of note is the identification of equipment types using a 3-character code. These codes are designed to be at a more “generic type” level, i.e., PMP-Pump, rather than using very specific 4-character code. This will reduce the tag changes as the design evolves; an example is where a centrifugal pump may be replaced with a diaphragm pump. In this case, the pump tag would normally require renumbering in a 4-letter tag convention to maintain the integrity of such a specific system.

2.2 The system has been set up to ensure that codes are unique across disciplines.

3. References

This asset tagging and identification document should be read in conjunction with the reference documents indicated below.

Table 3-1: Reference Documents

Document Number	Description
H373996-8000-101-026-0001	Facility Breakdown Structure

4. Terminology

4.1 Number String

This is the complete number with all its numbering elements.

NNNN-AAA-(N)NNN(A)

Number String

4.2 Number Elements

These are the separable groups of characters (numbers or alphas) within the number string that are used for identification.

NNNN-AAA-(N)NNN(A)

Number Elements

4.3 Mask

The numbering mask defines the type and maximum number of characters or numbers in a numbering element within the number string.

NNNN-AAA-(N)NNN(A)

Mask

5. Number Conventions

5.1 Delimiters

Between each number element within a number string a “ – ” delimiter shall be used to allow the easy recognition of the elements and to facilitate data manipulation.

5.2 Use of Redundant Characters

Within the number elements for the sequential number component, all the required number of characters are to be used i.e., if the numbering element mask is NNN and the current number is 22 then 022 will be used.

5.3 Numeric and Alpha Characters

In each numbering convention, the following characters will be used to indicate usage:

- N = Number only (1, 2, 3, etc.)

- A = Alpha only (A, B, C, etc.). The letters “O” and “I” should be avoided to prevent confusion with the digits “0” and “1”
- X = Either number or alpha can be used.

5.4 Tags and Unique Numbers

The term “TAG” refers to the identifier given to a piece of equipment, instrument or other plant asset that uniquely identifies that particular item in the plant. This identifier is what will be used to uniquely recognise items throughout the project and plant life cycle, for master equipment list, procurement, material management, construction and commissioning tracking and plant maintenance systems.

The “TAG” identifies the item within the process and can be defined as a “Functional Location Identifier” as it defines a location within the process function. As items are swapped out during operations and maintenance, the replacement item would assume the role and TAG of the replaced item but maintain its own unique serial or identification number for maintenance and warehousing purposes.

5.5 Optional Characters

If a number element shows a character enclosed in brackets (i.e., (A)) it indicates that the character is optional. The brackets are not to be shown in the displayed tag.

Redundant delimiters created as a result of not including an optional character are not to be shown.

5.6 Prohibited Characters

The following characters cannot be used in the tagging or identification of assets:

- ~ " # % & * : < > ? / \ { | }
- Leading and trailing spaces are not allowed inside the string.

6. Functional Breakdown Structure

6.1 Facility Breakdown Structure (FBS)

6.1.1 Purpose

The Facility Breakdown Structure (FBS) is used to define plant area, facility, sub facility and system within the plant.

The FBS is part of the tagging convention that defines uniqueness in the numbering, therefore it should always be used as part of the unique identifier.

6.1.2 Mask

The FBS mask will be NNNN, which will be built on the following logic:

- The FBS structure for the Zuuvch-Ovoo Uranium Project is detailed in the Facility Breakdown Structure document, H373996-8000-101-026-0001.

7. Hatch Part Codes

To facilitate consistent capturing of information on projects to enable cross project reporting of like equipment, all tagged equipment, piping specials, instruments, etc. have an assigned part code; refer to the relevant appendices of this document. For Mechanical equipment, this part code is more commonly referred to as the equipment subtype and is sometimes referred to as the tag subtype.

This part code is not included in the items tag number but is entered as attribute information against each tag in the engineering lists. The part code defines a more specific classification for the type of equipment, e.g., where a pump tag uses PMP as the Equipment Type Code (sometimes called the Tag Type), the associated part code could be PMPJ to signify a screw pump.

8. Process Streams

8.1 Purpose

8.1.1 Process streams are fundamental entities of a process plant. As such, they require careful numbering and data tagging.

8.1.2 The process stream number is displayed on the PFD (Process Flow Diagram) and on the stream table. The stream number is a tag, and in itself does not hold any design information.

8.2 Numbering Convention

Due to the variable nature of processes, there is no fixed convention for allocating stream numbers. The following are guidelines that will provide some order in the way stream numbers are chosen:

- Allocate a range of numbers to be used for each process area. This is particularly important where more than one process engineer is allocating numbers on PFDs
- A stream belongs to an area when it is *generated* in that area. That is, if a stream flows from Area 1 into Area 2, for stream numbering purposes, it belongs to Area 1
- When assigning numbers around a piece of equipment, leave gaps between numbers to allow for a possible future addition of streams. A gap of 5 is recommended
- To avoid having to map PFD stream numbers to a unique set of stream numbers for Hatch systems, the PFD stream numbers should be unique across the plant facility and not re-assigned over time.

9. Primary Tags (Equipment Tags)

9.1 Purpose

This convention will apply for the identification of mechanical and electrical equipment. Note that if an equipment is a child of another piece of equipment, then either this tag format or the Secondary Tag format (see Section 10) may be used based project preferences.

9.2 Convention

The convention for primary tag numbering is as follows:

NNNN – AAA – (N)NNN(A)

Table 9-1: Primary Tag Numbering Convention

No. Element	Description	Examples
NNNN	FBS – Area/Facility/Sub-Facility/System	0210, 0660, 1600
AAA(A)	Equipment Type Code Note: The fourth character in the equipment type code (A) for mechanical tagged equipment is defined as the equipment sub-type and is not included in the identification of the tag number. This fourth character is stored as an attribute in the equipment list and is used to differentiate between the different types of similar equipment Examples for mechanical tagged equipment: CTW – First three characters in the equipment type code used to identify a cooling tower CTWA – The fourth character indicates a forced draft type cooling tower. The A is not part of the tag number but only part of the attribute in the equipment list CTWB – The fourth character indicates an induced draft type cooling tower. The B is not part of the tag number but only part of the attribute in the equipment list CTWG – The fourth character indicates a natural draft type cooling tower. The G is not part of the tag number but only part of the attribute in the equipment list Refer to Appendix B for all equipment type codes	BIN, FDR, etc. As per Appendix B.1 and Appendix B.2
(N)	Unique identification number, set at '1' for the Zuuvch-Ovoo Uranium Project	1
NNN	Unique sequential number per FBS Note: Unique sequential numbers must be assigned to each equipment within a specific area, regardless of equipment type, in order to accommodate electrical and instrumentation numbering conventions Example: Two pumps and two agitators belong in area 2245. The appropriate tag numbers will be 2245-PMP-1001, 2245-PMP-1002, 2245-AGI-1003, 2245-AGI-1004 The same sequential number (2245-PMP-1001 and 2245-AGI-1001) is not to be assigned to different equipment types within the same FBS. The reason is that the sequential number is the unique identifier used by the electrical and instrumentation groups to link electrical and instrumentations commodities to a specific equipment	101, 302, 503, 799, etc.

No. Element	Description	Examples
	If both the pump and the agitator utilised 1001 as the sequential number, the electrical and instrumentation commodities associated to the pump would not be distinguishable from the agitator	
(A)	Parallel equipment indicator	A, B, C, etc., if required

Table 9-2: Primary Tag Convention Examples

Example	Description
0560-SCN-1004	Screen 004, located in area 0560
1310-CTW-1100	Cooling Tower 100 located in area 1310
4760-PMP-1001	Pump 001 in area 4760
4760-PMP-1010	Pump 010 in area 4760

10. Secondary Tags (Equipment Tags)

10.1 Purpose

This convention may apply to all components which are children (part of) of other components. Refer to Table 10-2 for examples of Secondary Tags.

Secondary Tag format applies only to Electrical and Instrumentation equipment. Mechanical equipment does not use the Secondary tag format.

It is not essential to use the Secondary Tag format for all child components. For example, an agitator that is the child of the tank in which it is mounted would be tagged using the Primary Tag format.

10.2 Convention

The convention for secondary tags is as follows:

NNNN-AAA-(N)NNN(A)

↑
Number String

Table 10-1: Secondary Tag Numbering Convention

Numbering Element	Description	Examples
NNNN-AAA(A)- (N)NNN(A)	Tag number of parent equipment as explained in Section Table 9-1 of this document	2721-SCN-1004 As per Appendix B.1
Then		

Numbering Element	Description	Examples
AAA	Equipment type	As per Appendix B.2
NN	Sequential number starting at 01 and incrementing by one for each component serving the given piece of equipment	01, 02, 03, 04, etc.

Table 10-2: Secondary Tag Numbering Examples

Example	Description
2271-SCN-1004-MOT-01	The first motor on screen 004 which is located in area 2271
1132-CTW-1009-VSD-01	The first variable speed drive associated with cooling tower 009, which is located in area 1132
1132-CRU-1007-ISO-02	The second isolator associated with crusher 007 which is located in area 1132

11. Equipment Nozzles (Nozzle Tag)

11.1 Purpose

The purpose of the nozzle tag is for the identification of nozzles on equipment.

11.2 Convention

The convention for equipment nozzles is as follows:

NNNN-AAA(A)-(N)NNN(A)-ANN(A)

|

Equipment Prefix

Table 11-1: Equipment Nozzle Numbering Convention

Numbering Element	Description	Examples
NNNN-AAA-(N)NNN(A)	Equipment Tag	3070-TNK-007
Then		
A	Nozzle identifier	N = Nozzle M = Manway
NN	Sequential number per equipment tag. Include preceding zeros for single digits	01,02, 03, etc.
(A)	Suffix	A, B, C, etc.

Table 11-2: Equipment Nozzle Numbering Examples

Example	Description
3010-TNK-007A-M01	Manway number 1, on tank number 007A in area 3010
3070-TNK-007-N01A	Nozzle number 1A, on tank number 007 in area 3070
3050-TNK-092-N12	Nozzle number 12, on tank number 092 in area 3050

12. Mobile Plant Numbering (Mobile Plant Tag)

12.1 Purpose

Uniquely identify all mobile equipment. Due to the potential to move mobile equipment between areas and sites, the mobile plant convention does not identify a FBS mask within its string.

12.2 Convention

The convention for mobile plant is as follows:

NNNN – AAAA – NN

Table 12-1: Mobile Plant Numbering Convention

Number Elements	Description	Examples
NNNN	FBS – Area/Facility/Sub-Facility/System NOTE: Where mobile equipment items are not specific to a given plant area, 0000 shall be used identifying them as plant wide	0000, 2210, 3101, 6022
AAAA	Equipment Subtype code	MOEA, MOEB, as per Appendix B
NN	Mobile plant sequential number per mobile equipment type	32

Table 12-2: Mobile Plant Numbering Example

Example	Definition
0000-MOEJ-32	Dozer number 32, plant wide area 0000

13. Instrument Tags

13.1 Purpose

The purpose of the instrument number is to uniquely identify the instrument. It should be noted that this number identifies the physical instrument type and is also the control system tag.

13.2 Convention

The convention for numbering of instruments is as follows:

NNNN – AA(A)(A)(A)(A)(A) – (N)NNN(A)(A)

Table 13-1: Instrument Numbering Convention

Numbering Element	Description	Examples
NNNN	FBS – Area/Facility/Sub-Facility/System	3011, 6202

Numbering Element	Description	Examples
AA(A)(A)(A)(A)(A)(A)	Instrument type (Max. of eight characters)	FIT, as per Appendix D
(N)	Identification Number. Refer to Table 9-1	1
NNN	A loop number is assigned to each group of instruments required to perform the desired function of the monitoring or control scheme Loop numbers should relate to main equipment number where possible	101, 302, 503, 799, etc.
(A)	Parallel equipment indicator	A, B, C, etc. if required
(A)	Parallel instrument indicator	A, B, C, etc. if required

Table 13-2: Instrument Numbering Examples

Example	Description
2011-FIT-1204	Flow indicating transmitter 204 located in area 201
2101-LIT-1302	Level indicating transmitter 302 located in area 2101

14. Primary Tags (Control and Automation Equipment Tags)

14.1 Control and Automation Equipment Numbering

14.1.1 Purpose

The purpose of the Control and Automation equipment numbering is to uniquely identify the equipment.

14.1.2 Convention

The convention for numbering control and automation equipment is as follows:

NNNN – AAAA – (N)NNN(A)

Table 14-1: Control and Automation Equipment Numbering Convention

Numbering Element	Description	Examples
NNNN	WBS – Area/Facility/Sub-Facility/System	4320 – Ex. Grinding Area
A	System Code	As per Appendix B.3
AAA	Equipment Code	As per Appendix B.3
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequential Number per WBS	001, 002, 003, etc.
(A)	Parallel Equipment Indicator (if required)	A, B, C, etc.

Table 14-2: Control and Automation Equipment Numbering Examples

Example	Description
4320-ACAM-1701	Security Camera 701 in area 4320
2779-CNOU-1001	Communication network outlet in area 2779
3331-CPNL-1702	Communications Panel 702 in area 3331

Multiple pieces of equipment with the same equipment code installed in a single cabinet shall use the same sequential number and be uniquely identified by the use of the parallel equipment indicator. For example, two fibre patch panels installed in cabinet 3433-CPNL-1702 shall be tagged 3433-CFPP-1702A and 3433-CFPP-1702B. As an alternative the 2 cabinets can use the secondary tag system (Section 10) resulting in 3433-CPNL-1702-CFPP-01 and 3433-CPNL-1702-CFPP-02.

14.2 Control Valve and Safety Element Tagging

14.2.1 Purpose

The purpose of the Control and Automation control valve and safety element numbering is to uniquely identify the equipment.

14.2.2 Convention

The convention for numbering control and automation equipment is as follows:

NNNN – A(A)(A)(A) – (N)NNN

Table 14-3: Control and Automation Control Valve and safety element Tagging Convention

Numbering Element	Description	Examples
NNNN	WBS – Area/Facility/Sub-Facility/System	4320 – Ex. Grinding Area
A	Measured/Initiating Variable as per ISA 5.1 2022 Table 4.1	As per Appendix B.3
(A)	Variable Modifier as per ISA 5.1 2022 Section 4.1 if required	As per Appendix B, and Appendix B.3
(A)(A)(A)	Succeeding Letters as per ISA 5.1 2022 Section 4.1. At least one letter needs to be selected	As per Appendix B.3
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequential Number per WBS	001, 002, 003, etc.

Table 14-4: Control and Automation Equipment Numbering Examples

Example	Description
4320-FV-1001	Flow control Valve in Area 4320
2799-PSE-1001	Rupture disc 001 located in area 2799

15. Cable Numbering (Cable Tag)

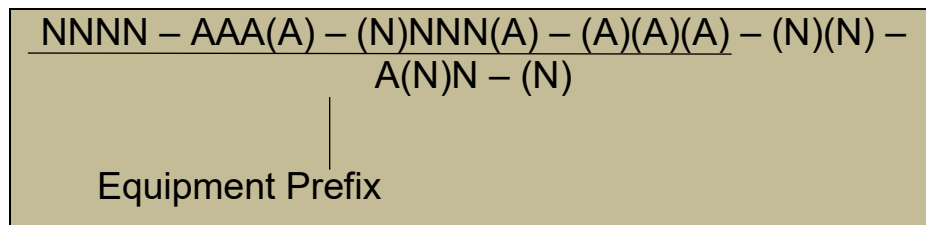
15.1 Electrical Cable Numbering

15.1.1 Purpose

Cables shall be identified by a coded number, which uniquely identifies the cable to the equipment to which it is connected or the lighting circuit to which it is connected. The cable number will also identify the service that the cable performs for the equipment.

15.1.2 Convention

The convention for electrical cable numbering is as follows:



Note that those elements of the cable number that are not necessary for positive identification shall be eliminated. Note also that the mask for the component prefix differs from the standard component equipment number mask.

Note the cable shall be tagged from field devices/equipment toward junction boxes or control cabinets or upstream equipment.

Table 15-1: Electrical Cable Numbering Convention

Number Element	Description	Examples
NNNN – AAA(A) – (N)NNN(A) – (A)(A)(A) – (N)(N)	Associated electrical load tag, associated equipment, electrical motor, associated instrument tag, control panel or junction box	3114-MCC-001 2041-PMP-0115A-MOT-01
Then		
A	Cable service identifier for cable types	Refer to Appendix C
(N)N	Sequential number for multiple cables of the same type (optional)	01, 02, 03, etc.
(N)	Suffix for multiple circuits (optional)	1, 2, etc.

Table 15-2: Electrical Cable Numbering Convention Examples

Example Number	Service Description
2041-PMP-0115AMOT-1-L01	First low voltage power cable to motor 01 associated with pump PMP-0115A
2041-PMP-0115AMOT-1-L02	Second low voltage power cable to motor 1 associated with pump PMP-0115A
3114-MCC-001-J01	First instrument cable to MCC001



Example Number	Service Description
3114-MCC-001-L01	First power cable to MCC 01, located in area 3114

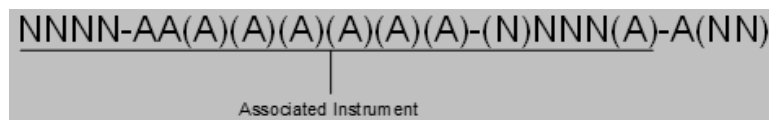
15.2 Instrument Cable Numbering

15.2.1 Purpose

Cables shall be identified by a coded number, which uniquely identifies the cable to the instrument to which it is connected. The cable number will also identify the service that the cable performs for the equipment.

15.2.2 Convention

The convention for cable numbering is as follows:



Note that those elements of the cable number that are not necessary for positive identification shall be eliminated. Note also that the mask for the component prefix differs from the standard component equipment number mask.

Table 15-3: Instrument Cable Numbering Convention

Number Element	Description	Examples
NNNN – AA(A)(A)(A)(A)(A)(A) – (N)NNN(A)(A)	Associated instrument	1200-FV-1200
Then		
A	Cable service identifier for cable types	Refer to Appendix C
(NN)	Sequential number for multiple cables (or multiple circuits) of the same type (optional)	01, 02, 03, etc.

Table 15-4: Instrumentation Cable Numbering Examples

Example Number	Service Description
1200-FV-1200-J	Instrument cable to valve 200 located in area 1200
2350-FIT-1200-L	Instrument power cable to flow meter 200 located in area 2350
2350-FIT-1200-J	Instrument cable to flow meter 200 located in area 2350

S1-405-PIT-2030B/405-ETI-1008G	WCPA Feed Preparation	405-PIT-2030B	405-ETI-1008G
C1-405-ETI-1009F/405-ETI-1009E	WCPA Feed Preparation	405-ETI-1009F	405-ETI-1009E

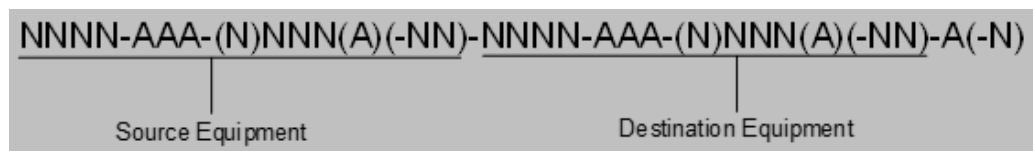
15.3 Communication Cable Numbering

15.3.1 Purpose

Cables shall be identified by a coded number, which uniquely identifies the source and destination equipment to which it is connected. The cable number will also identify the service that the cable performs for the equipment.

15.3.2 Convention

The convention for communication cable numbering will include typically both source and destination details as follows:



Note that those elements of the cable number that are not necessary for positive identification should be eliminated. Square brackets are not to be included.

Table 15-5: Communication Cable Numbering Convention

Number Element	Description	Examples
NNNN – AAAA – (N)NNN(A)	Associated Source Equipment	1200-CCPP-1200
(– NN/NN)	Port number at the Source Equipment	05-Port 5
NNNN – AAAA – (N)NNN(A)	Associated Destination Equipment	1200-CCPP-1300
(– NN/NN)	Port number at the Destination Equipment	01-Port 1
Then		
A	Cable service identifier for cable types	Refer to Appendix C
(NN)	Sequential number for multiple cables (or multiple circuits) of the same type (optional)	01, 02, 03, etc.

Table 15-6: Communications Cable Numbering Examples

Example Number	Service Description
3323-CCPP-1702C-02-3323-CNSW-1037-02-T	Copper patch cord connected between port 2 of communication copper patch panel 3323-CCPP-1702C and port 2 of communication network switch 3323-CNSW-1037
3331-CCPP-1702C-05/06-3331-CNOU-1001-01/02-T	Copper cables at port 5 and 6 of copper patch panel 3331-CCPP-1702C, connected to ports 1 and 2 of telecom outlet 3331-CNOU-1001



16. Instrument Wire Numbering

16.1 Purpose

Wires shall be identified by a coded number, which uniquely identifies the wire to the equipment to which it is connected or the circuit to which it is connected. The wire number will also identify the service that the wire performs for the equipment.

16.2 Convention

The convention for wire numbering is as follows:

NNNN-AA(A)(A)(A)(A)(A)-(N)NNN(A)(XXXX)

Instrument Prefix

Note that those elements of the wire number that are not necessary for positive identification shall be eliminated. Note also that the mask for the component prefix differs from the standard component equipment number mask.

Table 16-1: Wire Numbering Convention

Number Element	Description	Examples
NNNN – AA(A)(A)(A)(A)(A) – (N)NNN(A)	Instrument tag	1110-FIT-001
Then		
(XXXX)	Identifier (up to Max. 4) including '/', '–', or '(')	L, N, 1, 2, +, – , etc.

Table 16-2: Wire Numbering Examples

Example Number	Service Description
1110-FS-1103(+)	+ wire to the first flow instrument 1103, located in area 1110
1110-FS-1103/L24	Power wire to flow instrument 1103

17. Raceway/Conduit Numbering (Raceway Tag)

17.1 Purpose

All raceways shall be identified by a coded number, which uniquely identifies the raceway or conduit.

17.2 Convention

The convention for identification of raceways and conduit is as follows:

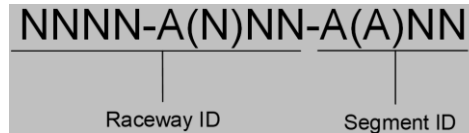


Table 17-1: Raceway/Conduit Numbering Convention

Number Element	Description	Examples
NNNN	FBS – Area/Facility/ Sub-Facility/System (area determined by origin of raceway)	3111, 6220
A	Use Case	C = Control H = High Voltage Power J = Instrumentation L = Low Voltage Power M = Medium Voltage Power N = Low Voltage Power and Control O = Control and Instrumentation R = Instrumentation and Communication T = Communication V = VSD Cable X= Others, where raceway is unique
(N)	Identification Number. Refer to Table 9-1	1
NN	Raceway Sequential Number	01, 02
A(A)	Segment Type	B = Bus Duct C =Conduit D =Duct Bank L = Ladder Type Cable Tray LC = Ladder Type Cable Tray with Cover N = Slotted Type Tray NC = Slotted Type Tray with Cover S = Solid Bottom Type Tray SC = Solid Bottom Type Tray with Cover
NN	Segment sequence number used to make each segment unique (unique for each Raceway ID)	01, 02

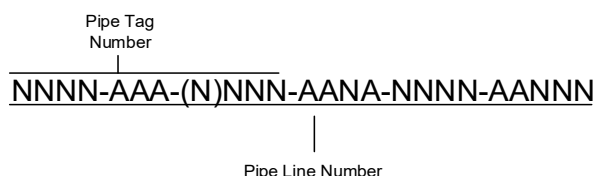
Table 17-2: Raceway/Conduit Numbering Examples

Example Number	Definition
1110-N01-L01	Area 1110, low voltage power and control, raceway number 01, Ladder type, segment number 01

Example Number	Definition
114-L01-L01	Area 114, Low voltage power, raceway number 01, Ladder type, segment number 01
114-C01-L01	Area 114, control, raceway number 01, Ladder type, segment number 01
114-C01-C02	Area 114, control, raceway number 01, Conduit type, segment number 02

18. Process Piping Line Numbering

There are two elements to the piping number scheme. The relationship between these have been defined below:



18.1 Pipe Tag Number

18.1.1 Purpose

The process line number is displayed on the P&ID (Piping and Instrumentation Diagram) and all piping deliverables. The process line numbering convention comprises of the piping ID and associated technical data relating to line size insulation and heat tracing requirements.

18.1.2 Convention

The convention for identification of pipe tag numbers is as follows:

NNNN – AAA – (N)NNN

Table 18-1: Pipe Tag Number Convention

No. Element	Description	Examples
NNNN	FBS – Area/Facility/Sub-Facility/System (pipeline originating area determined by material/fluid flow direction)	3110, 6220
AAA	Service code	LFI, as per P&ID Legend Sheets
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequential number per FBS, Fluid code and Spec. Same sequential number is not assigned to different lines within the same FBS	001, 492...

Table 18-2: Piping Line Number Example

Example Number	Definition
3101-WCS-1492	Service WCS, sequential number 1492 originating in area 3101

18.2 Pipeline Number

18.2.1 Purpose

The pipeline number is displayed on the P&ID (Piping and Instrumentation Diagram) and all piping deliverables. The pipeline numbering convention comprises of the Pipe Tag Number and associated technical data relating to material class, line size, insulation, and heat tracing requirements.

18.2.2 Convention

The convention for pipeline numbering is as follows:

NNNN-AAA-(N)NNN-AANA-NN(N)(N)-AA(N)(N)(N)

|
Pipe Tag
Number

Table 18-3: Pipeline Numbering Convention

Number Element	Description	Examples
NNN – AAA – (N)NNN	Pipe Tag Number	3506-WCS-1492
Then		
AANA	Piping material class designation	CA1A
NN(N)(N)	Nominal Pipeline size – DN in mm Note: Option for imperial projects, use NPS in inches	150
AA	Insulation/Heat tracing type	NI, PP, etc., – as per P&ID Legend Sheets
(N)(N)(N)	Insulation thickness NOTE: The insulation thickness (N)(N)(N) is to be used as a standard, but projects may opt to not use this	25, 50...

Table 18-4: Pipeline Numbering Examples

Example Number	Definition
2021-WCS-0492-CA1A-150-NI	Service WCS, sequential number 0492, Piping Material Class CA1A, Nominal Diameter 150 mm, not insulated, originating in area 2021
3110-WCS-1492-CA1A-150-PP50	Service WCS, sequential number 1492, Piping Material Class CA1A Nominal Diameter 150 mm,

Example Number	Definition
	personnel protection insulation 50 mm thick, originating in area 3110

18.2.2.1 Individual numbers shall be assigned to the following lines:

- Each complete line running between tagged equipment
- Lines between battery limits and tagged equipment
- Branch lines from one of the above running to an unrelated line or tagged equipment
- Bypass lines around major equipment
- Miscellaneous lines:
 - ♦ Vents to Atmosphere
 - ♦ Drains
 - ♦ Relief valve discharge to atmosphere, or open drain
 - ♦ Vessel Overflow.

18.2.2.2 Do not Tag:

- Pipe trim such as high point vents, low drain points without pipe to drains and instrument connections
- Bypass lines around inline instrumentation and control valves.

19. Piping Material Class Designation

19.1 Purpose

To identify the piping material class for the piping that will be installed in the plant and its associated services.

19.2 Convention

The convention for piping material class designation is as follows:

AANA

Table 19-1: Piping Material Class Specification Convention

No. Element	Description	Examples
A	Material type	C, as per P&ID Legend Sheets
A	Material Grade	A, as per P&ID Legend Sheets
N	Pressure Class	1, as per P&ID Legend Sheets
A	Identifying number, sequential based on material type, pressure class and material grade, e.g., corrosion allowance	A, B, C, etc.

Table 19-2: Piping Material Class Specification Example

Example No.	Definition
CA1A	Carbon Steel, Material Grade CS A53, CL150, first specification of this type

20. Piping Manual Valve Data Sheet Numbering

20.1 Purpose

Uniquely identifies a specification for a valve data sheet.

20.2 Convention

The convention for valve data sheet numbering is as follows:

AAA – NNN

Table 20-1: Valve Data Sheet Numbering Convention

No. Element	Description	Examples
A	Valve Data Sheet Prefix	Only "V"
AA	Valve type indicator	VBA (denotes Ball Valve) Refer P&ID Legend Sheets
N	Valve pressure class	1, 3, etc.
NN	Data sheet number for the type of valve	

Table 20-2: Valve Data Sheet Numbering Example

Example	Definition
VBA-102	Ball Valve Data sheet VBA 102, pressure class 150

21. Piping Manual Valve Numbering

21.1 Purpose

This convention will apply for the unique identification of manual piping valves for plant isolation procedures, commissioning, operation, and control. As per project requirements, all manual piping valves shall be uniquely identified.

21.2 Convention

The convention for manual piping valves is as follows:

NNNN – AA – (N)NNN(A)

Table 21-1: Piping Valve Numbering Convention

No. Element	Description	Examples
NNNN	FBS – Area/Facility/Sub-Facility/System (indicates the physical area that the valve resides in, not necessarily the FBS of the pipeline it is located on)	3101, 6229

No. Element	Description	Examples
AA	Type "MV" for manual valves Note: Hand Valves with actuation and/or limit switches designed and supplied by Instrumentation utilise HV as per ISA instrumentation codes	Use only "MV"
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequential number per FBS. Include preceding 0s	001, 002, 003, 999, etc.
(A)	Parallel valve indicator	A, B, C, etc. if required

Table 21-2: Piping Valve Number Examples

Example	Description
2210-MV-1004	The fourth manual valve, located in area 2210
0210-MV-1004	The fourth manual valve, located in area 0210

22. Specialty Piping Items Data Sheet Numbering

22.1 Purpose

The purpose of the Specialty Piping Item data sheet numbering is used to identify specific special piping items (e.g., inline basket strainers, air filters, etc.) with a common size, specification, and performance requirements.

22.2 Convention

The convention for specialty piping items specifications is as follows:

AA – NNNNN

Table 22-1: Specialty Piping Item Data Sheet Specification Numbering Convention

No. Element	Description	Examples
AA	Indicates Specialty Item Prefix	Only "SP"
NN	Specialty Piping Item Type	20 – Safety Shower Refer to Appendix E or P&ID legend sheets
NNN	SP Size Specific Sequential Number	Generated as required

Each data sheet must be specific to a single size, material, and performance specification to allow for material take-offs and procurement.

Table 22-2: Specialty Piping Item Data Sheet Specification Numbering Examples

Example	Definition
SP-20001	SP item, DN32 Safety Shower, data sheet number 001
SP-20002	SP item, DN25 Safety Shower, data sheet number 002

23. Specialty Piping Item Numbering

23.1 Purpose

This convention will apply to the specialty piping item to create a unique identifier used for plant commissioning, operation, and control. If a project requires unique identification; SP items will be identified as follows:

23.2 Convention

The convention for Specialty Piping Items is as follows:

NNNN – AA – (N)NNN(A)

Table 23-1: Specialty Piping Item Number Convention

No. Element	Description	Examples
NNNN	FBS – Area/Facility/Sub-Facility/System (indicates the physical area that the specialty piping item resides in, not necessarily the FBS of the pipeline it is located on)	3101, 6022
AA	SP for Specialty Piping Item Type	Use only “SP”
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequential number per FBS	001, 002, 003, 999, etc.
(A)	Parallel SP item indicator	A, B, C, etc. if required

Table 23-2: Specialty Piping Item Number Example

Example	Description
2521-SP-1004	The fourth SP item located in area 2521

24. Tie-In Numbering

24.1 Purpose

Used to identify the interface points between vendor packages and other parts of the plant and its equipment, battery limits in design responsibility and/or supply, and brown field site tie-ins.

24.2 Convention

The convention for tie-in tagging is as follows:

NNNN – AA – (N)NNN

Table 24-1: Tie-In Numbering Convention

No. Element	Description	Example
NNNN	FBS – Area/Facility/Sub-Facility/System	4311, 6224
A	Indicates tie-in type	B – Battery Limit V – Vendor

No. Element	Description	Example
		T – Brownfield Tie-In
A	Discipline identifier is the discipline that is responsible for the tie-in	C – Civil E – Electrical J – Instrumentation M – Mechanical P – Piping S – Structural
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequential Number per FBS and discipline	980

Table 24-2: Tie-In Numbering Example

Example	Definition
4311-TP-1051	Piping brownfield tie-in 51 located in area 4311

25. Foundations/Footings/Piers/Pedestals/etc.

25.1 Purpose

Used to uniquely identify foundations, footings, etc.

25.2 Convention

The convention for foundation identification is as follows:

NNNN – AAA – (N)NNN

Table 25-1: Foundation Numbering Convention

No. Element	Description	Examples
NNNN	FBS – Area/Facility/Sub-Facility/System	3181, 6228
AAA	Foundation/footing, etc.	Only “FDN”
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequential number per FBS	001, 002, 003, etc.

Table 25-2: Foundation Number Examples

Example	Description
3020-FDN-1001	Footing 001, in area 3020
3100-FDN-1001A	Footing 001A, in area 3100

26. Building Numbering

26.1 Purpose

The purpose of building numbers is to uniquely identify each building in a facility.

26.2 Convention

The convention for building and room numbers is as follows:

AAA – (N)NNN

Table 26-1: Building and Room Numbering Convention

No. Element	Description	Example
AAA	Building type	Refer to Appendix B
(N)	Identification Number. Refer to Table 9-1	1
NNN	Sequence number of the building per FBS, building type	1, 2, 3, etc.

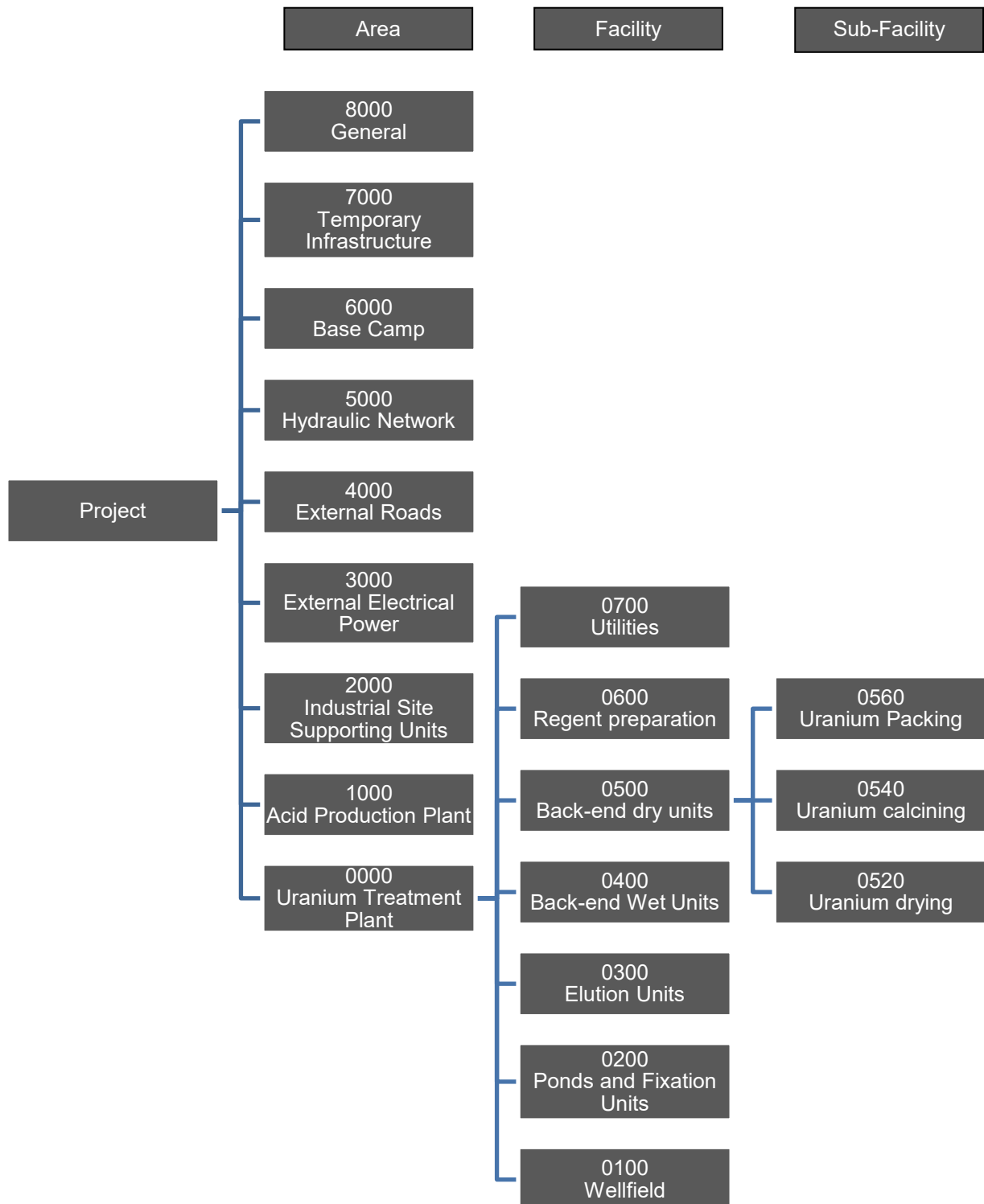
27. Reference Documents

The Instrumentation, Systems, and Automation Society (ISA)-ISA-5.1-1984-(R1992)
Instrumentation Symbols and Identification.



Appendix A : Facility Breakdown Structure Example

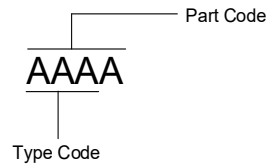
Example 1





Appendix B : Equipment Types

B.1 Mechanical Equipment Type Codes



Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
ACC	Accumulator		
		ACCA	Bellows Accumulator
		ACCB	Bladder Accumulator
		ACCC	Condensing Tank Accumulator
		ACCD	Diaphragm Accumulator
		ACCE	Expansion Tank Accumulator
		ACCF	Fluid/Gas Accumulator
		ACCG	Generic Accumulator
		ACCH	Piston Accumulator
ACN	Air Curtain		
		ACNA	Air Curtain
ACU	Air Conditioner		
		ACUA	Air Conditioner
		ACUB	Air Cooled Packaged A/C
		ACUC	Air Cooled Split A/C
		ACUD	Water Cooled Packaged A/C
		ACUE	Water Cooled Split A/C
AGC	Air Gravity Conveyor		
		AGCA	Air Gravity Conveyor
		AGCB	Fluidised Silo Discharge
AGI	Agitator		
		AGIA	Loop Agitator
		AGIB	Blade Agitator
		AGIC	Tee Agitator
AHU	Air Handling Unit		
		AHUA	Air Handling Unit
APF	Apron Feeder		
		APFA	Apron Feeder
AUC	Autoclave		
		AUCA	Horizontal Autoclave

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		AUCB	Vertical Autoclave
BCR	Belt Conveyor		
		BCRA	Plant Belt Conveyor
		BCRB	Air Supported Belt Conveyor
		BCRC	High Angle (Cleat) Belt Conveyor
		BCRD	High Angle (Sandwich) Belt Conveyor
		BCRE	Overland Belt Conveyor
		BCRF	Pipe Conveyor
		BCRG	Shuttle Belt Conveyor
		BCRH	Tripper Conveyor
		BCRI	Belt Feeder
		BCRJ	Pocket Belt Conveyor
		BCRK	Enclosed Belt Conveyor
BGH	Baghouse		
		BGHA	Generic Baghouse
		BGHB	Pulse Jet (High Pressure Low Volume) Baghouse
		BGHC	Pulse Jet (Mid Pressure Mid Volume) Baghouse
		BGHD	High-Volume Low-Pressure Baghouse
		BGHE	Bin Filter
		BGHF	Shaker Baghouse
		BGHG	Reverse Air Baghouse
		BGHH	Pleated/Cartridge Filter
BHE	Bag Handling Equipment		
		BHEA	Big Bag Loader
		BHEB	Big Bag Unloader
		BHEC	Small Bag Loader
		BHED	Small Bag Unloader
		BHEE	Palletiser
		BHEF	Plastic Shrink Wrapper
BIN	Bin		
		BINA	Bin
		BINB	Ball Bin
		BINC	Ball Charging Bucket
		BIND	Solid Waste Bin
		BINE	Bulk Container
		BINF	Measuring Flask

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
BLO	Blower		
		BLOA	Regenerative Blower
		BLOB	Positive Displacement Blower
		BLOC	Centrifugal Blower
		BLOD	Helical Screw Blower
BMV	Bulk Material Valves		
		BMVA	Clam Gate
		BMVB	Blind
		BMVC	Cone Valve
		BMVD	Diaphragm Valve
		BMVE	Orifice Plate
		BMVF	Pinch Valve
		BMVG	Rod Gate
		BMVH	Swing Valve
		BMVI	Iris Valve
		BMVJ	Chute Gate
BOL	Boiler		
		BOLA	Dry Backfire Tube Boiler
		BOLB	Wet Backfire Tube Boiler
		BOLC	Solid Fuel Water Tube Boiler
		BOLD	Liquid/Gas Fuel Water Tube Boiler
		BOLE	Thermal Oil Boiler
		BOLF	Hot Water Boiler
		BOLG	Generic Boiler
		BOLH	Waste Heat Recovery Boiler
BUE	Bucket Elevator		
		BUEA	Bucket Elevator
		BUEB	Continuous Belt Bucket Elevator
		BUEC	Continuous Chain Bucket Elevator
		BUED	Centrifugal Belt Bucket Elevator
		BUEF	Centrifugal Chain Bucket Elevator
BUN	Bunker		
		BUNA	Bunker
BUR	Burner		
		BURA	Gas Fuel Burner
		BURB	Liquid Fuel Burner
		BURC	Solid Fuel Burner

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		BURD	Multi Fuel Burner
BUV	Butterfly Valve		
		BUVA	Butterfly Valve
CEN	Centrifuge		
		CENA	Skimmer Pipe Centrifuge
		CENB	Basket Centrifuge
		CENC	Conical Screen Centrifuge
		CEND	Decanter Centrifuge
		CENE	Disk Centrifuge
		CENF	Peeler Centrifuge
		CENG	Generic Centrifuge
		CENH	Pusher Centrifuge
		CENI	Screen Bowl Centrifuge
		CENJ	Gravity Concentrator
CFB	Circulating Fluid Bed		
		CFBA	Circulating Fluid Bed Calciner
		CFBB	Circulating Fluid Bed Combustor
		CFBC	Circulating Fluid Bed Roaster
		CFBD	Circulating Fluid Bed Reducer
		CFBE	Circulating Fluid Bed Reactor
CHL	Chlorinator		
		CHLA	Standard Chlorinator
		CHLB	Hypo Chlorinator
CHU	Chute		
		CHUA	Chute
		CHUB	Slewing Chute
		CHUC	Head Chute
		CHUD	Telescopic Chute
		CHUE	Engineered Chute
		CHUF	Retractable Chute
CLC	Calciner		
		CLCA	Generic Calciner
CLM	Column		
		CLMA	Absorption Column
		CLMB	Adsorption Column
		CLMC	Ion Exchange Column
		CLMD	Distillation Column

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		CLME	Elution Column
CLS	Classifier		
		CLSA	Rake Classifier
		CLSB	Bowl Classifier
		CLSC	Cone Classifier
		CLSD	Drag Classifier
		CLSE	Elutriator
		CLSF	Spiral Classifier
		CLSG	Log Washer
		CLSH	Hindered Settler
		CLSI	Tank Classifier
		CLSJ	Counter-Current Classifier
		CLSK	Pocket Classifier
CMP	Compacting Equipment		
		COMPA	Briquetter
		COMPB	Extruder
		COMPC	Roller Compactor
		COMPD	Cold Isostatic Press
		COMPE	Hot Isostatic Press
COM	Compressor		
		COMA	Axial Compressor
		COMB	Positive Displacement Compressor
		COMC	Centrifugal Compressor
		COMD	Diaphragm Compressor
		COME	Screw Compressor
		COMF	Reciprocating Compressor
		COMG	Generic Compressor
CON	Condenser		
		CONA	Air Cooled Condenser
		CONB	Water Cooled Condenser
		CONC	Evaporative Condenser
		COND	Generic Condenser
CRD	Car Dumper		
		CRDA	Single Car Dumper
		CRDB	Multiple Car Dumper
CRU	Crusher		
		CRUA	Crusher (Generic)

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		CRUB	Cone/Hydrocone Crusher
		CRUC	Cage Mill
		CRUD	De-lumper
		CRUE	High Pressure Grinding Roll
		CRUF	Roll Crusher
		CRUG	Gyratory Crusher
		CRUH	Hammer mill
		CRUI	Impact crusher
		CRUJ	Jaw Crusher
		CRUK	Sizer
CRY	Crystalliser		
		CRYA	Draft Tube Baffle Crystalliser
		CRYB	Forced Circulation Crystalliser
		CRYC	Generic Crystalliser
CTW	Cooling Tower		
		CTWA	Forced Draft Cooling Tower
		CTWB	Induced Draft Cooling Tower
		CTWC	Natural Draft Cooling Tower
		CTWD	Generic Cooling Tower
CVO	Conveying		
		CVOA	Generic Conveyor
CYG	Gas Cyclone		
		CYGA	Generic Cyclone
		CYGB	Gas Cyclone
		CYGC	Multiclone
		CYGD	Dual Cyclone
		CYGE	Quad Cyclone
		CYGF	Drop Out Box
CYH	Hydro Cyclone		
		CYHA	Hydro Cyclone
		CYHB	Hydro Cyclone Cluster
DAM	Dam		
		DAMA	Dam
DCC	Drag Chain Conveyor		
		DCCA	Drag Chain Conveyor
		DCCB	En Masse Conveyor
		DCCC	Drag Chain Feeder

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
DGS	Degasser		
		DGSA	Flow Degasser
		DGSB	Vacuum Degasser
DHM	Dehumidifier		
		DHMA	Dehumidifier
DIS	Distributor		
		DISA	Generic Distributor
		DISB	Splitter Box
		DISC	Pressure Distributor
		DISD	Distributor Box
		DISE	Turnhead Distributor
		DISF	Feed Box
DIV	Diverter Valve		
		DIVA	Diverter Valve
		DIVB	Two Outlet Diverter Slide Gate
		DIVC	Multiple Outlet Diverter Slide Gate
		DIVD	Multiple Outlet Rotary Distributor
		DIVE	Basket Valve
		DIVF	Discharge Plow
DMP	Damper		
		DMPA	Backdraft Damper
		DMPB	Bypass Damper
		DMPC	Control and Balancing Damper
		DMPD	Generic Damper
		DMPE	Smoke Damper
		DMPF	Fire Damper
		DMPG	Gravity Damper
		DMPH	Fire/Smoke Damper
DOM	Dome		
		DOMA	Dome
DPV	Dump Valve		
		DPVA	Double Dump Valve
		DPVB	Single Dump Valve
DRY	Dryer		
		DRYA	Flash Dryer
		DRYB	Plate Dryer
		DRYC	Conveyor Dryer
		DRYD	Desiccant Dryer

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		DRYE	Refrigerant Dryer
		DRYF	Fluid Bed Dryer
		DRYG	Generic Dryer
		DRYH	Rotary Dryer
		DRYI	Infrared Dryer
		DRYJ	Spray Dryer
		DRYK	Steam Dryer
		DRYL	Tower Dryer
		DRYM	Microwave Dryer
		DRYN	Vacuum Dryer
DSS	Dust Suppression		
		DSSA	Dust Suppression System
		DSSB	Water Canon
		DSSC	Mister
DUT	Duct		
		DUTA	Duct
EDC	Eductor/Ejector		
		EDCA	Eductor/Ejector
ELC	Electrolyser		
		ELCA	Alkaline Electrolyser
		ELCB	Proton Exchange Membrane (PEM) Electrolyser
		ELCC	Solid Oxide Fuel Electrolyser
		ELCD	Generic Electrolyser
ELE	Elevator		
		ELEA	Personnel/Freight Elevator
ELW	Electrowinning Cell		
		ELWA	Electrowinning Cell
EPE	Electrorefining Process Equipment		
		EPEA	Electrorefining Cell
		EPEB	Electrorefining Cathodes
		EPEC	Electrorefining Anodes
		EPED	Electrorefining Anode Bag Assemblies
		EPEE	Cathode Washing Stripping and Packaging Machines
ESP	Electrostatic Precipitator		
		ESPA	Dry Electrostatic Precipitator

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		ESPB	Wet Electrostatic Precipitator
		ESPC	Dust Collector
EVA	Evaporator		
		EVAA	Plate Evaporator
		EVAB	Bare Tube Coil Evaporator
		EVAC	Shell and Tube Evaporator
		EVAD	Shell and Coil Evaporator
		EVAE	Tube in Tube Evaporator
		EVAF	Finned Tube Evaporator
		EVAG	Generic Evaporator
EXJ	Expansion Joint		
		EXJA	Expansion Joint
FAD			
		FADA	Air Cannon
		FADB	Bin Vibrator
		FADC	Air Sweeper
		FADD	Hammer
		FADE	Shaker
		FADF	Fluidising Pad
FAN	Fan		
		FANA	Axial Fan
		FANB	Centrifugal Fan
		FANC	Mixed Flow Fan
FBD	Fluid Bed		
		FBDA	Fluid Bed Calciner
		FBDB	Fluid Bed Classifier
		FBDC	Fluid Bed Combustor
		FBDD	Fluid Bed Cooler
		FBDE	Fluid Bed Roaster
		FBDF	Fluid Bed Reducer
		FBDG	Fluid Bed Reactor
FDR	Feeder		
		FDRA	Generic Feeder
		FDRB	Walking Floor Feeder
		FDRC	Wobbler
FEX	Fire Extinguisher		
		FEXA	Fire Extinguisher
FIL	Filter		

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		FILA	Basket Filter
		FILB	Belt Filter
		FILC	Candle Filter
		FILD	Disc Filter
		FILE	Drum Filter
		FILF	Filter Press
		FILG	Generic Filter
		FILH	Cartridge Filter
		FILI	Leaf Filter
		FILJ	Media Filter
		FILK	Membrane Filter
		FILL	Weir
FLT	Flotation Cell		
		FLTA	Flotation Cell
		FLTB	Flotation Tank Cell
		FLTC	Flotation Column Cell
		FLTD	Flash Flotation Cell
		FLTE	Jameson Flotation Cell
		FLTF	Direct Flotation Reactor
FLV	Flash Vessel		
		FLVA	Atmospheric Flash Vessel
		FLVB	Pressurised Flash Vessel
FTE	Furnace Tapping Equipment		
		FTEA	Mud Gun
		FTEB	Drill
		FTEC	Mud Gun and Drill
		FTED	Slag Stopper
FUR	Furnace		
		FURA	Annealing Furnace
		FURB	Blast Furnace
		FURC	Calcining Furnace
		FURD	Direct Reduction Furnace
		FURE	Electric Arc Furnace
		FURF	Converting Furnace
		FURG	Cupola Furnace
		FURH	Heat Treating Furnace
		FURI	Ignition Furnace



Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		FURJ	Induction Furnace
		FURK	Vacuum/Degassing Furnace
		FURL	Ladle Furnace
		FURM	Melting Furnace
		FURN	Submerged Arc Furnace
		FURO	Other Furnace
		FURP	Pelletising Furnace
		FURQ	Plasma Furnace
		FURR	Reactor Furnace
		FURS	Sintering Furnace
		FURT	Primary Refining Furnace
		FURU	Reheat/Heating Furnace
		FURV	Slag Cleaning Furnace
		FURW	Smelting Furnace
GEN	Generator		
		GENA	Diesel Engine Driven Generator
		GENB	Gas Engine Driven Generator
		GENC	Steam Turbine Generator
		GEND	Hydro Turbine Generator
		GENE	Wind Energy Generator
		GENF	Nuclear Fuel Generator
		GENG	Geothermal Energy Generator
GOV	Governor		
		GOVA	Governor
GRZ	Grizzly		
		GRZA	Actuated Grizzly
		GRZB	Stationary Grizzly
HOD	Hood		
		HODA	Hood
		HODB	Dust Collection Hood
		HODC	Fume Hood
		HODD	Ventilation Hood
HOP	Hopper		
		HOPA	Hopper
		HOPB	Ball Loading Hopper
		HOPC	Weigh Hopper
HST	Hoist		
		HSTA	Generic Hoist

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		HSTB	Mine Hoist
HTP	Heat Pump		
		HTPA	Air Cooled Heat Pump
		HTPB	Water Cooled Heat Pump
HTR	Heater		
		HTRA	Solar Heater
		HTRB	Thermoelectric Heater
		HTRC	Convection Heater
		HTRD	Exhaust Gas Heater
		HTRE	Electric Heater
		HTRF	Fuel Fired Heater
		HTRG	Generic Heater
HUM	Humidifier		
		HUMA	Atomising Humidifier
		HUMB	Steam Humidifier
		HUMC	Wetted Media Humidifier
HXC	Chiller/Cooler		
		HXCA	Air Cooled Chiller
		HXCB	Liquid Cooled Chiller
		HXCC	Screw Cooler
		HXCD	Generic Chiller
HXH	Heat Exchanger		
		HXHA	Coil Heat Exchanger
		HXHB	Plate & Frame Heat Exchanger
		HXHC	Spiral Plate Heat Exchanger
		HXHD	Shell & Tube Heat Exchanger
		HXHE	U Tube Heat Exchanger
		HXHF	Double Pipe Heat Exchanger
		HXHG	Generic Heat Exchanger
		HXHH	Economiser
HYS	Hydraulic System		
		HYSA	Hydraulic Power Unit
		HYSB	Hydraulic Die Changer
		HYSC	Hydraulic Thrust System
ICE	Combustion Engine		
		ICEA	Internal Combustion Engine
INC	Incinerator		
		INCA	Incinerator

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
JIB	Jib Crane		
		JIBA	Jib Crane
LBU	Lubrication Unit		
		LBUA	Lubrication Unit
LDL	Ladle		
		LDLA	Conventional Ladle
		LDLB	Bottom Discharge Ladle
		LDLC	Ladle Cover
LFT	Lift		
		LFTA	Articulating Boom Lift
		LFTB	Forklift
		LFTC	Container Handler
		LFTD	Telescopic Boom Lift
		LFTE	Scissor Lift
LHR	Liner Handler		
		LHRA	Liner Handler
LND	Launder		
		LNDA	Launder
		LNDB	Water Cooled Launder
LOV	Louver		
		LOVA	Operable Louver
		LOVB	Fixed Louver
MCR	Mobile Cranes		
		MCRA	Mobile Service Crane
		MCRB	Mobile Crane
MGS	Magnetic Separator		
		MGSA	Low-Intensity Magnetic Separator (LIMS)
		MGSB	High-Intensity Magnetic Separator (HIMS)
		MGSC	Permanent Magnet Magnetic Separator
		MGSD	Superconducting High Gradient Wet Magnetic Separator (HGMS)
		MGSE	Superconducting Open Gradient Dry Magnetic Separator (OGMS)
		MGSF	Generic Magnetic Separator

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
MHT	Multihearth		
		MHTA	Multihearth Calciner
		MHTB	Multihearth Roaster
		MHTC	Multihearth Reducer
		MHTD	Multihearth Reactor
MIE	Mist Eliminator		
		MIEA	Mist Collector
MIL			
		MILA	Autogenous Mill
		MILB	Ball Mill
		MILC	SAG Mill
		MILD	Rod Mill
		MILE	Vertical Stirred Mill
		MILF	ISA Mill
		MILG	Generic Mill
		MILH	Vibrating Mil
MIX	Mixer		
		MIXA	Paddle Mixer
		MIXB	Planetary Mixer
		MIXC	Plate Mixer
		MIXD	Drum Mixer
		MIXE	Pug Mixer
		MIXF	Ribbon Mixer
		MIXG	Generic Mixer
		MIXH	Screw Mixer
		MIXI	In-line Mixer
		MIXJ	Tumble Mixer
MMH	Molten Metal Handling		
		MMHA	Ladle Metallurgy Station
		MMHB	Ladle Tilter
		MMHC	Ladle Turret
		MMHD	Ladle Transfer Car
		MMHE	Rubber Tired Carrier
		MMHF	Torpedo Car
		MMHG	Continuous Casting Machine
		MMHH	Molten Metal Spoon
MOE	Mobile Equipment		

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		MOEA	Backhoe
		MOEB	Bus/Personnel Carrier
		MOEC	Car
		MOED	Drill
		MOEE	Boat
		MOEF	Loader
		MOEG	Grader
		MOEH	–Shovel/Excavator
		MOEI	Soil Compactor
		MOEJ	Dozer
		MOEK	Bobcat
		MOEL	Tractor
		MOEM	Trencher
		MOEN	Van
MUE	Mobile Underground Equipment		
		MUEA	Drill-Rock Bolter
		MUEB	Shotcrete Sprayer
		MUEC	Shotcrete Transmixer
		MUED	Jumbos
OCR	Overhead Crane		
		OCRA	Top Running Single Girder Crane
		OCRB	Top Running Multiple Girder Crane
		OCRC	Under Running Single Girder Crane
		OCRD	Under Running Multiple Girder Crane
		OCRE	Gantry Crane
		OCRF	Specialty Crane
OHD	Overhead Door		
		OHDA	Generic Overhead Door
		OHDB	Roll-Up Overhead Door
		OHDC	High Pressure Sectional Overhead Door
OVN	Oven		
		OVNA	Specialty Oven
		OVNB	By-product Coke Oven
		OVNC	Curing Oven
		OVND	Drying Oven
		OVNE	Heat Recovery Coke Oven

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
PAU	Pre-Assembled Unit		
		PAUA	Module
		PAUB	Skid
		PAUC	E-house
		PAUD	Generic Pre-assembled Unit
PBX	Pump Box		
		PBXA	Pump Box
PCP	Pneumatic Conveyor		
		PCPA	Pneumatic Conveyor Pipe
		PCPB	Air Slide
PLV	Pulveriser		
		PLVA	Ball Pulveriser
		PLVB	Disc Pulveriser
		PLVC	Ring and Puck Pulveriser
PMP	Pump		
		PMPA	Peristaltic Pump
		PMPB	Multistage Centrifugal pump
		PMPC	Centrifugal Pump
		PMPD	Diaphragm Pump
		PMPE	Piston/Plunger Pump
		PMPF	Fuel Pump
		PMPG	Gear Pump
		PMPH	Progressive Cavity Pump
		PMPI	Rotary Vane Pump
		PMPJ	Screw Pump
		PMPK	Slurry Pump
		PMPL	Lobe Pump
		PMPM	Submersible Pump
		PMPN	Sump Pump
		PMPO	Vacuum Pump
		PMPP	Vertical Pump
		PMPR	Air Operated Diaphragm Pump
PND	Pond		
		PNDA	Pond
PNF	Pan Conveyor		
		PNFA	Pan Conveyor
		PNFB	Pan Feeder

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
PVL	Pressure Vessel		
		PVLA	Receiver
		PVLB	Condensing Tank
		PVLC	Deaerator
QUE	Quench Unit		
		QUEA	Quench Unit
RBR	Rock Breaker		
		RBRA	Rock Breaker
RCL	Reclaimer		
		RCLA	Bridge Bucket Wheel Reclaimer
		RCLB	Boom Bucket Wheel Reclaimer
		RCLC	Grabs Reclaimer
		RCLD	Drum Reclaimer
		RCLE	Bridge Scraper Reclaimer
		RCLF	Rotary Plough Scraper Reclaimer
		RCLG	Drag Chain Reclaimer
		RCLH	Portal Scraper Reclaimer
		RCLI	Semi-Portal Scraper Reclaimer
RCV	Roller Conveyor		
		RCVA	Roller Conveyor
RER	Reactor		
		RERA	Reactor
RFR	Reciprocating Feeder		
		RFRA	Reciprocating Feeder
RGR	Regenerator		
		RGRA	Regenerator
RKN	Rotary Kiln		
		RKNA	Direct Fired Rotary Kiln
		RKNB	Indirect Fired Rotary Kiln
ROU	Reverse Osmosis Unit		
		ROUA	Standard RO Unit
		ROUB	Desalination RO Unit
ROV	Rotary Valve		
		ROVA	Rotary Valve
		ROVB	Blow Through Rotary Valve
RTR	Retractor		
		RTRA	Suspension Hook Retractor

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		RTRB	Spring Retractor
		RTRC	Reel Retractor
RTT	Retort		
		RTTA	Batch Retort
		RTTB	Continuous Retort
SAM	Sampler		
		SAMA	Sampling System
		SAMB	In-line Sampler
		SAMC	Cross Stream Sampler
		SAMD	Pendulum Sampler
		SAME	Vezin Sampler
		SAMF	Gravity Sampler
SCN	Screen		
		SCNA	Vibratory Single Deck Screen
		SCNB	Vibratory Multiple Deck Screen
		SCNC	Orbital Single Deck Screen
		SCND	Orbital Multiple Deck Screen
		SCNE	Roller Screen
		SCNF	Band Screen
		SCNG	Linear Screen
		SCNH	Trommel
		SCNI	Sieve
SCR	Scrubber		
		SCRA	Absorber
		SCRB	Bio Bed Scrubber
		SCRC	Bubble Column Scrubber
		SCRD	Deluge Scrubber
		SCRE	Eductor Scrubber
		SCRF	Fluid Bed Scrubber
		SCRG	Generic Scrubber
		SCRH	Mechanical Scrubber
		SCRI	Multi Vane Scrubber
		SCRJ	Spray Tower Scrubber
		SCRK	Tray Tower Scrubber
		SCRL	Venturi Scrubber
SCV	Screw Conveyor		
		SCVA	Screw Conveyor
		SCVB	Screw Feeder

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		SCVC	Live Bottom Screw Feeder
		SCVD	Sweeping Screw Feeder
SEP	Separator		
		SEPA	Amalgam Drum
		SEPB	Oil/Gas Separator
		SEPC	Oil/Water Separator
		SEPD	Jig Separator
		SEPE	Plate Separator
		SEPF	Spiral Separator
		SEPG	Generic Separator
		SEPH	Separator Cell
		SEPI	Table Separator
SGP	Slag Pot		
		SGPA	Slag Pot
SHC	Shaft Conveyance		
		SHCA	Shaft Conveyance Arrestor
		SHCB	Shaft Conveyance Bucket
		SHCC	Shaft Conveyance Cage
		SHCD	Shaft Conveyance Catch Gear
		SHCE	Shaft Conveyance Counterweight
		SHCF	Shaft Conveyance Ropes
		SHCG	Shaft Conveyance Rope Attachment
		SHCH	Shaft Conveyance Skip
SIL	Silo		
		SILA	Silo
		SILB	Tapered Bottom Silo
		SILC	Flat Bottom Silo
		SILD	Tapered Bottom Multiple Outlets Silo
		SILE	Flat Bottom Multiple Outlets Silo
SKN	Stationary Kiln		
		SKNA	Direct Fired Stationary Kiln
		SKNB	Indirect Fired Stationary Kiln
SKP	Stockpile		
		SKPA	Stockpile
SLC	Silencer		
		SLCA	Silencer
SLG	Slide Gate		
		SLGA	Slide Gate Valve

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
SME	Shop/Maintenance Equipment		
		SMEA	Shop/Maintenance Equipment
SMP	Sump Pit		
		SMPA	Area Sump Pit
		SMPB	Sump Pit
SPL	Ship Loader (Unloader)		
		SPLA	Mobile Ship Loader
		SPLB	Radial Ship Loader
		SPLC	Travelling Ship Loader
		SPLD	Grab Ship Loader/Unloader
		SPLE	Continuous Mechanical Ship Unloader
		SPLF	Suction Ship Unloader
STA	Stack		
		STAA	Steel Stack
		STAB	Concrete Stack
		STAC	Generic Stack
STC	Stacker		
		STCA	Fixed Stacker
		STCB	Telescopic Stacker
		STCC	Luffing Stacker
		STCD	Radial Stacker
		STCE	Radial, Telescopic Stacker
		STCF	Radial, Luffing Stacker
		STCG	Radial, Luffing, Telescopic Stacker
		STCH	Tripper Stacker
		STCI	Plough Stacker
		STCJ	Open Bottom Screw Stacker
		STCK	Open Bottom Drag Stacker
		STCL	Shuttle Stacker
		STCM	Generic Stacker
STP	Standpipe		
		STPA	Standpipe
TCA	Transfer Car		
		TCAA	Ore Transfer Car
THK	Thickener		
		THKA	Conventional Thickener
		THKB	High-Rate Thickener

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		THKC	High Density Thickener
		THKD	Ultra-High-Rate Thickener
THM	Thickener Mechanism		
		THMA	Thickener Lifting Mechanism
		THMB	Thickener Rake Mechanism
TMG	Tramp Magnet		
		TMGA	Plate Magnet
		TMGB	Belt Magnet
		TMGC	Grate-type Tramp Magnet
		TMGD	Hump Tramp Magnet
TNK	Tank		
		TNKA	Flat Bottom, Open Top Tank
		TNKB	Flat Bottom, Closed Top Tank
		TNKC	Conic Bottom, Open Top Tank
		TNKD	Conic Bottom, Closed Top Tank
		TNKE	Dome Bottom, Open Top Tank
		TNKF	Dome Bottom, Closed Top Tank
		TNKG	Horizontal Tank
TRK	Truck/Trailer		
		TRKA	Ambulance
		TRKB	Flat Bed Truck
		TRKC	Rigid Frame Dump Truck
		TRKD	Articulated Dump Truck
		TRKE	Road Sweeper
		TRKF	Fire Truck
		TRKG	Service Truck
		TRKH	Haul Truck
		TRKI	Tank Truck
		TRKJ	Vacuum Truck
		TRKK	Waste Removal Truck
		TRKL	Trailer/Trolley
		TRKM	Concrete/Shotcrete Truck
TRN	Train		
		TRNA	Locomotive
		TRNB	Box Car
		TRNC	Rail Tanker
		TRND	Bulk Rail Carrier

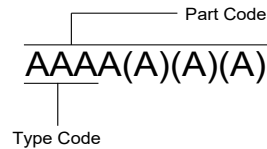


Badrakh Energy LLC
Zuuvch-Ovoo Uranium Project
H376512

Technical Specification
Engineering Management
Asset Tagging and Identification

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Subtype (Part Code) Description
		TRNE	Mobile Rail Car Mover
		TRNF	Rail Flat Bed
		TRNG	Generic Rail Car
TUN	Tundish		
		TUNA	Tundish
TUR	Turbine		
		TURA	Gas Turbine
		TURB	Hydraulic Turbine
		TURC	Steam Turbine
		TURD	Wind Turbine
		TURE	Generic Turbine
UAQ	Underground Air Quality		
		UAQA	Refuge Station Oxygen System
VIF	Vibrating Feeder		
		VIFA	Vibrating Conveyor
		VIFB	Electromagnetic Vibrating Conveyor
		VIFC	Electromechanical Vibrating Conveyor
		VIFD	Vibrating Feeder
		VIFE	Electromagnetic Vibrating Feeder
		VIFF	Electromechanical Vibrating Feeder
		VIFG	Vibrating Bin Actuator
WFR	Wire Feeder		
		WFRA	Wire Feeder
WNH	Winch		
		WNHA	Winch
UNCLASSIFIED			
			Collection Boxes
			Transfer Chutes (see Chutes-CHU)

B.2 Electrical Equipment Type Codes



Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Part Code Description
ATS	Automatic Transfer Switch		
		ATSA	Automatic Transfer Switch
BAT	Battery Bank		
BTC	Battery Charger		
		BATA	Battery Bank
		BATC	Battery Charger
BUD	Bus Duct		
		BUDA	Bus Duct
CAP	Capacitor Bank		
		CAPA	Capacitor Bank
CBA	Circuit Breaker		
		CBAACB	Air Circuit Breaker
		CBAMCB	Miniature Circuit Breaker
		CBAMCCB	Moulded Case
		CBAOTH	Other Type
		CBAVAC	Vacuum Circuit Breaker
		CBAGAS	Gas Circuit Breaker
CTX	Current Transformer		
		CTXA	Current Transformer
MDB	Distribution board, Main		
DBL	Distribution board, Lighting		
DBU	Distribution board, UPS power		
DBD	Distribution board, 110VDC		
JDB	Instrument power DB		
DSW	Switch		
		SWA	Switch
		SWFS	Fuse Switch

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Part Code Description
		SWAB	Air Brake Switch
		SWES	Earth Switch
		SWTS	Transfer Switch
		SWBT	Bus Tie
		SWCP	Control Panel Switch
		SWDC	Decontactor – type disconnecter
EAR	Earthing Equipment		
		EARBAR	Earth Bar
		EARMAT	Earth Mat
		EAROTH	Other Equipment
EJB	Electrical Junction Box		
		EJBA	Electrical Junction Box
EXX	Other Electrical Tag		
		EXXA	Miscellaneous Electrical Tags
FSP	Fire Service Panel	FSPA	Aspirated Fire Detection System (e.g. VESDA)
		FIP	Fire Indication Panel (primary fire alarm/control panel to which all other devices report)
FUS	Fuse		
		FUSA	Fuse – General
		FUSDO	Expulsion Drop Out
		FUSH	Fuse HRC type
		FUSM	Fuse – Motor Start type
		FUST	Fuse – terminal Strip mounted
FUD	Fused Isolator		
		FUDA	Fused Isolator
	Generators	Refer Mechanical	
HML	High mast light		
ISO	Isolator/disconnector		
	(See DSW also)	ISOA	Isolator/disconnector
JBX	Junction Box		
		JBXPB	Pull Box
		JBXPP	Pulling Pit (for underground conduit systems)
		JBXTB	Terminal Box – General
		JBXTBC	Terminal Box – Control
		JBXTBI	Terminal Box Instrument
		JBXSB	Splice Box

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Part Code Description
KIT	Key Transfer Block		
		KITM	Key Interlock Mechanical
		KITE	Key Interlock Electrical
LCS	Local Control Station		
	(typically, a stop start Station)	LCSA	Local Control Station
LCP	Local Control Panel		
	(typically, many switches and indication devices)	LCPA	Local Control Panel
LIN	Line Traps		
		LINA	Line Traps
LGT	Light Equipment		
		LGTDDB	Distribution Board
		LGTCON	Light Contactor
		LGT	Lighting Photocell
		LNGA	Lightning Equipment
MCC	Motor Control Centre		
		MCCHV	High Voltage
		MCCLV	Low Voltage
MOT	Electrical Motors		
		MOTDC	Direct Current
		MOTHV	High Voltage
		MOTLV	Low Voltage
		MOTSCSC	Squirrel Cage – Single Cage
		MOTSCDC	Squirrel Cage – Double Cage
		MOTSCDB	Squirrel Cage – Deep Bar
		MOTWRIM	Wound Rotor Induction Motor
		MOTSY	Synchronous
		MOTGMD	GMD/Wrap Around
NER or NGR or NEC or NECR	Neutral Earthing Resistor or Neutral Grounding Resistor or Neutral Earthing Compensator or Neutral Earthing Compensator with Resistor		
		NER	Neutral Earthing Resistor
		NGR	Neutral Grounding Resistor
OHL	Overhead transmission Line		
		OHLHV	High Voltage
PNL	Panelboards		



Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Part Code Description
		PNLDIS	Distribution Panelboard (other than lighting)
		PNLIN	Panel Dist. board – Instrumentation
		PNLLI	Panel Dist. Board – Lighting
		PNLAC	Panel Dist. Board – Air Conditioning
		PNLEM	Panel Dist. Board – Emergency Circuits
PPT	Power Potential Transformer		
		PPTA	Power Potential Transformer
PTC	Potential Transformer – Capacitive Type		
		PTCHV	High Voltage

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Part Code Description
PTI	Potential Transformer – Inductive Type		
		PTIHV	High Voltage
PWC	Power Conditioner		
		PWCFTR	Filter Type
		PWCISO	Isolation Type
		PWCLIN	Linear Type
		PWCOTH	Other Type
REA	Reactor		
		REAA	Reactor
REC	Power Rectifier		
		RECA	Power Rectifier
RMU	Ring Main Unit		
		RMUHV	High Voltage
		RMULV	Low Voltage
SFC	Static Frequency Converter		
		SFCA	Static Frequency Converter
STR	Starter (Full Voltage)		
		STRLV	Low Voltage
		STRMV	Medium Voltage
SSX	Soft Starter		
		SSXMV	Medium Voltage
		SSXLV	Low Voltage
		SSXSPC	Special Application Soft Starter
SUB	Substation		
		SUBA	Substation
		SUBOD	Outdoor Substation
		SUBID	Indoor Substation
		SUBKS	Kiosk Substation
SUR	Surge Arrestor		
		SURA	Surge Arrestor
SVC	Static Var Compensator		
		SVCA	Static Var Compensator
SWB	Switch Board		
		SWBDC	Low Voltage DC Distribution Board
		SWBELV	Extra Low Voltage
		SWBHV	High Voltage
		SWBLV	Low Voltage

Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Part Code Description
SGM	Switchgear		
		SGMHV	High Voltage
		SGMMV	Medium Voltage
		SGMLV	Low Voltage
TRA	Transformer		
		TRAIN	Transformer – Instrument Supply
TRX	Distribution Transformer		
		TRXELV	Extra Low Voltage
		TRXHV	High Voltage
		TRXLV	Low Voltage
		TRXMV	Medium Voltage
		TRXA	Ground Mounted Power Transformer
		TRXPM	Pole Mounted Power Transformer
		TRXET	Earthing Transformer
		TRXFC	Transformer – Furnace Type
		TRXS x	Transformer – Sealed Type
		TRXC x	Transformer – Conservator Type
		TRXD x	Transformer Dry type
			x = A for Ground Mount, P for Pole mount, E for Earthing, F for furnace, etc. as per above suggestion
UPS	Uninterruptible Power Supply		
		UPSOTH	Other Type
		UPSPOL	Permanently On-line
		UPSSTS	Static Transfer
VSD	Variable Speed Drive		
		VSDHV	High Voltage
		VSDLV	Low Voltage
		VSDMV	Medium Voltage
		VSDCC (or new category as CCV)	Cycloconverter
		VSDAx	VSD – Active Front End Type
		VSDDx	VSD – Diode/Rectifier Front End

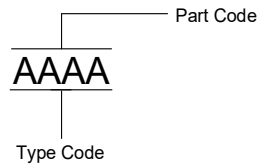


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Equipment Type Code	Equipment Type Code Description	Equipment Part Code	Equipment Part Code Description
		VSDCx	VSD – Cycloconverter Type
			X = L for Low voltage, M for Medium Voltage and H for High Voltage from above
VTX	Voltage Transformer		
		VTXA	Voltage Transformer

B.3 C&A Equipment Type Codes



System Code	Sub-Equipment Type Code	Description	Equipment Type Code
System Code			
A	Security/Access Control		–
B	BPCS – Basic Process Control System		–
C	IT and Communications System		–
F	Fire System		–
P	Power Management Systems		–
S	SIS – Safety Instrumented System		–
	Equipment Code		
	ANT	Antenna	System code + ANT
	AUH	Audio Hood	System code + AUH
	CAM	Camera	System code + CAM
	CCH	Cable Chamber or Manhole	System code + CCH
	COM	Computer	System code + COM
	CPP	Copper Patch Panel	System code + CPP
	CTL	Controller	System code + CTL
	DCS	Distributed Control System Panel	System code + DCS
	DOL	Door Lock Device	System code + DOL
	DOS	Door Switch	System code + DOS
	EWS	Engineering Workstation	System code + EWS
	FAX	Fax	System code + FAX
	FOE	Fiber Optic Encloser	System code + FOE
	FPP	Fiber Patch Panel	System code + FPP
	GAT	Gate	System code + GAT
	GPC	GPS Precision Clock	System code + GPC
	HED	Heat Detector	System code + HED
	HON	Horn	System code + HON
	IAM	Instrument Air Manifold	System code + IAM
	IED	Intelligent Electronic Device	System code + IED
	INT	Intercom	System code + INT
	IOR	I/O Rack	System code + IOR
	JBA	Junction Box-Analog	System code + JBA

System Code	Sub-Equipment Type Code	Description	Equipment Type Code
	JBD	Junction Box-Digital	System code + JBD
	JBP	Junction Box-Power	System code + JBP
	JBX	Junction Box	System code + JBX
	LAP	Laptop Computer	System code + LAP
	LCP	Local Control Panel	System code + LCP
	LIG	Light	System code + LIG
	MIP	Microphone	System code + MIP
	MOD	Motion Detector	System code + MOD
	MON	Monitor	System code + MON
	NAP	Network Access Point	System code + NAP
	NFW	Network Firewall	System code + NFW
	NGW	Network Gateway	System code + NGW
	NHB	Network Hub	System code + NHB
	NLC	Network Lan Controller	System code + NLC
	NLR	Network End of Line Resistor	System code + NLR
	NMC	Network Media Converter (Fibre to Copper)	System code + NMC
	NMO	Network Modem	System code + NMO
	NMU	Network Multiplexer	System code + NMU
	NOU	Network Outlet	System code + NOU
	NPL	Network Plug	System code + NPL
	NPS	Network Power Supply	System code + NPS
	NRO	Network Router	System code + NRO
	NSM	Single Mode to Multimode Fibre Converter	System code + NSM
	NSW	Network Switch	System code + NSW
	NTE	Network Terminator	System code + NTE
	NTT	Network T-Tap	System code + NTT
	OCD	Operator Control Desk	System code + OCD
	OCP	Operator Control Panel	System code + OCP
	OWS	Operator Workstation	System code + OWS
	PBX	Pull Box or Handhole	System code + PBX
	PLC	Programmable Logic Controller Panel	System code + PLC
	PNL	Panel	System code + PNL
	PRI	Printer	System code + PRI
	PRO	Processor	System code + PRO
	PST	Pull Station	System code + PST
	PSY	Power Supply	System code + PSY
	RBS	Radio Base Station	System code + RBS



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System Code	Sub-Equipment Type Code	Description	Equipment Type Code
	REA	Reader	System code + REA
	REP	Repeater	System code + REP
	RHE	Radio-Handheld	System code + RHE
	RIO	Remote Input-Output Panel	System code + RIO
	RTU	Remote Terminal Unit	System code + RTU
	SCD	Satellite Communication Dish	System code + SCD
	SCP	Scanner/Photocopier	System code + SCP
	SER	Server	System code + SER
	SMD	Smoke Detector	System code + SMD
	SPE	Speaker	System code + SPE
	SRA	Server Rack	System code + SRA
	TCT	Thin Client Terminal	System code + TCT
	TDE	Test Device	System code + TDE
	TEP	Telephone	System code + TEP
	TEV	Television	System code + TEV
	TPB	Tape Drive Backup	System code + TPB
	TUR	Turnstile	System code + TUR
	UBP	UPS Battery Pack	System code + UBP
	VAS	Virtual Application Server	System code + VAS
	VCS	Virtual Connectivity Server	System code + VCS
	VDC	Virtual Domain Controller	System code + VDC
	VDE	Virtual Desktop	System code + VDE
	VEW	Virtual Engineering Workstation	System code + VEW
	VIR	Video Recorder	System code + VIR
	VOW	Virtual Operator Workstation	System code + VOW
	VSM	Virtual Storage Manager	System code + VSM
	VTs	Virtual Terminal Server	System code + VTS
	WLC	Wireless Lan Controller	System code + WLC

Examples:

Based on the Equipment Numbering Standard: NNNN – AAAA(A) – (N)NNN(A), the above codes for the AAAA portion are concatenated as System Code + Equipment Code, e.g.,:

ACAM	Security Camera
AJBX	Security Multi-Purpose Junction Box
ANHB	Access/Security Network Hub
AREA	Security Reader
BNSW	BPCS Network Switch
BPNL	BPCS Panel
CSCD	Comms Satellite Dish.

Control Valve and Safety Element Codes

Codes are built up based on Section 4.2 and Table 4.1 of ISA 5.1 2022.

Type Code	Type Code Description	Part Code	Part Code Description
FV	Signal actuated Flow Control Valve		
PV	Pressure Control Valve Pressure Control Valve		
DV	Density Control Valve		
TCV	Temperature Control Valve		
PCV	Self-regulating Pressure Control Valve to regulate downstream pressure for process control		
PSV	Pressure Safety Valve to protect against emergency over-pressurisation		
PSE	Rupture Disc		
FSV	Flow Safety Valve that protects against emergency excess flow or loss of flow conditions		
TSV	Temperature Safety Valve that protects against emergency temperature conditions		
TSE	Fusible Link		
XV	Actuated on/off valve		

B.4 Building and Room Type Codes

AAA

Type Code

Type Code	Type Code Description	Part Code	Part Code Description
BAR	Battery Room		
		BARA	Battery Room
BLG	Building		
		BLGA	Building
CCR	Central Control Room		
		CCRA	Central Control Room
CMR	Communications Room		
		CMRA	Communications Room
ELE	Electrical Room		
		ELEA	Electrical Room – General
EQR	Equipment Room		
		EQRA	Equipment Room – General
FDN	Foundation/Footing		
		FDNA	Foundation/Footing
HYR	Hydraulic Equipment Room		
		HYRA	Hydraulic Equipment Room
ITR	Infrastructure (Data) Room		
		ITRA	Infrastructure (Data) Room
MCR	MCC Room		
		MCRA	MCC Room
PFR	Power Factor Correction Room		
		PFRA	Power Factor Correction Room
ROM	Miscellaneous Room		
		ROMA	Miscellaneous Room
SAR	Supply Authority Room		
		SARA	Supply Authority Room
SCR	Satellite Control		
		SCRA	Satellite Control
SUB	Substation		



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Type Code	Type Code Description	Part Code	Part Code Description
		SUBA	Substation
TXR	Transformer Room		
		TXRA	Transformer Room



Appendix C : Cable Service Identifiers



Table C-1: Cable Service Identifiers

Service Identifier Abbreviation	Service Identifier Description
H	High Voltage Power
M	Medium Voltage Power
L	Low Voltage Power
C	Control
G	Grounding
S	Signal
P	Instrument Power (24 Vdc, 220 Vac)
E	Earthing



Appendix D : Instrument Types

Table D-2: Instrumentation Reference Identification Letters

Reference: ISA 5.1-2009

	First Letter		Succeeding Letters		
	Measured or Initiating Variable	Modifier	Readout or Passive Function	Output Function	Modifier
A	Analysis		Alarm		
B	Burner, Combustion		User's Choice	User's Choice	User's Choice
C	User's Choice			Control	Close
D	Density or Specific Gravity	Difference, Differential		Deviation	
E	Voltage		Sensor (Primary Element)		
F	Flow, Flow Rate	Ratio			
G	Gauging (Dimensional)		Glass, Gauge, Viewing Device		
H	Hand (Manually Initiated)				High
I	Current		Indicate		
J	Power		Scan		
K	Time, Schedule	Time Rate of Change		Control Station	
L	Level		Light		Low
M	Moisture				Middle, Intermediate
N	Torque		User's Choice	User's Choice	User's Choice
O	User's Choice		Orifice, Restriction		Open
P	Pressure		Point (Test Connection)		
Q	Quantity	Integrate, Totalise	Integrate, Totalise		
R	Radiation		Record		Run
S	Speed, Frequency	Safety		Switch	Stop
T	Temperature			Transmit	
U	Multivariable		Multifunction	Multifunction	
V	Vibration, Mechanical Analysis			Valve, Damper, Louver	



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	First Letter		Succeeding Letters		
	Measured or Initiating Variable	Modifier	Readout or Passive Function	Output Function	Modifier
W	Weight, Force		Well, Probe		
X	On – Off	X Axis	Accessory Devices Unclassified	Conditioner	Unclassified
Y	Event, State or Presence	Y Axis		Compute, Convert, Relay	
Z	Position, Dimension	Z Axis Safety Instrumented System		Driver, Actuator, Final Control Element	



Appendix E : SP Item Type Codes

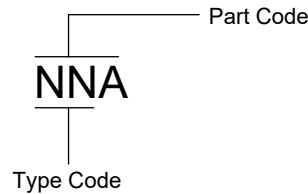


Table E-3: SP Item Type Codes

SP Item Type Code	SP Item Type Code Description	SP Item Part Code	SP Item Part Code Description
04	Hoses		
		04A	Flexible Hose – flanged ends
		04B	Flexible Hose – Kamlok ends
05	Hose Adaptors		
		05A	Kamlok Adaptor BSPT Type F
		05B	Kamlok Adaptor CL150 Flanged Type FLA
		05C	Kamlok Adaptor NPT Type F
		05D	Hose coupling Minsup, Male NPT, Rubber Seal
		05E	Hose coupling Cam and Groove, Polypropylene (TBD), Rubber Seal, Male End, w/flange
		05F	Dry Break Coupling
06	Filtration/Strainers		
		06A	Simplex Strainer
		06B	Horizontal T type strainer
		06C	Y strainer
		06D	Temporary Strainer
		06E	Basket Strainer
		06F	Automatic backwash Filters
		06G	Duplex Strainer
07	Safety Items		
		07A	Flame Arrestor
08	Flexibility Items		
		08A	Expansion Joint Straub type
		08B	Expansion Joint Bellows type
		08C	Expansion Joint – Single Axial Type
		08D	Expansion Joint – Tied
		08E	Expansion joint, FRP FR Conductive
		08F	Expansion joint, Bromobutyl Rubber-Lined

SP Item Type Code	SP Item Type Code Description	SP Item Part Code	SP Item Part Code Description
		08G	Expansion joint, FRP NFR Non-Conductive
		08H	Expansion Joint, FRP NFR NON-CONDUCTIVE ABRASION RESISTANT
09	Traps		
		09A	Thermodynamic
		09B	Liquid
		09C	Ball-float type liquid
		09D	Steam Trap with Integral Strainer
		09E	Inverted Bucket Steam Trap
10	Drainage and Overflow		
		10A	Tundish type A
		10B	Tundish type B
		10C	Seal Pot
		10D	Multi Entry Drain Pot
		10E	Sample Point Type A (Kamlok)
		10F	Sample Point – Type B (Flanged)
		10G	Tundish Straight
		10H	BFW Flash Tank
11	Fire Water Items		
		11A	Fire Hydrant Flanged
		11B	Fire water monitor, flanged
		11C	High mast spray monitor
		11D	Fire Hose Assembly
12	Tank/Vessel Items		
		12A	Air Sparger – Adapted Spool
		12B	Dip Tube
		12C	Control Valve Discharge Sparger
13	Non-Registered Vessels		
		13A	Pulsation Dampener
14	Silencers		
		14A	Vent Silencer
15	Dampers/Relief Devices		
		15A	Round Type
		15B	Rectangular
16	Couplings and Flanges (Non-Standard)		

SP Item Type Code	SP Item Type Code Description	SP Item Part Code	SP Item Part Code Description
		16A	WN Flange DIN 2633
		16B	Compact Flange
		16C	Saddle Flange
		16D	Taper Bore Reducing Flange
		16E	Compact Reducing Flange
		16F	Warman Flanges
17	Extension Devices/Operators		
		17A	Butterfly Valve Extension Spindle
		17B	Special Check Valve
		17C	Plug Valve Chainwheel
18	Spacers/Blinds (Non-Standard)		
		18A	Spacer Rings
19	Vents		
		19A	Vent Rain Hat
		19B	Air Vent
20	Safety Shower/Eyewash		
		20A	Emergency Shower – Single Spray Head
		20B	Emergency Shower – Multiple Spray Head
		20C	Handheld Drench Hose
		20D	Gravity Feed Wash
		20E	Combination Unit
		20F	Hand Basin Plastic
21	Heating/Cooling Devices		
		21A	Water Cooler
		21B	Heating Coil
		21C	Jet Heater
		21D	Liquid Injector
		21E	Foam Generator
22	Special Pipe Fittings		
		22A	Wear Resistant Pipe
		22B	Cleaning Port for Dust Extraction Cleaning
		22C	Instrument Air Manifolds
23	Siphon Breaker/Vacuum Breaker		
		23A	Siphon Breaker/Vacuum Breaker



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SP Item Type Code	SP Item Type Code Description	SP Item Part Code	SP Item Part Code Description
24	Launders		
		24A	Launders
25	Miscellaneous	25X	Miscellaneous