TULSA Water and Sewer Department

SCADA System Improvements

Tag Naming Standards

FINAL

PRESENTED TO

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Revision History

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A	November 11, 2019	Draft delivered to client.
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1. INTRODUCTION

The tag naming development guide provides a standardized approach for the development of instrument tags as related to the design and documentation of the control system. Standardizing the tag naming convention will make identification of instruments, and their use within the control system, consistent throughout the various facilities. In using a consistent tag structure, the engineering effort is reduced by utilizing a standardized approach to instrument tagging. In addition, maintenance of the control system is aided by a standardized tag naming convention from field device to SCADA Master Station.

This document identifies the standard tag format for both PLC programming and HMI development. The standard is also intended to be used in engineering drawings, alarming, and maintenance programs. Consistent tag naming throughout all disciplines will enable efficient, productive maintenance and operations of the systems. Since the PLC and HMI programs have different capabilities of handling tagnames, two separate formats will be defined. Both will follow the same principles yet apply them to the capabilities of their respective systems.

2. REFERENCES

TMUA has previously completed an asset ID naming convention that will be used in this standard. It is anticipated that all programs, functions, and documentation that reference equipment and instruments adhere to this standard to maintain clarity and consistency.

2.1. REFERENCE MATERIALS

TMUA's Equipment ID Scheme (Appendix A) and All Plant Naming Conventions (Appendix B) have been used to provide the foundation of the tag naming standard.

3. ROLES & RESPONSIBILITIES

This standard should be considered a "living document," meaning it adapts with the needs of the utility and with the capabilities of the software programs that use it. SCADA Support Services will maintain and modify the standard as necessary to keep it current and accurate.

Support services will oversee the application of the standard by reviewing and approving 3rd party integrator, engineering documentation, and maintenance system references. Maintenance, Engineering, and Support Services will all work closely with Operations to ensure that the most accurate and clear naming of the equipment, instrument and system tags will be used.

SCADA Support Services will create a tag database for each facility. This database will contain a list of all PLC and HMI tags associated with that facility. The tag database will be maintained by SCADA Support services and will be provided to all Contractors or Vendors maintaining or developing the facility's SCADA system. The Contractor or Vendor will be responsible for following this Tag Naming Standard and updating the tag database with any new or deleted tags from both the PLC and HMI systems. The tag database will contain the following:

Table 3-1 Tag Database

Tagname	Full Tag Name
Tag Description	Short Description of the Tag
Analog Range	Analog Instrument Range and Engineering Units
Setpoint Range	Setpoint Range
Additional Comments	Important notes, alarm status, historical logging, etc.

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4. PLC AND HMI TAG FORMAT

The PLC Tag format will closely follow TMUA's Equipment ID Scheme, with additional nomenclature to categorize the equipment, PLC, and HMI functions required for monitoring and operations of the facilities.

Tagnames can get long, and so abbreviations are often used for common names. To match the existing Equipment ID Scheme, the PLC will use underscores and periods as delimiters to ensure the tag is clear and easy to read. The HMI will use only use underscores as delimiters.

Tagnames used in the PLC and HMI should:

- Identify the source/use of the data
- Identify the process being assessed
- Identify the location in the process
- Be sufficiently generic such that the application does not have to be rewritten to reuse the code in other applications

The tags will have the following format:
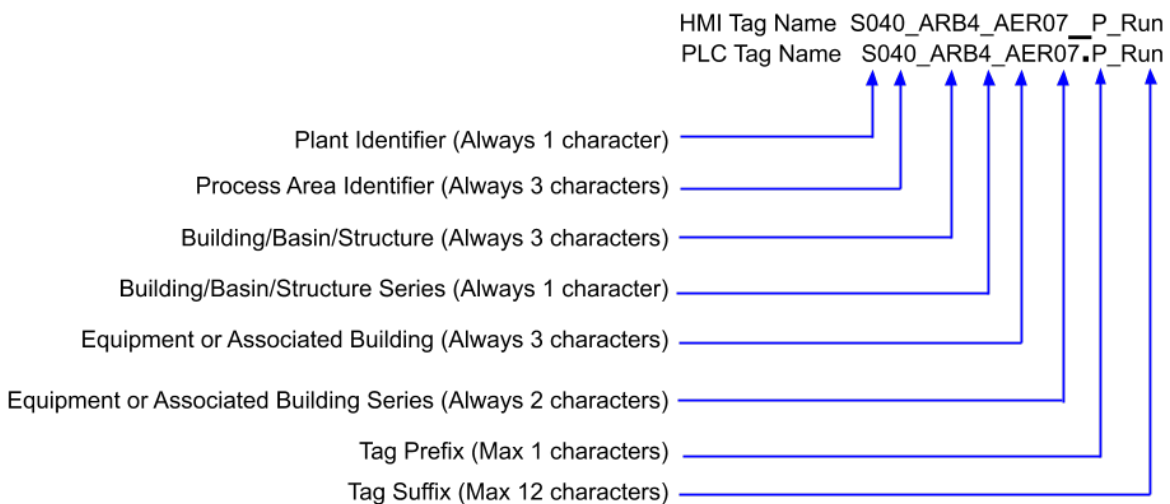
Figure 1 – Tag Format

In the example above, the tagname states the Southside Aeration Train Aeration Basin 4 Aerator 7 is running. The sections below define each cluster of the tagname and its function.

4.1. PLANT IDENTIFIER

Each tag will begin with a Plant Identifier shown in the table 4-1.

Table 4-1 Plant Identifier

Identifier	Plant
N	Northside
L	Lower Bird Creek
S	Southside
H	Haikey Creek

4.2.   PROCESS AREA IDENTIFIER

The next three numbers will identify the process area.

Table 4-2 Process Identifier

Identifier	Process Area
001	Operation
002	Maintenance
003	Administration
004	Underground Piping
010	Bar Screen/HDW/DVS
020	Grit
030	Primary Clarifier
040	Aerator/BIO/BLO
050	Final Clarifier
060	Disinfection/Effluent
070	THK Process (DAF/THK/RDT)
080	Digester/Pasteurization
090	Belt Press/Lagoon
100	Lift Station
130	FEB
140	Waste Transfer Station
151	Stormwater/TFC
152	Oil Containment Pit
153	East Bank Junction
200-220	Electric Primary Feed

4.3.   BUILDING/BASIN/STRUCTURE

The Building, Basin, and Structure is next and will always be 3 characters plus another number indicating the series or train of the building. The abbreviations can be found in the All Plant Naming Conventions in Appendix B.

4.4.   EQUIPMENT OR ASSOCIATED BUILDING

The following series is the Equipment or Associated Building designation. This is always 3 characters plus another 2 numbers indicating the equipment or building number. The abbreviations can be found in the All Plant Naming Conventions in Appendix B.

4.5.   TAG PREFIX

The PLC will use a decimal to separate the equipment or instrument ID with the function of that equipment or instrument. The HMI will use an underscore to separate the equipment or instrument ID with

the function of that equipment or instrument. The tag prefix will indicate the primary function of the tag within the context of the PLC. Table 4-3 below defines the tag prefix.

Table 4-3 Tag Prefix

Prefix	Description
C	Configuration – Indicates the tag modifies the configuration of an equipment or instrument.
O	Output – Indicates the tag controls a real-world output within the PLC.
H	HMI – Indicates the tag modifies a PLC register from the operator interface.
P	PLC Logic – Indicates a read only tag that is modified or calculated within the PLC.
I	Input – Indicates the tag is displaying an equipment or instrument status.

4.6.   TAG SUFFIX

The tag suffix indicates the specific function of the tag within the context of the device or equipment. To maximize character count and space and retain clarity, Camel Case text will be used in the tag suffix. Camel Case uses capital letters to delimit the words in the tag function. Table 4-4 are a typical motor tag prefix and suffix to be used in tag names. Note that many of the Tag Suffix names have been abbreviated in order to account for the twelve-character limit. Table 4-5 defines the abbreviations used in the example tag suffix. Scada Support Services will maintain an abbreviation table for all tag suffixes used in the system.

Table 4-4 Tag Suffix

Tag Prefix	Tag Suffix	Tag Description
H	Auto	HMI Auto Command
H	AutoEn	HMI Auto Enable Command
I	CalcPwr	Calculated Power Status
P	Count	Logic Counter
I	Current	Current Status
I	FlwLoss	Flow Loss Status
I	Fault	Fault Status
C	HasAuto	Has Auto Config
C	HasRem	Has Remote Config
I	HiVib	High Vibration Status
I	HotBrng	Hot Bearing Status
I	HotMot	Hot Motor Status
P	InFailure	Logic in Failure
P	InPermsv	Logic in Permissive
P	InWarn	Logic in Warning
P	LimFl	Logic Limit Fail

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Tag Prefix	Tag Suffix	Tag Description
P	NotInRem	Logic Not in Remote
P	OffTmRun	Logic Off Time Last Run
H	Oos	HMI Out of Service Command
I	Ovrld	Overload Status
I	Pwr	Power Status
P	Rem	Logic Remote
H	RemEn	HMI Remote Enable Command
H	Reset	HMI Reset Command
P	Run	Logic Running
P	RTmTtl	Logic Run Time Cumulative
P	RTmL	Logic Run Time Last Run
P	RTmDay	Logic Run Time Day
P	RTmYday	Logic Run Time Yesterday
P	RTmWk	Logic Run Time Week
P	RTmWkL	Logic Run Time Last Week
P	RTmMth	Logic Run Time Month
P	RTmMthL	Logic Run Time Last Month
P	RTmYr	Logic Run Time Year
P	RTmYrL	Logic Run Time Last Year
I	SealFl	Seal Fail Status
H	Stop	HMI Stop Command
P	StopReq	Logic Stop Requested
H	Strt	HMI Start Command
H	StrtsLim	HMI Starts Hour Limit
P	StrtStopFl	Logic Start-Stop Fail Alarm
P	StrtReq	Logic Start Requested
P	StrtsTtl	Logic Starts Cumulative
P	StrtsDay	Logic Starts Day
P	StrtsYday	Logic Starts Yesterday
P	StrtsHr	Logic Starts Hour
P	StrtsHrL	Logic Starts Last Hour
P	StrtsWk	Logic Starts Week
P	StrtsWkL	Logic Starts Last Week
P	StrtsMth	Logic Starts Month
P	StrtsMthL	Logic Starts Last Month
P	StrtsYr	Logic Starts Year
P	StrtsYrL	Logic Starts Last Year
I	StrtTrbl	Starter Trouble Status
I	Torque	Torque Status

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Table 4-5 Tag Suffix Abbreviations

Abbreviation	Full Description
Brng	Bearing
Calc	Calculated
En	Enable
Fl	Fail
Flw	Flow
Hi	High
L	Last
Lim	Limit
Mth	Month
Mot	Motor
Oos	Out of Service
Ovrld	Overload
Permsv	Permissive
Pwr	Power
Rem	Remote
Req	Request
RTm	Runtime
Strt	Start
Tm	Time
Trbl	Trouble
Ttl	Total
Vib	Vibration
Warn	Warning
Wk	Week
Yday	Yesterday
Yr	Year

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