SmartPlant 3D Piping Reference Data

Student Workbook

Process, Power & Marine

INTERGRAPH

Table of Contents

Preface

This document is designed as an aid for students attending the SmartPlant 3D Reference Data class presented by Intergraph Corporation, and it's a supplement to the standard product documentation.

Objective

This document is designed to provide comprehensive information of what is in SmartPlant 3D Reference Data version 6.1

Course description

Upon completing this course, you will be able to:

- Provide an overview of the SmartPlant 3D reference data. It describes general information about the catalog schema, terms, and the delivered piping reference data.

Course Reference Material

- SmartPlant 3D Reference Data Guide

- SmartPlant 3D Symbols Reference Data Guide

- Piping Reference Data Guide

Questions or suggestions relating to this document should be directed to:

SmartPlant 3D Training Services

Lab 1: Piping Material Class

Objective

After completing this lab, you will be able to:

- Create a new Piping Material Class

  Note : This lab is intended as a basic introduction to spec creation. As such it is limited to straight pipe and few fittings (Example: 90 and 45 degree elbows, tees, etc). It is not intended as an example of a functional design spec.

Creating the Piping Specification CC150-1 Bulkload Worksheet

1. Open the Ten_Specs_SpecificationData.xls file located in <SP3DInstalled_Location>\ CatalogData\BulkLoad\DataFiles

2. Select the following worksheets while holding down the control key:

   a. PipingMaterialsClassData

   b. PipingCommodityFilter

   c. BendAngles

   d. PipeNominalDiameters

   e. WeldClearanceRule

   f. StandardNotesData

3. Save the worksheets to a new Excel Workbook named "CC150-1.xls" in your own working directory.

Editing Piping Material Class Data

1. Open the PipingMaterialsClassData worksheet in the CC150-1.xls workbook.

2. Add the following data in the columns noted for the new piping specification.

   a. SpecName : CC150-1

   b. MaterialsOfConstructionClass : 31 (Reference AllCodeLists.xls, MaterialsOfConstructionClass)

    c.   MaterialsDescription: CL150, Carbon Steel, RFFE, .75" - 24" BE

    d.   FluidService : Process

    e.   DesignStandard : 40 (Reference AllCodeLists.xls, DesignStandard - ANSI-B31.3)

    f.   AutomatedFlangeSelectionOption: 10 (Reference AllCodeLists.xls - Enable)

    g.   PipingSpecStatus : 5 (Reference AllCodelists.xls, PipingSpecStatus- Draft)

    h.   Comments: Training Specs

    i.   RevisionNumber : A

    j.   PipingNote1: 203

3. Save the workbook.

Editing Piping Diameter Data

1. Open the NominalDiameter worksheet.

2. Add records for the new specification as shown below:

Head	SpecName	Npd	NpdUnitType
Start			
a	CC150-1	0.75	in
a		1	in
a		1.5	in
a		2	in
a		4	in
a		6	in
a		8	in
a		10	in
a		12	in
a		14	in
a		16	in
a		18	in
a		20	in
a		24	in
End			

3. Save the worksheet

Editing Bend Angle Data

1. Open the Bend Angle worksheet.

2. Add records for preferred bend angles for the new specification as shown below:

Head	SpecName	Npd	NpdUnitType	BendAngle
Start				
a	CC150-1	0.75	in	90deg
a		1	in	90deg
a		1.5	in	90deg
a		2	in	90deg
a		4	in	90deg
a		6	in	90deg
a		8	in	90deg
a		10	in	90deg
a		12	in	90deg
a		14	in	90deg
a		16	in	90deg
a		18	in	90deg
a		20	in	90deg
a		24	in	90deg
a		0.75	in	45deg
a		1	in	45deg
a		1.5	in	45deg
a		2	in	45deg
a		4	in	45deg
a		6	in	45deg
a		8	in	45deg
a		10	in	45deg
a		12	in	45deg
a		14	in	45deg
a		16	in	45deg
a		18	in	45deg
a		20	in	45deg
a		24	in	45deg
End				

3. Save the worksheet.

Editing WeldClearanceRule Data

1. Open the WeldClearanceRule worksheet.

2. Add records for the new specification as shown below:

Head	SpecName	NominalPipingDiameterFrom	NominalPipingDiameterTo	NominalPipingDiameterUnits	WeldClass	WeldClearanceRadiusIncrease	WeldClearanceLength
Start							
a	CC150-1	0.75	6	in	5	6in	18in
a		8	12	in	5	8in	24in
a		14	24	in	5	16in	30in
a		0.75	6	in	10	6in	18in
a		8	12	in	10	8in	24in
a		14	24	in	10	16in	30in
a		0.75	6	in	15	6in	18in
a		8	12	in	15	8in	24in
a		14	24	in	15	16in	30in
a		0.75	6	in	20	6in	18in
a		8	12	in	20	8in	24in
a		14	24	in	20	16in	30in
End							

3. Save the worksheet.

Creating Piping Material Class Records

1. Open the PipingCommodityFilter worksheet.

2. Add records for pipes, bends, size changes and tee as shown below:
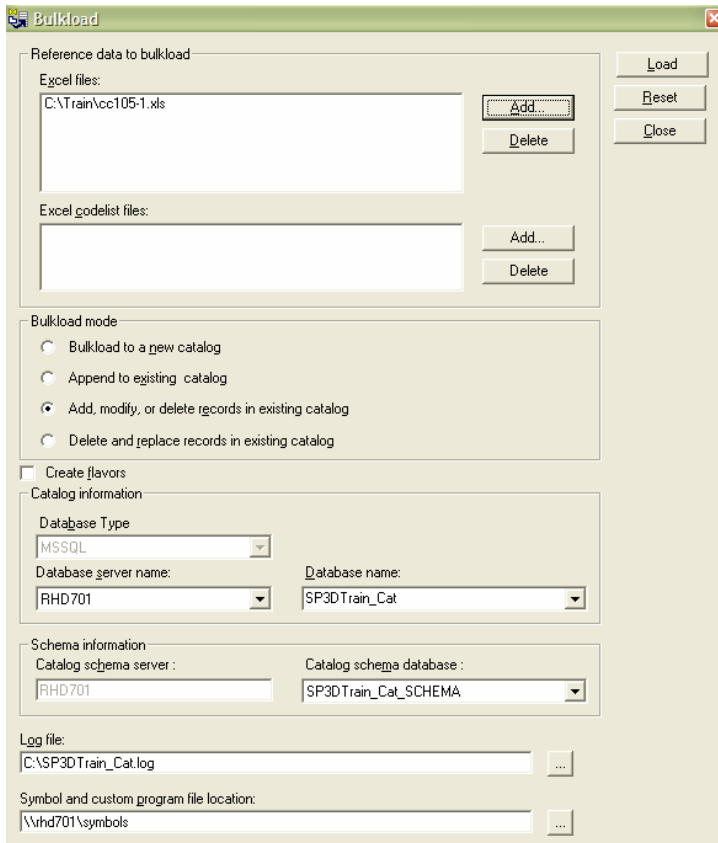
Item	Size	Schd	Commodity Code	Description
Pipe	0.75" – 1.5"	S-XS	PAAZZBPZZABAABSAAZZUS	Pipe, plain ends, ASTM-A106-B, [401]
Pipe	2"-24"	S-STD	PAAZZBOZZABAABOAAZZUS	Pipe, [401], BE, ASTM-A53-B Type S
PipeBend (default)	0.75"- 1.5"	S-XS	PAAZZBPZZABAABSAAZZUS	Pipe, plain ends, ASTM-A106-B, [401] Bend Radius 3 D
45 Deg Elbow (Default)	2"-24"	S-STD	MBXZZBOZZAAEADCZZUS	45 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9
45 Deg Trimmable Elbow (Default)	2"-24"	S-STD	MBXZZBOZZAAEADCZZUS	45 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9
90 Deg Elbow (Default)	2"-24"	S-STD	MCMZZBOZZAAEADCZZUS	90 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9
90 Deg Trimmable Elbow (Default)	2"-24"	S-STD	MCMZZBOZZAAEADCZZUS	90 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9
Concentric Size Change	4"-24"	S-STD	MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9
Eccentric Size Change	4"-24"	S-STD	MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9
Tee	2"-24"	S-STD	Tee01	Tee, [403], BE, ASTM-A234-WPB, ANSI-B16.9

Head Start	SpecName	ShortCode	OptionCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	SelectionBasis	CommodityCode	FirstSizeSchedule	SecondSizeSchedule	BendRadiusMultiplier
a	CC150-1	Piping	1	0.75	1.5	in				1	PAAZZBPZZABAABSAAZZUS	S-XS		
a		Piping	1	2	24	in				1	PAAZZBOZZABAABOAAZZUS	S-STD		
a		<45 Degree Direction Change	1	0.75	1.5	in				35	PAAZZBPZZABAABSAAZZUS	S-XS		3
a		45 Degree Direction Change	1	0.75	1.5	in				35	PAAZZBPZZABAABSAAZZUS	S-XS		3
a		45-90 Degree Direction Chang	1	0.75	1.5	in				35	PAAZZBPZZABAABSAAZZUS	S-XS		3
a		90 Degree Direction Change	1	0.75	1.5	in				35	PAAZZBPZZABAABSAAZZUS	S-XS		3
a		<45 Degree Direction Change	1	2	24	in				70	MBXZZBOZZAAEADCZZUS	MATCH	MATCH	
a		45 Degree Direction Change	1	2	24	in				65	MBXZZBOZZAAEADCZZUS	MATCH	MATCH	
a		45-90 Degree Direction Chang	1	2	24	in				70	MCMZZBOZZAAEADCZZUS	MATCH	MATCH	
a		90 Degree Direction Change	1	2	24	in				65	MCMZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	4	4	in	2	2	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	6	6	in	4	4	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	8	8	in	4	6	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	10	10	in	4	8	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	12	12	in	6	10	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	14	14	in	6	12	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	16	16	in	8	14	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	18	18	in	10	16	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	20	20	in	12	18	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Concentric Size Change	1	24	24	in	16	20	in	1	MBCZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	4	4	in	2	2	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	6	6	in	4	4	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	8	8	in	4	6	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	10	10	in	4	8	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	12	12	in	6	10	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	14	14	in	6	12	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	16	16	in	8	14	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	18	18	in	10	16	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	20	20	in	12	18	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Eccentric Size Change	1	24	24	in	16	20	in	1	MBJZZBOZZAAEADCZZUS	MATCH	MATCH	
a		Tee	1	2	24	in				1	Tee01	MATCH	MATCH	

3. Save the worksheet.

4. Select Start => Programs => Intergraph SmartPlant3D => Database Tools => Bulkload Reference Data.

5. The Bulkload Utility form will appear.

6. Select the "Add" option under "Excel Files" and select CC150-1.xls

7. Load the records into the database using the "Add/Modify/Delete" mode.

8. Select an existing piping catalog. Find your catalog server name and database/schema names from the pull down menus. Obtain these names from the instructor.

   Note : If the file is loaded into a new catalog, then additional data files will be required and the spec will be unusable until the required files are loaded into the database – this lab assumes that a functional catalog with existing specs and rules exists.

9. Enter a Log file name in your working directory.

10. Point the Symbol path to the symbols share for this class.

11. Review the log file once the Bulkload process is complete.

Lab 2: Piping Specification Validation

Objective

After completing this lab, you will be able to:

- Run the Verify Consistency between Piping Specification and Catalog tool
- Review and check for missing data in your piping specification

Database Verification/Consistency Checks

1. Open a session or create a new workspace and enter the Catalog task.

2. Select **Tools -> Verify Consistency**

3. The system displays the Verify Consistency between Piping Specification and Catalog form.

4. Select the "Piping materials classes" check box.

5. Select spec CC150-1 in the "Available piping material classes" picklist and select the "Add" option to move the spec into the Selected piping material classes" side of the form.

6. Enable the Verify symbol placement option. Define an output location for the logfile. (Note: the filename is automatically generated by the system).
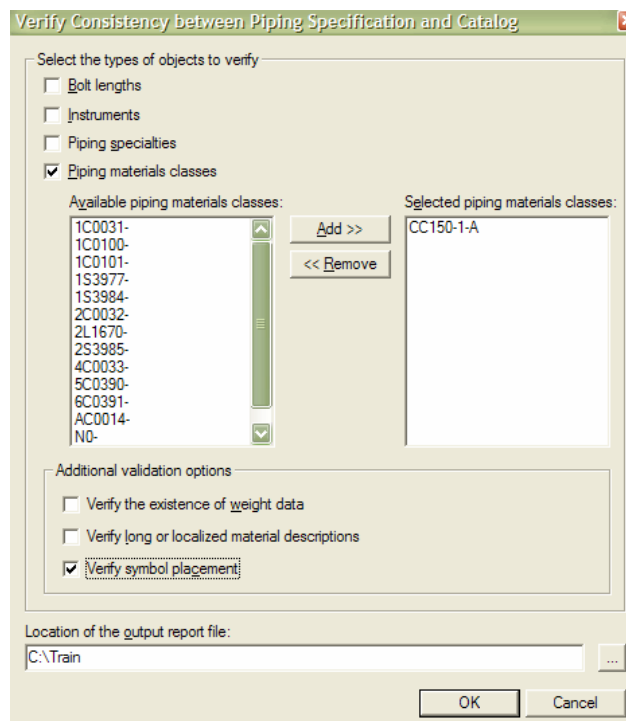
7. Accept the form for processing by selecting the "OK" button.

8. You can rename the generated report ((Reportoutput.xls) filename to CC150report.xls

9. Review the system generated spreadsheet once processing is complete. Go to the index sheet and select the following links:

    - Rules data undefined

    - Piping commodity undefined in piping commodity material control data

    - Piping commodity undefined in piping commodity part data

    - Summary of catalog parts

Go to Rules data undefined report. Review the missing specification rules.

Description Of The Error	Piping Materials Class	Revision Number	Rule Name
Rule data is missing	CC150-1	A	Field Fit Length rule
Rule data is missing	CC150-1	A	Corrosion Allowance rule
Rule data is missing	CC150-1	A	Service Limits rule
Rule data is missing	CC150-1	A	Branch Intersection rule
Rule data is missing	CC150-1	A	Permissible Taps rule
Rule data is missing	CC150-1	A	Minimum Pipe Length rule
Rule data is missing	CC150-1	A	Minimum Pipe Length rule for purchase length
WARNING : Optional rule data is missing	CC150-1	A	Default Change-of-Direction rule
WARNING : Optional rule data is missing	CC150-1	A	Joint Quality Factor rule
WARNING : Optional rule data is missing	CC150-1	A	Thickness Data rule
WARNING : Optional rule data is missing	CC150-1	A	Pipe Bending Elongation rule
WARNING : Optional rule data is missing	CC150-1	A	Size Reduction rule
WARNING : Optional rule data is missing	CC150-1	A	Inside Surface Treatment rule
WARNING : Optional rule data is missing	CC150-1	A	Field Lining Thickness rule
WARNING : Optional rule data is missing	CC150-1	A	Flared Pipe rule
WARNING : Optional rule data is missing	CC150-1	A	Port Alignment rule
WARNING : Optional rule data is missing	CC150-1	A	Weld Gap rule
WARNING : Optional rule data is missing	CC150-1	A	Jacket Closure rule
WARNING : Optional rule data is missing	CC150-1	A	Swaged Jacket Pipe rule

Go to Piping commodity undefined in piping commodity material control data report. Note that tee commodity code is missing from the Piping Commodity Material Control Data sheet. This problem will be corrected in later labs.

Description Of The Error	Piping Materials Class	Revision Number	Contractor Commodity Code	Primary Npd	Primary Npd Units	Secondary Npd	Secondary Npd Units	Multi-size Option
Piping commodity undefined in piping commodity material control data	CC150-1	A	Tee01	0		0		

Go to Piping commodity undefined in piping commodity part data report. Note that parts are missing from the part catalog. This problem will be corrected in later labs.

Description Of The Error	Piping Materials Class	Revision Number	Industry Commodity Code	Short Material Description	Primary Size	Primary Size Units	Secondary Size	Secondary Size Units	Multi-size option	First Size Schedule	Second Size Schedule
Part undefined in part data	CC150-1	A	Tee01		2	in	2	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		4	in	4	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		6	in	6	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		8	in	8	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		10	in	10	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		12	in	12	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		14	in	14	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		16	in	16	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		18	in	18	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		20	in	20	in		S-STD	
Part undefined in part data	CC150-1	A	Tee01		24	in	24	in		S-STD	

Go to Summary catalog parts report. This report displays a summary of the catalog parts required by your piping spec CC150-1

! Summary of the catalog parts required by each piping materials class

Piping Materials Class	Industry Commodity Code	Short Material Description
CC150-1	MBXZZBOZZAAEADCZZUS	45 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9
CC150-1	MCMZZBOZZAAEADCZZUS	90 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9
CC150-1	MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9
CC150-1	MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9
CC150-1	PAAZZBOZZABAABOAAZZUS	Pipe, [401], BE, ASTM-A53-B Type S
CC150-1	PAAZZBPZZABAABSAAZZUS	Pipe, [401], PE, ASTM-A106-B

10. Go back to the Catalog Task and select Tools -> Run Reports

11. Select Catalog Reports Tab

12. Expand the report hierarchy and select Diagnostic folder.

13. Select Diagnostic Piping Commodity Specifications report
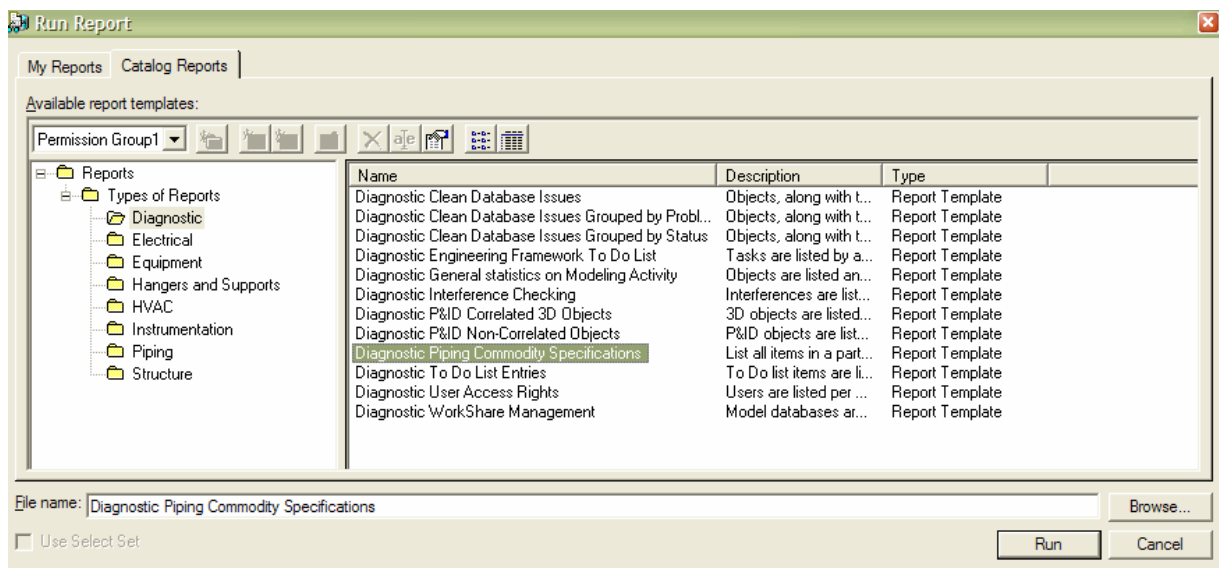
14. Select Run button and key in the spec name CC150-1

15. Hit Finish button to generate the report.

Specification Name:	CC150-1													Date: 12:21:34 PM
Fluid Service:	Process													
User:	INGRPPO\rhim													

Piping Specification Report

Short Code	Option Code	Multi. Size	First Size From	To	Units	Schedule	Second Size From	To	Units	Schedule	Engineering Tag	Commodity Code	Description (Note: Embedded labels based on model objects cannot be)	Valve Operator Type	Part Number
<45 Degree Direction Change	Default	0.75	1.5	in	S-XS					Undefined		PAAZZBPZZABAABSAAZZUS	Pipe, [401], PE, ASTM-A106-B	Undefined	
<45 Degree Direction Change	Default	2	24	in	MATCH					MATCH		MBXZZBOZZAAEADCZZUS	45 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
45 Degree Direction Change	Default	0.75	1.5	in	S-XS					Undefined		PAAZZBPZZABAABSAAZZUS	Pipe, [401], PE, ASTM-A106-B	Undefined	
45 Degree Direction Change	Default	2	24	in	MATCH					MATCH		MBXZZBOZZAAEADCZZUS	45 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
45-90 Degree Direction Change	Default	0.75	1.5	in	S-XS					Undefined		PAAZZBPZZABAABSAAZZUS	Pipe, [401], PE, ASTM-A106-B	Undefined	
45-90 Degree Direction Change	Default	2	24	in	MATCH					MATCH		MCMZZBOZZAAEADCZZUS	90 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
90 Degree Direction Change	Default	0.75	1.5	in	S-XS					Undefined		PAAZZBPZZABAABSAAZZUS	Pipe, [401], PE, ASTM-A106-B	Undefined	
90 Degree Direction Change	Default	2	24	in	MATCH					MATCH		MCMZZBOZZAAEADCZZUS	90 deg LR elbow, [403], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	4	4	in	MATCH	2	2	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	6	6	in	MATCH	4	4	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	8	8	in	MATCH	4	6	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	10	10	in	MATCH	4	8	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	12	12	in	MATCH	6	10	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	14	14	in	MATCH	6	12	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	16	16	in	MATCH	8	14	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	18	18	in	MATCH	10	16	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	20	20	in	MATCH	12	18	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Concentric Size Change	Default	24	24	in	MATCH	16	20	in	MATCH		MBCZZBOZZAAEADCZZUS	Concentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	4	4	in	MATCH	2	2	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	6	6	in	MATCH	4	4	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	8	8	in	MATCH	4	6	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	10	10	in	MATCH	4	8	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	12	12	in	MATCH	6	10	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	14	14	in	MATCH	6	12	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	16	16	in	MATCH	8	14	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	18	18	in	MATCH	10	16	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	20	20	in	MATCH	12	18	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Eccentric Size Change	Default	24	24	in	MATCH	16	20	in	MATCH		MBJZZBOZZAAEADCZZUS	Eccentric reducer, [414], BE, ASTM-A234-WPB, ANSI-B16.9	Undefined	
Piping	Default	0.75	1.5	in	S-XS					Undefined		PAAZZBPZZABAABSAAZZUS	Pipe, [401], PE, ASTM-A106-B	Undefined	
Piping	Default	2	24	in	S-STD					Undefined		PAAZZBPZZABAABOAAZZUS	Pipe, [401], BE, ASTM-A53-B Type S	Undefined	
Tee	Default	2	24	in	MATCH					MATCH		Tee01			

Modeling Verification

1. Enter the Systems and Specifications task.

2. Add the newly added spec to the plant hierarchy at any level you desire.

3. Enter the piping task.

4. Verify placement of spec components.

   Note: Use the insert component command to **place the Tee** component on a straight pipe. System displays an error message. Note the error message indicating that the material control data of the component is not defined in the catalog.

5. Exit the model.

Lab 3: Piping Commodity Part Data

Objective

After completing this lab, you will be able to:

- Define piping components associated with a particular piping material class.

Reminder : The Piping Commodity Filter rule is intended to provide the data that is required to select unique piping commodity codes from the part catalog.

Editing Piping Commodity (Part) Data

1. Open the Ten_Specs_CatalogData.xls file located in <SP3DInstalled_Location>\ CatalogData\BulkLoad\DataFiles and **save the following worksheets to a new workbook:**

   CustomInterfaces

   GUIs

   Tee

2. Open the Tee worksheet.

3. Add records for the new commodity code Tee01 as shown below:

Head Start	IndustryCommodityCode	FirstSizeSchedule	SecondSizeSchedule	CommodityType	GeometryType	GraphicalRepresentationOrNot	SymbolDefinition	MaterialGrade	LiningMaterial	PipingPointBasis[1]	Id[1]	PressureRating[1]	EndPreparation[1]	EndStandard[1]	ScheduleThickness[1]	FlowDirection[1]	PipingPointBasis[2]	Id[2]	PressureRating[2]	EndPreparation[2]	EndStandard[2]	ScheduleThickness[2]	FlowDirection[2]	PipingPointBasis[3]	Id[3]	PressureRating[3]	EndPreparation[3]	EndStandard[3]	ScheduleThickness[3]	FlowDirection[3]	PipingNote1	DryWeight	Npd[1]:Primary	NpdUnitType[1]	Npd[2]:Primary	NpdUnitType[2]	Npd[3]:Secondary	NpdUnitType[3]	FacetoCenter
a	Tee01	S-STD	S-STD	T	75		SP3DTee.CEqualTee	264		15		301	5	S-STD	3	15		301	5	S-STD	3	15		301	5	S-STD	3					3lbm	2 in	2 in		2 in	2 in	2.5in
a																																13lbm	4 in	4 in		4 in	4 in	4.125in
a																																29lbm	6 in	6 in		6 in	6 in	5.625in
a																																54lbm	8 in	8 in		8 in	8 in	7in
a																																88lbm	10 in	10 in		10 in	10 in	8.5in
a																																128lbm	12 in	12 in		12 in	12 in	10in
a																																176lbm	14 in	14 in		14 in	14 in	11in
a																																200lbm	16 in	16 in		16 in	16 in	12in
a																																318lbm	18 in	18 in		18 in	18 in	13.5in
a																																369lbm	20 in	20 in		20 in	20 in	15in
a																																560lbm	24 in	24 in		24 in	24 in	17in

4. Save the workbook as **Company_Catalog.xls**.
5. Open CC150-1.xls.
6. Open the Ten_Specs_SpecificationData.xls file located in <SP3DInstalled_Location>\ CatalogData\BulkLoad\DataFiles
7. Open the PipingCommodityMatlControlData worksheet
8. Save the sheet into the CC150-1.xls

9. Add the record for the new commodity code Tee01 as shown below:

Head	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	IndustryCommodityCode	ClientCommodityCode	CIMISCommodityCode	ShortMaterialDescription	LocalizedShortMaterialDesc	LongMaterialDescription	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	Quantity	GasketRequirements	BoltingRequirements	WeldingRequirement	LooseMaterialRequirements
Start																									
a	Tee01	2	24	in								Tee, [403], BE, ASTM-A234-WPB, ANSI-B16.9			39			15	2	5		20	35	5

10. Load the Company_Catalog.xls into the Catalog using the Add/Modify and Delete Mode.
11. Review the log file once the Bulkload process is complete.
12. Load the CC150-1.xls into the Catalog using the Add/Modify and Delete Mode.
13. Review the log file once the Bulkload process is complete.
14. Run the Verify Consistency between Piping Specification and Catalog command again.
15. Review the output report. Note that there is no entries in the *Piping commodity undefined in piping commodity material control data* and in the *Piping commodity undefined in piping commodity part data* reports.
16. Go to the Piping Task and place the Tee using the Insert component command.

Lab 4: Branch Insertion Rule

Objective

- After completing this lab, you will be able to create the branch insertion rule for the specified spec.

1. Open the Ten_Specs_SpecificationData.xls file located in <SP3DInstalled_Location>\ CatalogData\BulkLoad\DataFiles

2. Select PipeBranch worksheet. Move and copy this sheet into the CC150-1.xls in your working directory.

3. Add records to create the branch insertion rule for spec CC150-1 as shown below:

Header

Branch \ Header	0.75	1	1.5	2	4	6	8	10	12	14	16	18	20	24
0.75	RW	RW	RW	S	S	S	S	S	S	S	S	S	S	S
1		RW	RW	S	S	S	S	S	S	S	S	S	S	S
1.5			RW	S	S	S	S	S	S	S	S	S	S	S
2				T	W	W	W	W	W	W	W	W	W	W
4					T	W	W	W	W	W	W	W	W	W
6						T	W	W	W	W	W	W	W	W
8							T	W	W	W	W	W	W	W
10								T	W	W	W	W	W	W
12									T	W	W	W	W	W
14										T	W	W	W	W
16											T	W	W	W
18												T	W	W
20													T	W
24														T

Head Start	SpecName	HeaderSize	BranchSize	AngleLow	AngleHigh	HdrSizeNPDUnitType	BrSizeNPDUnitType	ShortCode	SecondaryShortCode	TertiaryShortCode
	CC150-1	0.75	0.75	89.5deg	90.5deg	in	in	Reinforcing Weld		
	CC150-1	1	0.75	89.5deg	90.5deg	in	in	Reinforcing Weld		
	CC150-1	1	1	89.5deg	90.5deg	in	in	Reinforcing Weld		
	CC150-1	1.5	0.75	89.5deg	90.5deg	in	in	Reinforcing Weld		
	CC150-1	1.5	1	89.5deg	90.5deg	in	in	Reinforcing Weld		
	CC150-1	1.5	1.5	89.5deg	90.5deg	in	in	Reinforcing Weld		
	CC150-1	2	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	4	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	6	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	8	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	10	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	12	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	14	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	16	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	18	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	20	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	24	1.5	89.5deg	90.5deg	in	in	Sockolet		
	CC150-1	2	2	89.5deg	90.5deg	in	in	Tee		
	CC150-1	4	4	89.5deg	90.5deg	in	in	Tee		
	CC150-1	6	6	89.5deg	90.5deg	in	in	Tee		
	CC150-1	8	8	89.5deg	90.5deg	in	in	Tee		
	CC150-1	10	10	89.5deg	90.5deg	in	in	Tee		
	CC150-1	12	12	89.5deg	90.5deg	in	in	Tee		
	CC150-1	14	14	89.5deg	90.5deg	in	in	Tee		
	CC150-1	16	16	89.5deg	90.5deg	in	in	Tee		
	CC150-1	18	18	89.5deg	90.5deg	in	in	Tee		
	CC150-1	20	20	89.5deg	90.5deg	in	in	Tee		
	CC150-1	24	24	89.5deg	90.5deg	in	in	Tee		
	CC150-1	4	2	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	6	4	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	8	6	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	10	8	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	12	10	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	14	12	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	16	14	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	18	16	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	20	18	89.5deg	90.5deg	in	in	Weldolet		
	CC150-1	24	20	89.5deg	90.5deg	in	in	Weldolet		

4. Run the Verify Consistency between Piping Specification and Catalog command.
5. Review the output report. Go to *Branch fitting undefined in piping commodity filter* report.

Note that all the branch fitting specified by the branch table is determined to be undefined in the piping commodity filter. Let add the missing components in the piping commodity filter.

Description Of The Error	Piping Materials Class	Revision Number	Short Code	HeaderSize	Header Size NPD Unit Type	BranchSize	Branch Size NPD Unit Type
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Reinforcing Weld	0.75	in	0.75	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Reinforcing Weld	1	in	0.75	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Reinforcing Weld	1	in	1	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Reinforcing Weld	1.5	in	0.75	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Reinforcing Weld	1.5	in	1	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Reinforcing Weld	1.5	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	2	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	4	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	4	in	2	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	6	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	6	in	4	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	8	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	8	in	6	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	10	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	10	in	8	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	12	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	12	in	10	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	14	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	14	in	12	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	16	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	16	in	14	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	18	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	18	in	16	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	20	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	20	in	18	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Sockolet	24	in	1.5	in
Branch fitting in pipebranch undefined in piping commodity filter	CC150-1		Weldolet	24	in	20	in

6. Go to the PipingCommodityFilter worksheet.
7. Add the record for the new commodities as shown below:

Item	Size	Commodity Code	Description
Sockolet	0.75" – 1.5"	MELAWDFZZAEYABQZZUM	Sockolet, SWE, 3000#, ASTM-A105
Weldolet	2"-20"	MEKZZBOZZAEYABQZZUM	Weldolet, [412], BE, CS, ASTM-A105 MSS SP-97
Reinforcing Weld	0.75"-1.5"		Reinforcing Weld CS, ASTM A53-B

ShortCode	OptionCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	Comments	SelectionBasis	JacketedPipingBasis	MaximumTemperature	MinimumTemperature	EngineeringTag		CommodityCode	FabricationCategoryOverride	SupplyResponsibilityOverride	FirstSizeSchedule	SecondSizeSchedule
Reinforcing Weld	1	1	1.5	in	0.75	0.75	in			25										
Reinforcing Weld	1	1.5	1.5	in	1	1	in			25										
Reinforcing Weld	1	0.75	1.5	in						25										
Sockolet	1	2	24	in	0.75	1.5	in			1						MELAWDFZZAEYABQZZUM				
Weldolet	1	4	24	in	2	20	in			1						MEKZZBOZZAEYABQZZUM			MATCH	MATCH

8. Save the CC150-1.xls
9. Load the information into the Catalog using the Add/Modify and Delete Mode.
10. Review the log file once the Bulkload process is complete.
11. Run the Verify Consistency between Piping Specification and Catalog command.
12. Review the output report. Go to the index sheet and select the following links:

- Branch fitting undefined in piping commodity filter

Note that there is no entries in the *Branch fitting undefined in piping commodity filter* report.

- Piping commodity undefined in piping commodity material control data

- Piping commodity undefined in piping commodity part data

Note that there is no entries in both reports.

- Plain pipe end generic data undefined

Note that there are missing plain piping generic data for the sockolet component. The system is checking the generic data in all size combinations for a part (example: sockolet) that is referenced by the piping specification and not limiting the check to the sizes that are applicable to the component.

SmartPlant

! Plain piping generic data undefined

Description of the error	Piping Materials Class	Revision Number	Contractor Commodity Code	Industry Commodity Code	Short Material Description	Nominal Piping Diameter	Nominal Diameter Units	Schedule (Thickness)	End Standard	essure Rating
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		2	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		4	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		6	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		8	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		10	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		12	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		14	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		16	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		18	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		20	in	Undefined	Default	1
Plain pipe end generic data undefined	CC150-1	A	MELAWDFZZAEYABQZZUM	MELAWDFZZAEYABQZZUM		24	in	Undefined	Default	1

13. Go to the Piping Task and test the branch insertion rule using Route Pipe command to route a 4" header line and a 2" branch line.

Lab 5: Bolted Components and Valve Operators

Objective

- After completing this lab, you will be able to add, delete or modify existing piping specifications.
- Use the automated flange selection logic to distinguish between flanges to be inserted on plain piping versus fitting-to-fitting situations.

Add records for flanges and valves in spec CC150-1 as shown below:

Item	Size	Commodity Code	Description
Flange at Fitting	2" -24"	FWN001	Flange, CL150, RFFE/BE, ASTM-A105, ANSI-B16.5, WN, [409]bore to match
Flange	2"-24"	FSO001	Flange CL150, RFFE,ASTM-A105, ANSI-B16.5, SO
Gate Valve	2"-12"	GAT001	Gate valve, CL300, RFFE, BB, OS&Y, ASTM-A216-WCB, trim 8, Crane 33

Adding Flanges

1. Open the Company_Catalog.xls

2. Open the WeldNeckFlange worksheet and edit as follows:

3. Make a copy of the WeldNeckFlange worksheet and rename it as SlipOnFlange.

4. Edit the SlipOnFlange sheet as follows:

Definition	PartClassType	SymbolDefinition	UserClassName	OccClassName	SymbolIcon	OA:InsulationThickness
a	PipeComponentClass		Slip on Flange	Slip on Flange	SymbolIcons\SP3DSliponFlange.gif	

Head / Start	IndustryCommodityCode	FirstSizeSchedule	SecondSizeSchedule	CommodityType	GeometryType	GraphicalRepresentationOrNot	SymbolDefinition	MaterialGrade	LiningMaterial	PipingPointBasis[1]	Id[1]	PressureRating[1]	EndPreparation[1]	EndStandard[1]	ScheduleThickness[1]	FlowDirection[1]	PipingPointBasis[2]	Id[2]	PressureRating[2]	EndPreparation[2]	EndStandard[2]	ScheduleThickness[2]	FlowDirection[2]	PipingNote1	Npd[1]	NpdUnitType[1]	Npd[2]	NpdUnitType[2]	FacetoFace
a	FSO001			FSO	15		SP3DSlipOnFlange.CSlipOnFlange	150		15		150	21	5		3	15		591	5		3			2	in	2	in	1in
a																									4	in	4	in	1.31in
a																									6	in	6	in	1.56in
a																									8	in	8	in	1.75in
a																									10	in	10	in	1.94in
a																									12	in	12	in	2.19in
a																									14	in	14	in	2.25in
a																									16	in	16	in	2.5in
a																									18	in	18	in	2.69in
a																									20	in	20	in	2.88in
a																									24	in	24	in	3.25in

5. Save the workbook.

6. Open the CC150-1.xls spreadsheet.

7. Open the PipingCommodityMatlControlData worksheet and add the following record:

   • The ContractorCommodityCode is FWN001.

   • The ShortMaterialDescription is Flange WN CL150 RFFE CS A105, ASME B16.5.

   • The ContractorCommodityCode is FSO001.

   • The ShortMaterialDescription is Flange CL150, RFFE,ASTM-A105, ANSI-B16.5, SO.

   Note : Add the appropriate values in the Geometric Industry Standard, Fabrication Type, Supply Responsibility, Reporting Type, Gasket Requirement, Bolting Requirement, and Welding Requirement columns. (Hint : Check the AllCodeLists.xls spreadsheet for similar codelist items.)

Head	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	IndustryCommodityCode	ClientCommodityCode	CIMISCommodityCode	ShortMaterialDescription	LocalizedShortMaterialDesc	LongMaterialDescription	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	Quantity	GasketRequirements	BoltingRequirements	WeldingRequirement
Start																								
	Tee01	2	24	in								Tee, [403], BE, ASTM-A234-WPB, ANSI-B16.9			39			15	2	5		20	35	5
a	FWN001											Flange, CL150, RFFE/BE, ASTM-A105, ANSI-B16.5, WN, [40			35			15	2	5		5	5	5
a	FSO001											Flange CL150, RFFE,ASTM-A105, ANSI-B16.5, SO			35			15	2	5		5	5	5
End																								

8. Save the workbook.

9. Load the information into the Catalog using the Add/Modify and Delete Mode.

10. Review the log file once the Bulkload process is complete.

11. Run the Verify Consistency between Piping Specification and Catalog command.

12. Review the output report. Go to the index sheet and select the following links:

   - Piping commodity undefined in piping commodity material control data

   - Piping commodity undefined in piping commodity part data

   - Summary of existing symbols

   - Summary of catalog parts

Adding Gate Valves

1. Open the Company_Catalog.xls workbook again.

2. Open the Gate Valve worksheet and edit as follows:

	IndustryCommodityCode	FirstSizeSchedule	SecondSizeSchedule	CommodityType	GeometryType	GraphicalRepresentationOrNot		SymbolDefinition	SymbolIcon	MaterialGrade	LiningMaterial	BendRadius	BendRadiusMultiplier	MirrorBehaviorOption	PartDataBasis	ValveManufacturer	ValveModelNumber	ValveTrim	FlangeFaceSurfaceFinish	SurfacePreparation	ManufacturingMethod	MiscRequisitionClassification
Head																						
Start																						
a	GAT001			GAT	15			SP3DGateValve.CGateValve	252								440	35				
a																						
a																						
a																						
a																						
a																						
End																						

PipingPointBasis[1]	Id[1]	PressureRating[1]	EndPreparation[1]	EndStandard[1]	ScheduleThickness[1]	FlowDirection[1]	PipingPointBasis[2]	Id[2]	PressureRating[2]	EndPreparation[2]	EndStandard[2]	ScheduleThickness[2]	FlowDirection[2]	PipingNote1	DryWeight	Npd[1]	NpdUnitType[1]	Npd[2]	NpdUnitType[2]	FacetoFace
15		150	21	5		3	15		150	21	5		3		46lbm	2	in	2	in	7in
															110lbm	4	in	4	in	9in
															175lbm	6	in	6	in	10.5in
															310lbm	8	in	8	in	11.5in
															455lbm	10	in	10	in	13in
															650lbm	12	in	12	in	14in

3. Save the workbook.

4. Open the CC150-1.xls workbook.

5. Open the PipingCommodityMatlControlData worksheet

   - The ContractorCommodityCode is GAT001.

   - The ShortMaterialDescription is Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-WCB, trim 8, Crane 47

6. Note : Add the appropriate values in the Geometric Industry Standard, Fabrication Type, Supply Responsibility, Reporting Type, Gasket Requirement, Bolting Requirement, and

Welding Requirement columns of the part. (Hint : Check the AllCodeLists.xls spreadsheet for similar codelist items.)

7. Add the valve operator data for the Gate Valve.

	Name	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	IndustryCommodityCode	ClientCommodityCode	CIMISCommodityCode	Description	ShortMaterialDescription	LocalizedShortMaterialDesc	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	QuantityOfReportableParts	GasketRequirements	BoltingRequirements	WeldingRequirement	MultiportValveOpReq	ValveOperatorType	ValveOperatorGeoIndStd	ValveOperatorCatalogPartNumber
Head																													
Start																													
	Tee01		2	24	in								Tee, [403], BE, ASTM-A234-WPB, ANSI-B16.9	39					15	2	5	20	35	5					
	FWN001												Flange, CL150, RFFE/BE, ASTM-A105, ANSI-B16.5, WN, [403]	35					15	2	5	5	5	5					
	FSO001												Flange, CL150, RFFE, ASTM-A105, ANSI-B16.5, SO	35					15	2	5	5	5	5					
A	GAT001												Gate valve, CL150, RFFE, BB, OS&Y, ASTM-A216-WCB, trim 8, Crane 47	40					7	10	5	5	5	50		3	1190	GAT001-BLT-150-3

8. Save the workbook.

Creating Piping Material Class Records.

1. Go to the PipingCommodityFilter worksheet.

2. Add records for the flanges and gate valve.

	SpecName	ShortCode	OptionCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	Comments	SelectionBasis	JacketedPipingBasis	MaximumTemperature	MinimumTemperature	EngineeringTag	CommodityCode	FabricationCategoryOverride	SupplyResponsibilityOverride	FirstSizeSchedule	SecondSizeSchedule
Head																					
Start																					
a	Flange	1	2	24	in							5					FSO001				
a	Flange at Fitting	1	2	24	in							5					FWN001				MATCH
a	Gate Valve	1	2	12	in							1					GAT001				

3. Save the file and exit.

4. Load the modified workbooks into the database using the Bulkload Utility.

5. Review the log file once the Bulkload process is complete. Run the Verify Consistency between Piping Specification and Catalog command.

6. Review the output report. Go to the index sheet and select the following links:

    - Piping commodity undefined in piping commodity material control data

    - Piping commodity undefined in piping commodity part data

    - Summary of existing symbols

    - Summary of catalog parts

    - Valve operator undefined in valve operator part data

! Valve operator is determined to be undefined in the valve operator part data

Description Of The Error	Piping Materials Class	Revision Number	Valve Operator Number	Contractor Commodity Code
Valve operator undefined in valve operator part data	CC150-1	A	GAT001-BLT-150-3	GAT001

Note: the system reports that the valve operator is not defined in the part catalog.

    - Valve operator undefined in piping commodity material control data

! Valve operator is determined to be undefined in the valve operator material control data

Description Of The Error	Piping Materials Class	Revision Number	Valve Operator Number	Contractor Commodity Code
Valve operator undefined in valve operator material control data	CC150-1	A	GAT001-BLT-150-3	GAT001

Note: the system reports that valve operator is not defined in the valve operator material control data

    - PMCSymbolPlacement.xls

Description Of The Error	Piping Materials Class	Revision Number	Industry Commodity Code	Short Code	Primary Size	Primary Size Units	Secondary Size	Secondary Size Units	Multi-size option	First Size Schedule	Second Size Schedule	Option Code
Placement of Symbol Failed. Please refer the log file	CC150-1	A	GAT001	Gate Valve	2	in						1
Placement of Symbol Failed. Please refer the log file C:\Train\SymbolPlacementError Log.log	CC150-1	A	GAT001	Gate Valve	4	in						1
Placement of Symbol Failed. Please refer the log file C:\Train\SymbolPlacementError Log.log	CC150-1	A	GAT001	Gate Valve	6	in						1
Placement of Symbol Failed. Please refer the log file C:\Train\SymbolPlacementError Log.log	CC150-1	A	GAT001	Gate Valve	8	in						1
Placement of Symbol Failed. Please refer the log file C:\Train\SymbolPlacementError Log.log	CC150-1	A	GAT001	Gate Valve	10	in						1
Placement of Symbol Failed. Please refer the log file C:\Train\SymbolPlacementError Log.log	CC150-1	A	GAT001	Gate Valve	12	in						1

Note: The system reports that the system fails to construct the gate valve GAT001 symbol for all sizes.

Adding valve operator data

7. Open the Company_Catalog.xls workbook again

8. Open the Operator3 worksheet

9. Add the valve operator data GAT001-BLT-150-3 as shown below:

Definition	PartClassType	SymbolDefinition	SymbolIcon											
	ValveOperatorClass		SymbolIcons\SP3DOP3.gif											
CommodityPart	ValveOperatorNumber	ValveSize	ValveSizeUnits	SymbolDefinition	MirrorBehaviorOption	ValveOperatorIsRotatable	DryWeight	DryCogX	DryCogY	DryCogZ	OperatorHeight	OperatorDiameter
Head												
Start												
a	GAT001-BLT-150-3	2	in		SP3DOP3.COP3		5				17.813in	10in
a		4	in								28.188in	13.75in
a		6	in								35.375in	15.5in
a		8	in								45in	19.5in
a		10	in								52.5in	19.5in
a		12	in								61.125in	20in

10. Save the workbook.

11. Open CC150-1.xls.

12. Open the Ten_Specs_SpecificationData.xls file located in <SP3DInstalled_Location>\
CatalogData\BulkLoad\DataFiles

13. Open the ValveOperatorMatlControlData worksheet

14. Add the valve operator data GAT001-BLT-150-3 as shown below:

	OperatorPartNumber	ShortMatlDescription	LocalizedShortMaterialDescription	LongMaterialDescription	Vendor	Manufacturer	ValveOperatorType	ReportableCommodityCode	QuantityOfReportableParts	AltReportableCommodityCode	QuantityOfAltReportableParts	HyperlinkToElectronicVendor	HyperlinkToElectronicManuals
Head													
Start													
a	GAT001-BLT-150-3	Handwheel											

15. Save the sheet into the CC150-1.xls
16. Save the file and exit.
17. Load the modified workbooks into the database using the Bulkload Utility.
18. Review the log file once the Bulkload process is complete. Run the Verify Consistency between Piping Specification and Catalog command.

Review the output report. Go to the index sheet and select the following links:

- Piping commodity undefined in piping commodity material control data

- Piping commodity undefined in piping commodity part data

- Summary of existing symbols

- Summary of catalog parts

- Valve operator undefined in valve operator part data

- Valve operator undefined in piping commodity material control data

- PMCSymbolPlacement.xls

Lab 6: Connection Components

Objective

• After completing this lab, you will be able to define bolt and gasket data to an existing piping specification.

Creating Gasket Records.

1. Open the Ten_Specs_SpecificationData.xls file located in <SP3DInstalled_Location>\ CatalogData\BulkLoad\DataFiles

2. Select GasketSelection Filter and BoltSelectionFilter sheets. Move and copy these sheets into the CC150-1.xls

3. Go to the GasketSelectionFilter worksheet and add the following records:

Head	SpecName	NominalDiameterFrom	NominalDiameterTo	NpdUnitType	GasketOption	MaximumTemperature	EndPreparation	PressureRating	EndStandard	AlternateEndPreparation	AlternatePressureRating	AlternateEndStandard	FluidCode	ScheduleThickness	ContractorCommodityCode	Priority	RingNumber	FabricationCategoryOverride	SupplyResponsibilityOverride	Comments	PipingNote1
Start																					
a	CC150-1	2	24	in	1		21	150	5						GMAHACABXBEPUS			7	10		
a	CC150-1	2	24	in	1		21	150	5	121	150	5			GMAHACABXBEPUS			7	10		
End																					

Creating Bolt Records.

1. Go to the BoltSelectionFilter worksheet and add the following records:

Head	SpecName	NominalDiameterFrom	NominalDiameterTo	NpdUnitType	BoltOption	MaximumTemperature	EndPreparation	PressureRating	EndStandard	AlternateEndPreparation	AlternatePressureRating	AlternateEndStandard	ContractorCommodityCode	Priority	BoltExtensionOption	FabricationCategoryOverride	SupplyResponsibilityOverride	Comments	PipingNote1
Start																			
a	CC150-1	2	24	in	1		21	150	5				BAZZZZZZAAYBETZZUS		1	7	10		
a	CC150-1	2	24	in	1		21	150	5	121	150	5	BAZZZZZZAAYBETZZUS		1	7	10		
End																			

2. Save the file and load the CC150-1.xls using the Bulkload Utility. Review the log file.

3. Run the Verify Consistency between Piping Specification and Catalog command.

4. Review the output report. Go to the index sheet and select the following links:

    - Bolt for bolted joint undefined in bolt selection filter data

    - Bolts undefined in piping commodity material control data

    - Bolts undefined in bolt part data

    - Summary of bolt parts

    - Gasket for bolted joint undefined in gasket selection filter data

    - Gaskets undefined in piping commodity material control data

    - Gaskets undefined in gasket part data

    - Summary of gasket parts

5. Enter SmartPlant 3D and attempt to place a flange or flanged valve on the existing lines from the prior lab.

Lab7: PipeTakedown Parts Rule

Objective

- After completing this lab, you will be able to create the pipe takedown parts rule for the specified spec.

1. Open the Ten_Specs_SpecificationData.xls file located in <SP3DInstalled_Location>\
    CatalogData\BulkLoad\DataFiles

2. Select PipeTakedownParts worksheet. Move and copy this sheet into the CC150-1.xls

3. Add records to create the pipe takedown parts rule for spec CC150-1 as shown below:

    - Place a Union when NPD is 0.75"
    - Place a Coupling when NPD is between 1" – 1.75"
    - Place default flanges when NPD is between 2" – 24"

Head	SpecName	TakeDownShortCode	WeldShortCode	IsPairRequired	Npd	NpdUnitType	IsWeld
Start							
a	CC150-1	Union	Butt Weld	0	0.75	in	1
a		Coupling	Butt Weld	0	1	in	1
a		Coupling	Butt Weld	0	1.5	in	1
a		Flange	Butt Weld	1	2	in	1
a		Flange	Butt Weld	1	4	in	1
a		Flange	Butt Weld	1	6	in	1
a		Flange	Butt Weld	1	8	in	1
a		Flange	Butt Weld	1	10	in	1
a		Flange	Butt Weld	1	12	in	1
a		Flange	Butt Weld	1	14	in	1
a		Flange	Butt Weld	1	16	in	1
a		Flange	Butt Weld	1	18	in	1
a		Flange	Butt Weld	1	20	in	1
a		Flange	Butt Weld	1	24	in	1
End							

4. Go to the PipingCommodityFilter worksheet.
5. Add the record for the new commodities as shown below:

Item	Size	Commodity Code	Description
Union	0.75" – 0.75"	MAXAWBVZZADRABQZZUS	Union, CL3000, SWE, ASTM-A105, MSS-SP-83
Coupling	1" – 1.5"	MAKAWBVZZAAGABQZZUS	Coupling, CL3000, SWE, ASTM-A105, ANSI-B16.11

Head	SpecName	ShortCode	OptionCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	Comments	SelectionBasis	JacketedPipingBasis	MaximumTemperature	MinimumTemperature	EngineeringTag	CommodityCode
Start																	
a		Coupling	1	1	1.5	in						1					MAKAWBVZZAAGABQZZUS
a		Union	1	0.75	0.75	in						1					MAXAWBVZZADRABQZZUS

6. Save the sheet into the CC150-1.xls
7. Load the information into the Catalog using the Add/Modify and Delete Mode.
8. Review the log file once the Bulkload process is complete.
9. Run the Verify Consistency between Piping Specification and Catalog command.
10. Review the output report. Go to the index sheet and select the following links:

   - Piping commodity undefined in piping commodity material control data

   - Piping commodity undefined in piping commodity part data

   - Summary of existing symbols

   - Summary of catalog parts

11. Go to the Piping Task and test the pipe takedown parts rule.

Lab 8: Permissible Taps Rule

Objective

- After completing this lab, you will be able to create the permissible taps rule for the specified spec.

1. Open the Ten_Specs_SpecificationData.xls file located in <SP3DInstalled_Location>\ CatalogData\BulkLoad\DataFiles

2. Select PermissibleTaps worksheet. Move and copy this sheet into the CC150-1.xls

3. Add records to create the permissible taps rule for spec CC150-1 as shown below:

   - Set the default tap for a 1" NPD
   - Place a 3000# socket weld tap when NPD is between 0.75" – 4"
   - Place a hole circular end tap when NPD is between 4" – 24"

	SpecName	PermissibleTapNumber	IsPreferredTap
Head			
Start			
A	CC150-1	Tap-004	FALSE
A		Tap-006	TRUE
A		Tap-010	FALSE
A		Tap-012	FALSE
A		Tap-018	FALSE
A		Tap-021	FALSE
A		Tap-022	FALSE
A		Tap-023	FALSE
A		Tap-024	FALSE
A		Tap-025	FALSE
A		Tap-026	FALSE
A		Tap-027	FALSE
A		Tap-028	FALSE
A		Tap-029	FALSE
End			

Note: The Permissible TapNumbers are defined in TapProperties rule.

4. Save the sheet into the CC150-1.xls
5. Load the information into the Catalog using the Add/Modify and Delete Mode.
6. Review the log file once the Bulkload process is complete.

7. Run the Verify Consistency between Piping Specification and Catalog command.
8. Review the output report. Go to the index sheet and select the following link:

   - Rules data undefined
   - Tap undefined in tap properties data

9. Go to the Piping Task and test the permissible taps rule.

Lab 9: Model/Catalog Synchronization

Objective

- After completing this lab, you will be able to modify the piping specification/catalog and synchronize the catalog with the model data.

Component Modeling

1. Route items in the model that include the following items:

2. Large bore pipe and fittings (NPD = 4")

3. Small Bore pipe and fittings (NPD = 2")

4. At least one flanged component

5. At least three standard tees on the 2" pipeline: at the end of a pipe, somewhere along the pipe and between two fittings.

Modification of Specification Fabrication Category Data

1. Exit SP3D and open the CC150-1.xls workbook.

2. Open the PipingCommodityMatlControlData worksheet

3. Make the 2" Tee field fabricated for this spec as follows:

	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	IndustryCommodityCode	ClientCommodityCode	CIMSCommodityCode		ShortMaterialDescription	LocalizedShortMaterialDesc	LongMaterialDescription	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	Quantity	GasketRequirements	BoltingRequirements	WeldingRequirement
Head																									
Start																									
d	Tee01	2	24	in									Tee, [403], BE, ASTM-A234-WPB, ANSI-B16.9			39			15	2	5		20	35	5
a	Tee01	2	2	in									Tee, [403], BE, ASTM-A234-WPB, ANSI-B16.9			39			7	2	5		20	35	5
a	Tee01	4	24	in									Tee, [403], BE, ASTM-A234-WPB, ANSI-B16.9			39			15	2	5		20	35	5

Note: Delete the existing Tee01 row first because the sizes are attributes that make the row unique.

4. Save the spreadsheet.

5. Open the Company_Catalog.xls

6. Open the Tee worksheet and edit the FacetoCenter dimension for the 2" Tee as follows:

FacetoCenter = 6in

Head	IndustryCommodityCode	FirstSizeSchedule	SecondSizeSchedule	CommodityType	GeometryType	GraphicalRepresentationOrNot	SymbolDefinition	MaterialGrade	LiningMaterial	PipingPointBasis[1]	Id[1]	PressureRating[1]	EndPreparation[1]	EndStandard[1]	ScheduleThickness[1]	FlowDirection[1]	Id[2]	PressureRating[2]	EndPreparation[2]	EndStandard[2]	ScheduleThickness[2]	FlowDirection[2]	PipingPointBasis[3]	Id[3]	PressureRating[3]	EndPreparation[3]	EndStandard[3]	ScheduleThickness[3]	FlowDirection[3]	PipingNote1	DryWeight	Npd[1]:Primary	NpdUnitType[1]	Npd[2]:Primary	NpdUnitType[2]	Npd[3]:Secondary	NpdUnitType[3]	FacetoCenter
Start																																						
m	Tee01	S-STD	S-STD	T	75		SP3DTee.CEqualTee	264			15		301	5	S-STD	3	15		301	5	S-STD	3	15		301	5	S-STD	3			3lbm	2	in	2	in	2	in	6in
m																															13lbm	4	in	4	in	4	in	4.125in
m																															29lbm	6	in	6	in	6	in	5.625in
m																															54lbm	8	in	8	in	8	in	7in
m																															88lbm	10	in	10	in	10	in	8.5in
m																															128lbm	12	in	12	in	12	in	10in
m																															176lbm	14	in	14	in	14	in	11in
m																															200lbm	16	in	16	in	16	in	12in
m																															318lbm	18	in	18	in	18	in	13.5in
m																															369lbm	20	in	20	in	20	in	15in
m																															560lbm	24	in	24	in	24	in	17in
End																																						

7. Load the changes into the database using the Bulkload Utility. Review the log file.

   Note : Make sure to mark modified all rows in the spreadsheet with an "M", and use the "Add, Modify, or Delete" Bulkload option.

8. Open Project Management Tool

9. Select the Model and go to Tool -> Synchronize Model with Catalog command. <u>Do not need to re-generate the views</u> in the model.

10. Select OK to start the process.

11. Enter SmartPlant 3D and go to Piping task. Use F5 to update graphics if using a session file to enter the model.

12. Review the TO DO LIST dialog box.

13. Hit the Update button in the TO DO LIST to update any out of date entries in the list.

Lab 10: Reportable Piping Commodity

Objective

- After completing this lab, you will be able to add a lap joint flange represents the primary piping commodity, and the stub end represents the reportable piping commodity for reporting purposes. It is not necessary that the stub end be modeled.

1. Add records for lap joint flange in spec CC150-1 as shown below:

Item	Option	Size	Commodity Code	Description
Flange	189	4" -8"	FLSL-01	Flange, CL150, RFFE/BE, ASTM-A105, ANSI-B16.5, FLSL
		4"-8"	StubEnd-01	Stub End, ANSI-B16.9, bevel end, Schedule bore to match

2. Open the Company_Catalog.xls

3. Edit the LapJointFlange sheet as follows:

4. Go to StubEnd sheet.

5. Edit the StubEnd sheet as follows:

6. Save the file and exit.

7. Open the CC150-1.xls spreadsheet.

8. Open the PipingCommodityMatlControlData worksheet

- The ContractorCommodityCode is FLSL-01.

- The ShortMaterialDescription is Flange, CL150, RFFE/BE, ASTM-A105, ANSI-B16.5, FLSL

- The ContractorCommodityCode is StubEnd-01.

- The ShortMaterialDescription is Stub End, ANSI-B16.9, bevel end, Schedule bore to match

Note : Add the appropriate values in the Geometric Industry Standard, Fabrication Type, Supply Responsibility, Reporting Type, Gasket Requirement, Bolting Requirement, and Welding Requirement columns of the part. (Hint : Check the AllCodeLists.xls spreadsheet for similar codelist items.)

	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	ShortMaterialDescription	LocalizedShortMaterialDesc	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	Quantity	GasketRequirements	BoltingRequirements	WeldingRequirement
Head																
Start																
a	FLSL-01				Flange CL150 RFLFE/BE CS A105, ASME B16.5, FLSL		39			15	2	5		5	5	5
a	StubEnd-01				Stub End ASME B16.5, bevel end, Schedule bore to match		39			15	2	5		5	5	50

Creating Piping Material Class Record

9. Open the PipingCommodityFilter worksheet.

10. Add records for the lap joint flange and the Stub End.

Head	SpecName	ShortCode	OptionCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	Comments	SelectionBasis	CommodityCode	FabricationCategoryOverride	SupplyResponsibilityOverride	FirstSizeSchedule	SecondSizeSchedule	ReportableCommodityCode	QuantityOfReportableParts
Start																			
a		Flange	189	4	8	in						5	FLSL-01				MATCH	StubEnd-01	1

11. Save the file and load both workbooks using the Bulkload Utility.

12. Review the log file once the Bulkload process is complete.

13. Run the Verify Consistency between Piping Specification and Catalog command again.

14. Review the output report. Go to the index sheet and select the following links:

- Piping commodity undefined in piping commodity material control data

- Piping commodity undefined in piping commodity part data

- Summary of existing symbols

- Summary of catalog parts

- Bolt for bolted joint undefined in bolt selection filter data

- Bolts undefined in piping commodity material control data

- Bolts undefined in bolt part data

- Summary of bolt parts

- Gasket for bolted joint undefined in gasket selection filter data

- Gaskets undefined in piping commodity material control data

- Gaskets undefined in gasket part data

- Summary of gasket parts

Note: the report shows missing bolts and gaskets.

Creating Gasket Records.

15. Open the GasketSelectionFilter worksheet and add the following records:

Head Start	SpecName	NominalDiameterFrom	NominalDiameterTo	NpdUnitType	GasketOption	MaximumTemperature	EndPreparation	PressureRating	EndStandard	AlternateEndPreparation	AlternatePressureRating	AlternateEndStandard	FluidCode	ScheduleThickness	ContractorCommodityCode	Priority	RingNumber	FabricationCategoryOverride	SupplyResponsibilityOverride
a	CC150-1	4	8	in	1		71	150	5						GMAHACABXBEPUS			7	10

Creating Bolt Records.

16. Open the BoltSelectionFilter worksheet and add the following records:

Head Start	SpecName	NominalDiameterFrom	NominalDiameterTo	NpdUnitType	BoltOption	MaximumTemperature	EndPreparation	PressureRating	EndStandard	AlternateEndPreparation	AlternatePressureRating	AlternateEndStandard	ContractorCommodityCode	Priority	BoltExtensionOption	FabricationCategoryOverride	SupplyResponsibilityOverride	Comments	PipingNote1
a	CC150-1	4	8	in	1		71	150	5				BAZZZZZZZAAYBETZZUS		1	7	10		
a	CC150-1	4	8	in	1		21	150	5	71	150	5	BAZZZZZZZAAYBETZZUS		1	7	10		

17. Save the file and load both workbooks using the Bulkload Utility.

18. Review the log file once the Bulkload process is complete.

19. Run the Verify Consistency between Piping Specification and Catalog command again.

20. Review the output report.

21. Go to the Piping Task and place the lap joint flange.

22. Review the properties page.

Name	Type
Pipe Along Leg Feature	Feature
PipeRun-1-0201	Run
Bolted Joint	Connection
Welded Joint	Connection
StubEnd-01S-STD44	Reportable Part

Pipe Component Properties

Occurrence | Definition | Connections | Relationships | Configuration | Notes

Go To

OK   Cancel   Apply

Lab 11: Substitution Cap Screw Commodity Code

Objective

- After completing this lab, you will be able to add a lug-type wafer butterfly valve, where the valve body has threaded holes that are drilled to a manufacturer-specific depth for cap screws.

1. Add records for lug-type wafer butterfly valve in spec CC150-1 as shown below:

Item	Size	Commodity Code	Cap Screws	Description
Butterfly Valve	4" –8"	BFYHP-01	4 Partial cap screw substitution for threaded holes	Butterfly valve, CL150, RFTBE, Standard Lugged Pattern, ASTM-A216-WCB

2. Open the Company_Catalog.xls

3. Go to ButterflyValve sheet.

4. Edit the ButterflyValve sheet as follows:

BendRadius	BendRadiusMultiplier	MirrorBehaviorOption	ValveManufacturer	ValveModelNumber	ValveTrim	FlangeFaceSurfaceFinish	SurfacePreparation	ManufacturingMethod	MiscRequisitionClassification	PipingPointBasis[1]	Id[1]	PressureRating[1]	EndPreparation[1]	EndStandard[1]	ScheduleThickness[1]	FlowDirection[1]	PipingPointBasis[2]	Id[2]	PressureRating[2]	EndPreparation[2]	EndStandard[2]	ScheduleThickness[2]	FlowDirection[2]	PipingNote1	DryWeight	Npd[1]	NpdUnitType[1]	Npd[2]	NpdUnitType[2]	FacetoFace
			620	80						292	15		150	211	5		3	15		150	211	5		3	31lbm	4	in	4	in	2.125in
																									47lbm	6	in	6	in	2.25in
																									65lbm	8	in	8	in	2.5in

5. Save the file and exit.

6. Open the CC150-1.xls spreadsheet.

7. Open the PipingCommodityMatlControlData worksheet

   - The Contractor Commodity Code is BFYHP-01.

   - The ShortMaterialDescription is Butterfly valve, CL150, RFTBE, Standard Lugged Pattern, ASTM-A216-WCB

Note : Add the appropriate values in the Geometric Industry Standard, Fabrication Type, Supply Responsibility, Reporting Type, Gasket Requirement, Bolting Requirement, and Welding Requirement columns of the part. (Hint : Check the AllCodeLists.xls spreadsheet for similar codelist items.)

Head	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	IndustryCommodityCode	ClientCommodityCode	CIMISCommodityCode	ShortMaterialDescription	LocalizedShortMaterialDesc	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	QuantityOfReportableParts	GasketRequirements	BoltingRequirements	WeldingRequirement
Start																							
a	BFYHP-01	4	8	in								Butterfly valve, CL150, RFTBE, Standard Lugged Pattern, ASTM-A216-WCB		4200			7	10	5		5	20	50

8. Add the valve operator data and the cap screws for the butterfly valve.

SubstCapScrewsQuantity		SubstCapScrewCntrCommodityCode	SubstCapScrewDiameter	TappedHoleDepth	MultiportValveOpReq	ValveOperatorType	ValveOperatorGeoIndStd		ValveOperatorCatalogPartNumber
4	BCZZZZZZAAYBETZZUS					17	2035	BFYHP-Bolted-150-17	

9. Save the spreadsheet.

Creating Piping Material Class Records.

10. Open the PipingCommodityFilter worksheet.

11. Add records for the butterfly valve.

	SpecName		ShortCode	OptionCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	Comments	SelectionBasis	JacketedPipingBasis	MaximumTemperature	MinimumTemperature	EngineeringTag		CommodityCode
	Butterfly Valve			1	4	8	in						1						BFYHP-01

Creating Gasket Records.

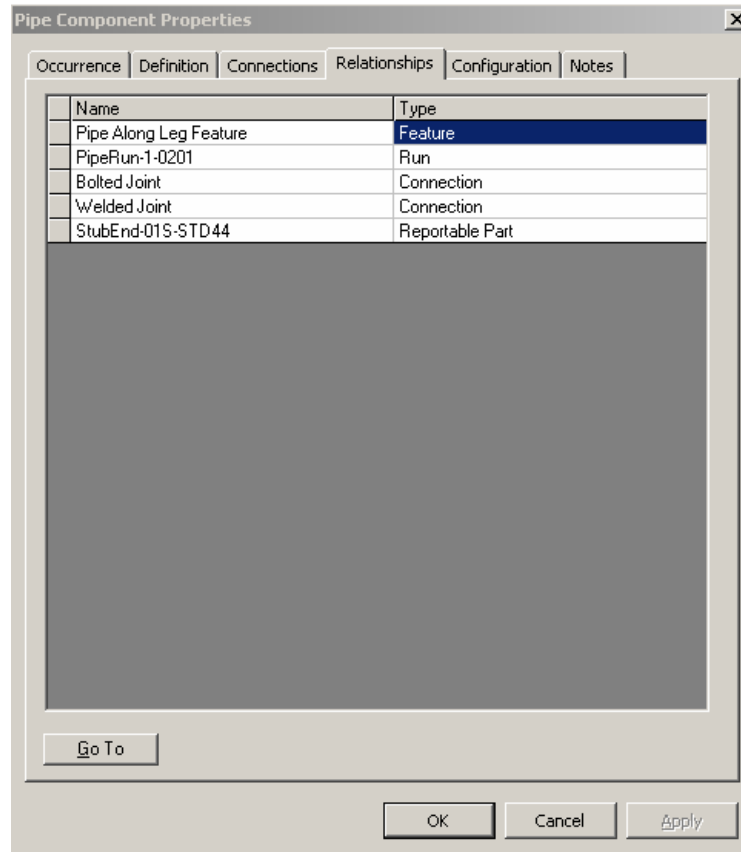12. Open the GasketSelectionFilter worksheet and add the following records:

SpecName	NominalDiameterFrom	NominalDiameterTo	NpdUnitType	GasketOption	MaximumTemperature	EndPreparation	PressureRating	EndStandard	AlternateEndPreparation	AlternatePressureRating	AlternateEndStandard	FluidCode	ScheduleThickness	ContractorCommodityCode	Priority	RingNumber	FabricationCategoryOverride	SupplyResponsibilityOverride
CC150-1	4	8 in	1		21	150	5	211	150	5			GMAHACABXBEPUS			7	10

Creating Bolt Records.

13. Open the BoltSelectionFilter worksheet and add the following records:

SpecName	NominalDiameterFrom	NominalDiameterTo	NpdUnitType	BoltOption	MaximumTemperature	EndPreparation	PressureRating	EndStandard	AlternateEndPreparation	AlternatePressureRating	AlternateEndStandard	ContractorCommodityCode	Priority	BoltExtensionOption	FabricationCategoryOverride	SupplyResponsibilityOverride
CC150-1	4	8 in	1		21	150	5	211	150	5	BAZZZZZZAAYBETZZUS		1	7	10

14. Save the file and load both workbooks using the Bulkload Utility.

15. Review the log file once the Bulkload process is complete.

16. Run the Verify Consistency between Piping Specification and Catalog command.

17. Review the output report. Go to the index sheet and select the following links:

- Piping commodity undefined in piping commodity material control data

- Piping commodity undefined in piping commodity part data

- Summary of existing symbols

- Summary of catalog parts

- Bolt for bolted joint undefined in bolt selection filter data

- Bolts undefined in piping commodity material control data

- Bolts undefined in bolt part data

- Summary of bolt parts

- Gasket for bolted joint undefined in gasket selection filter data

- Gaskets undefined in piping commodity material control data

- Gaskets undefined in gasket part data

- Summary of gasket parts

18. Go to the Piping Task and place the butterfly valve.

19. Review the properties page. "Go To" the bolts properties and verify cap screws.

Property	Value
Industry Commodity Code	BCZZZZZZAAYBETZZUS
Materials Category	Bolting materials
Materials Grade	A193-B7, >=1.5" lub, w/A194-2H
Bolt Type	Cap Screw
LubricationRequirements	Undefined
Short Material Description	Cap screws, ASTM-A193-B7
Long Material Description	:x head w/o nut, heavy series per ANSI-B1.1
CoatingRequirement	Undefined
Coating Type	Undefined

Lab 12: Custom Engineered/Stock Instruments

Objective:

After completing this lab, you will be able to:

- Add/Modify Custom Engineered/Stock Instrument.

Create a stock flowmeter (part number: Flow-001) with a tag number F-001. Stock items represent those piping items that are purchased from a manufacturer's catalog, where no real engineering is required other than selecting the correct size, material, etc.

Create a custom-engineered item Flow Meter called F-002.
Both flowmeters will use the symbol called SP3DCoriolisFlowMeterTy1.CCFMeterTy1.
The symbol can be found in [Install Product]\Programming\ExampleCode\Symbols\Piping

1. Open the Instrument Data.xls Excel Workbook.
2. Copy the worksheet ANG as FlowMeter1

FlowMeter1 / GUIDs /
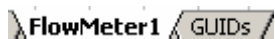
3. Locate printable document SmartPlant 3D Symbols Reference Data Guide (or open the symbol program) and find out the inputs required to construct the symbol SP3DCoriolisFlowMeterTy1.
4. Define all inputs that create the body of the instrument as **occurrence attributes (oa)**. The part definition for this instrument will look as follows:

Definition	PartClassType	SymbolDefinition	UserClassName	OccClassName	SymbolIcon	OA:FacetoFace	OA:FlowDiameter	OA:InstrumentHeight	OA:InstrumentDiameter	OA:InstrumentWidth	OA:InstrumentWidth1	OA:InsulationThickness
a	InstrumentsClass	SP3DCoriolisFlowMeterTy1.CCFMeterTy1	Flowmeter 1 lab	Flowmeter 1 lab	SymbolIcons\FlowMeter.gif							

5. Add the two instruments with the following data:
   Make sure the Geometry Type is 15 (Linear, full size)
   and Commodity Type is 5413 (Flow Controller).
   Material Grade: 150
   Make sure to delete any attributes used by the Control Gate Valve

   Flowmeter 1:
   Industry Commodity Code: Flow-001
   Port data:

   > NPD: 4 in
   >
   > Rating: 150
   > EndPrep: 21
   > End Standard: 5
   > Flow Direction: 3
   >
   > FacetoFace: 12 in
   > FlowDiameter: 5 in
   > InstrumentHeight: 18 in
   > InstrumentDiameter: 4 in
   > InstrumentWidth: 6 in
   > InstrumentWidth1: 8 in

   Flowmeter 2:
   Industry Commodity Code: F-002
   Port data:

   > NPD: 4 in
   >
   > Rating: 150
   > EndPrep: 21
   > End Standard: 5
   >
   > FacetoFace: 12 in
   > FlowDiameter: 5 in
   > InstrumentHeight: 24 in
   > InstrumentDiameter: 4 in
   > InstrumentWidth: 6 in
   > InstrumentWidth1: 8 in

   Make sure you **add the Requisition Type attribute**.

		IndustryCommodityCode	FirstSizeSchedule	SecondSizeSchedule	CommodityType	GeometryType	GraphicalRepresentationOrNot	SymbolDefinition	MaterialGrade	LiningMaterial	RequisitionType	BendAngle	BendRadius	BendRadiusMultiplier	PipingPointBasis[1]	Id[1]	PressureRating[1]	EndPreparation[1]	EndStandard[1]	ScheduleThickness[1]	FlowDirection[1]	PipingPointBasis[2]	Id[2]	PressureRating[2]	EndPreparation[2]	EndStandard[2]	ScheduleThickness[2]	FlowDirection[2]	DryWeight	Npd[1]	NpdUnitType[1]	Npd[2]	NpdUnitType[2]	*FacetoFace*	*FlowDiameter*	*InstrumentHeight*	*InstrumentDiameter*	*InstrumentWidth*	*InstrumentWidth1*
Head																																								
Start																																								
a	Flow-001		5413	15					150		5						150	21	5		3			150	21	5		3		4	in	4	in	12in	5in	18in	4in	6in	8in
a	F-002		5413	15					150		10						150	21	5		3			150	21	5		3		4	in	4	in	12in	5in	24in	4in	6in	8in

:

6. Go to the InstrumentClassData sheet and add the following data:

		TagNumber	GenericTagNumber	SpecName	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultiSizeOption	RequisitionType		ContractorCommodityCode	InstrumentType	GeometryType	FirstSizeSchedule	SecondSizeSchedule	IsGraphicalRepresentation	MaximumTemperature	MaterialGrade	LiningMaterial	CorrosionAllowance		ShortMaterialDescription	LocalizedShortMaterialDesc	LongMaterialDescription	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	GasketRequirements	BoltingRequirements	WeldingRequirement
Head																																					
Start																																					
a	F-001				4	4	in					5		Flow-001	5413	15																					
a	F-002											10			5413	15									Custom Instr							7	2	5	5	5	50
End																																					

7. Go to the Piping Commodity Material Control Data sheet and add the following data for the stock instrument.

	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits		ShortMaterialDescription	LocalizedShortMaterialDesc	GeometricIndustryStandard	Vendor	Manufacturer	FabricationType	SupplyResponsibility	ReportingType	Quantity	GasketRequirements	BoltingRequirements	WeldingRequirement
Head																	
Start																	
	Flow-001					Stock instr						7			5	5	50
End																	

8. Create the FlowMeter.gif file and place it under \\<MachineName>\Symbols\SymbolIcons. (Remember this file may need to be copied to all workstations back at the office). You can use the picture for SP3DCoriolisFlowMeterTy1 in the <u>SmartPlant 3D Symbols Reference Data Guide</u> printable guide for illustration details.

9. Save the changes to Instrument Data.xls and use the Bulkload Utility to load the new class. Remember to add the letter A to all new rows in all sheets modified.

   For faster processing, copy the worksheets that were modified above to a separate workbook: Instrument.xls. The system will require at least the following worksheets for this and next lab:

   a. FlowMeter1

   b. PipingCommodityMaterialControlData

   c. InstrumentClassData

   d. CustomInterfaces

   e. R-ClassNodeDescribes

   f. GUIDs

10. Once the bulkload process is complete, review the log file. If no errors, run the View Generator utility on the model to re-create the views in the model database ([Install Product]\Core\Tools\Administrator\Bin\ViewGenerator.exe).

11. Re-generate the report databases.

12. Run the Verify Consistency between Piping Specification and Catalog command.

13. Review the output report.

14. Go to the Piping Task and place both instruments.

Lab 13: Instrument "On the Fly"

Objective

After completing this lab, you will be able to:

- Add an Instrument "On the fly"

Create a Custom-engineered flow controller called F-101.
This flow controller will use the symbol called SP3DCICoriolisFlowMeterTy1.CCICFMetTy1.
The symbol can be found in [Install Product]\Programming\ExampleCode\Symbols\Piping

1. Open the Instrument Data.xls Excel Workbook.
2. Select IA1 sheet, copy it as FlowController into the Instrument.xls workbook from the previous lab.
3. Open the SmartPlant 3D Symbols Reference Data Guide printable guide and find out the inputs required to construct the symbol SP3DCICoriolisFlowMeterTy1.
4. Define all inputs that create the body of the instrument as occurrence attributes.
5. The Part definition for this instrument will look as follows:

Definition	PartClassType	SymbolDefinition	SymbolIcon
a	InstrumentsClass	SP3DCICoriolisFlowMeterTy1.CCICFMetTy1	SymbolIcons\FlowController.gif

The occurrence attributes are:

oa:FacetoFace	oa:FlowDiameter	oa:InstrumentHeight	oa:InstrumentDiameter	oa:InstrumentWidth	oa:InstrumentWidth1	oa:InsulationThickness	OA:Npd	OA:NpdUnitType	OA:EndPreparation	OA:ScheduleThickness	OA:EndStandard	OA:PressureRating	OA:FlowDirection	OA:Id1	OA:PortIndex1	OA:Npd1	OA:NpdUnitType1	OA:EndPreparation1	OA:ScheduleThickness1	OA:EndStandard1	OA:PressureRating1	OA:FlowDirection1	OA:Id2	OA:PortIndex1	OA:Npd2	OA:NpdUnitType2	OA:EndPreparation2	OA:ScheduleThickness2	OA:EndStandard2	OA:PressureRating2	OA:FlowDirection2

7. Add the part with the following data:

CommodityPart																													
Head	IndustryCommodityCode	FirstSizeSchedule	SecondSizeSchedule	CommodityType	GeometryType	GraphicalRepresentationOrNot	SymbolDefinition	MaterialGrade	LiningMaterial	BendAngle	BendRadius	BendRadiusMultiplier	DryCogX	DryCogY	DryCogZ	WaterWeight	WaterCogX	WaterCogY	WaterCogZ	SurfaceArea	VolumetricCapacity	PipingPointBasis[1]	Id[1]	PressureRating[1]	EndPreparation[1]	EndStandard[1]	ScheduleThickness[1]	FlowDirection[1]	DryWeight	Npd[1]	NpdUnitType[1]
Start																															
	F-101				15																									4	in
End																															

8. Open the Instrument Data.xls Excel Workbook.
9. Select R-ClassNodeDescribes sheet and save it to the Instrument.xls (if not already done in Lab 12).
10. Go to the R-ClassNodeDescribes sheet in Instrument.xls and add the following data:

RelationSource	RelationDestination
CustomInstruments	FlowController

11. Create the FlowController.gif file and place it under \\<MachineName>\Symbols\SymbolIcons. A figure to go by of the symbol SP3DCICoriolisFlowMeterTy1 can be found in the SmartPlant 3D Symbols Reference Data Guide printable guide.

12. Load the information into the Catalog using the Append Mode.
13. Run the View Generator utility on the model to re-create the views in the model database.
14. Re-generate the report databases.
15. Run the Verify Consistency between Piping Specification and Catalog command.
16. Review the output report.
17. Go to the Piping Task and place the F-101 instrument "on the fly".

Lab 14: Piping Commodity Procurement Data

Objective

After completing this lab, you will be able to:

- Use the Piping Commodity Procurement Data to determine the *Size-Dependent Client Commodity Code* on the basis of the *Contractor Commodity Code* from the piping commodity filter

1. Open the Ten_Specs_SpecificationData.xls workbook located in <SP3DInstalled_Location>\ CatalogData\BulkLoad\DataFiles.
2. Go to the DefaultProjectOptions sheet.
3. Save the sheet into the CC150-1.xls
4. Change the PipingCmdtyProcurementDataOpt option to 10.
5. Save the workbook.

	IndustryCommodityCodeOption	OletBranchOwnershipOption	StudBoltLengthRoundOffOption	StudBoltLengthRoundOffValue	MachBoltLengthRoundOffOption	MachBoltLengthRoundOffValue	CapScrewLengthRoundOffOption	CapScrewLengthRoundOffValue	CapScrewEngagementGap	NutCreationOption	WasherCreationOption	PipingCommodityOverrideOption	PipeBendRadiusMultiplierOption	MinimumPlateFlangeThickness	DensityOfWater	PipeBendRadiusByUserOption	BoltLengthCalculationOption	NonRadlTangtlBranchODMultplier	NonRadlOffsetBranchODMultplier	PipingCmdtyCtlgPartNoBasisOpt	PipingCmdtyProcurementDataOpt	BoltDiameterEquivalenceOption	GsktSInForMIsmatchBItdEndsOpt	UndefinedServiceLimitsruleOpt
Head																								
Start																								
m	10	5	15	0.25in	15	0.25in	15	0.25in	0.25in	5	5	5	5	0.5in	1000Kg/m^3	5		5	0.5	0.375	5	10	5	10	5
End																								

6. Open the Piping Commodity Procurement Data.xls workbook located in <SP3DInstalled_Location>\ CatalogData\ BulkLoad\SampleDataFiles
7. Go to the PipingCommodityProcurementData sheet and add the following records:

Head		CommodityCode	FirstSize	FirstSizeUnits	SecondSize	SecondSizeUnits	MultisizeOption	FirstSizeSchedule	SecondSizeSchedule	ClientCommodityCode	CIMISCommodityCode	VendorPartNumber	ManufacturerPartNumber	UnitCost	RequisitionNumber	InstallationManHours	MaintenanceManHours
Start																	
a	FSO001	2	in	2	in				FSACC2							
a	FSO001	4	in	4	in				FSACC4							
a	FSO001	6	in	6	in				FSACC6							
a	FSO001	8	in	8	in				FSACC8							
a	FSO001	10	in	10	in				FSACC10							
a	FSO001	12	in	12	in				FSACC12							
a	FSO001	14	in	14	in				FSACC14							
a	FSO001	16	in	16	in				FSACC16							
a	FSO001	18	in	18	in				FSACC18							
a	FSO001	20	in	20	in				FSACC20							
a	FSO001	24	in	24	in				FSACC24							
a	FWN001	2	in	2	in		S-STD	FWSACC2								
a	FWN001	4	in	4	in		S-STD	FWSACC4								
a	FWN001	6	in	6	in		S-STD	FWSACC6								
a	FWN001	8	in	8	in		S-STD	FWSACC8								
a	FWN001	10	in	10	in		S-STD	FWSACC10								
a	FWN001	12	in	12	in		S-STD	FWSACC12								
a	FWN001	14	in	14	in		S-STD	FWSACC14								
a	FWN001	16	in	16	in		S-STD	FWSACC16								
a	FWN001	18	in	18	in		S-STD	FWSACC18								
a	FWN001	20	in	20	in		S-STD	FWSACC20								
a	FWN001	24	in	24	in		S-STD	FWSACC24								
a	GAT001	2	in	2	in				GTSACC2							
a	GAT001	4	in	4	in				GTSACC4							
a	GAT001	6	in	6	in				GTSACC6							
a	GAT001	8	in	8	in				GTSACC8							
a	GAT001	10	in	10	in				GTSACC10							
a	GAT001	12	in	12	in				GTSACC12							
End																	

8. Save the sheet into the CC150-1.xls
9. Load the information into the Catalog using the Add/Modify/Delete Mode.
10. Open your session and go to the Piping Task.
11. Select the weld neck flange and open the properties page. Verify the client commodity code is displayed in the properties page.

Lab 15: Create/Modify Spec in Catalog Task (Optional)

Objective

After completing this lab, you will be able to:

- "Copy and Paste" a piping spec in the Catalog Task to create a brand new specification
- Modify piping spec data directly in the catalog database through the interface
- Edit/Create spec's Rules
- Edit/Create Branch Table in paper spec format
- Create and modify code list values through the Catalog Task

Using the Catalog Task only, start creation of a new piping spec "CC150-1C": 150#, RF, Carbon Steel, design std ANSI-B31.3, service: Utilities; Corrosion Allowance of 0.063, -20 to 800 degF, cement lined.
Use the following temperature-pressure chart:

| TEMP F	100	200	300	400	500	600	700	800
Psig	285	260	230	200	170	140	110	80

Using the Catalog Task verify that cement lining is an available option and add Kynar lining as an additional lining option to the select list.

Use the following branch table for the new spec:

BRANCH	30	24	20	18	16	14	12	10	8	6	4	3	2	1-1/2	1	3/4	1/2
30	T																
24	RP	T															
20	RP	RP	T														
18	RP	RP	RP	T													
16	RP	RP	RP	RP	T												
14	RP	RP	RP	RP	RW	T											
12	RP	RP	RP	RP	RW	RW	T										
10	W	W	W	RW	RW	RW	RW	T									
8	W	W	W	RW	RW	RW	RW	RW	T								
6	W	W	W	RW	RW	RW	RW	RW	RW	T							
4	W	W	W	RW	RW	RW	RW	RW	RW	RW	T						
3	W	W	W	RW	RW	RW	RW	RW	RW	RW	RW	T					
2	RW	RW	RW	RW	RW	RW	RW	RW	RW	RW	RW	RW	T				
1-1/2	S	S	S	S	S	S	S	S	S	S	S	S	S	T			
1	S	S	S	S	S	S	S	S	S	S	S	S	S	RT	T		
3/4	S	S	S	S	S	S	S	S	S	S	S	S	S	RT	RT	T	
1/2	S	S	S	S	S	S	S	S	S	S	S	S	S	RT	RT	RT	T

HEADER

RW Branch Weld
RT Reducing Tee
RP Reinforcing Pad
S Sockolet
T Tee
W Weldolet

1. Open the Catalog Task to …Piping Specification>Piping Materials Classes
2. Select a spec in the catalog tree view, e.g. CC150-1 or 1C0031.
3. Use Edit>Copy or the Copy ribbon bar button
4. Use Edit>Paste or the Paste ribbon bar button. When prompted, enter the new spec name: "CC150-1C"
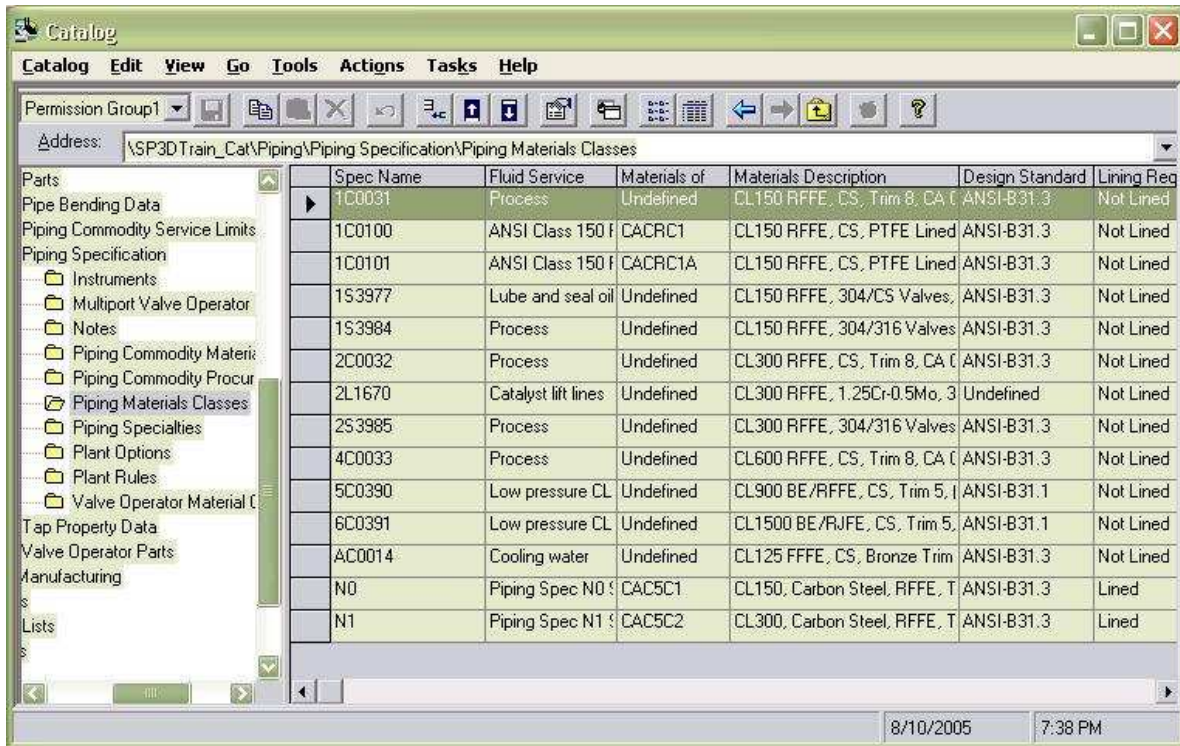
5. Open the Catalog Task to Select Lists>Lining Material
6. Verify that "Cement Lined" is available in the short description column
7. Modify the Select List to include "Kynar" as an option in the short description column
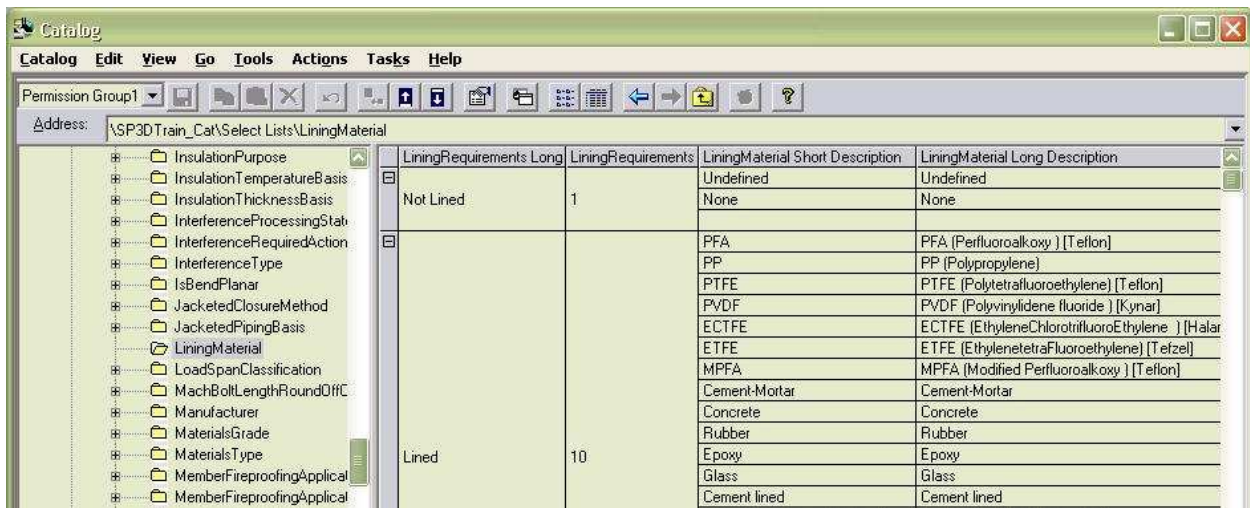
8. Return to …Piping Specification>Piping Materials Classes and edit the pasted spec name and spec properties in the grid view to match spec requirements

9. Select Tools>Options and set <u>all</u> "Units" tabs to display pressure ("force per area") to Psi
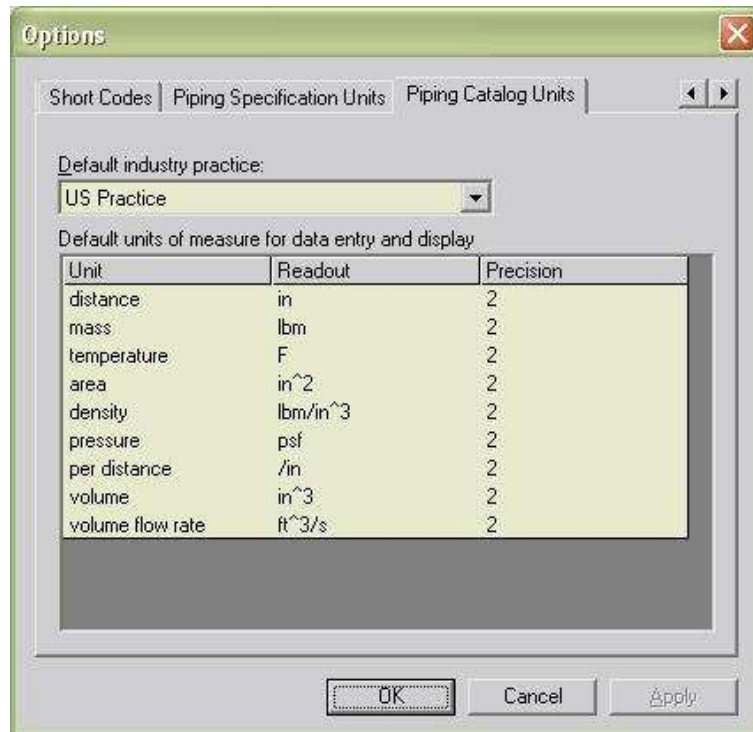
10. Navigate to Piping>Piping Specification>Piping Materials Classes> CC150-1C>Piping Materials Class Rules>Service Limits Rule and set the temperature and pressure limits rule to their proper values for this spec as provided above.
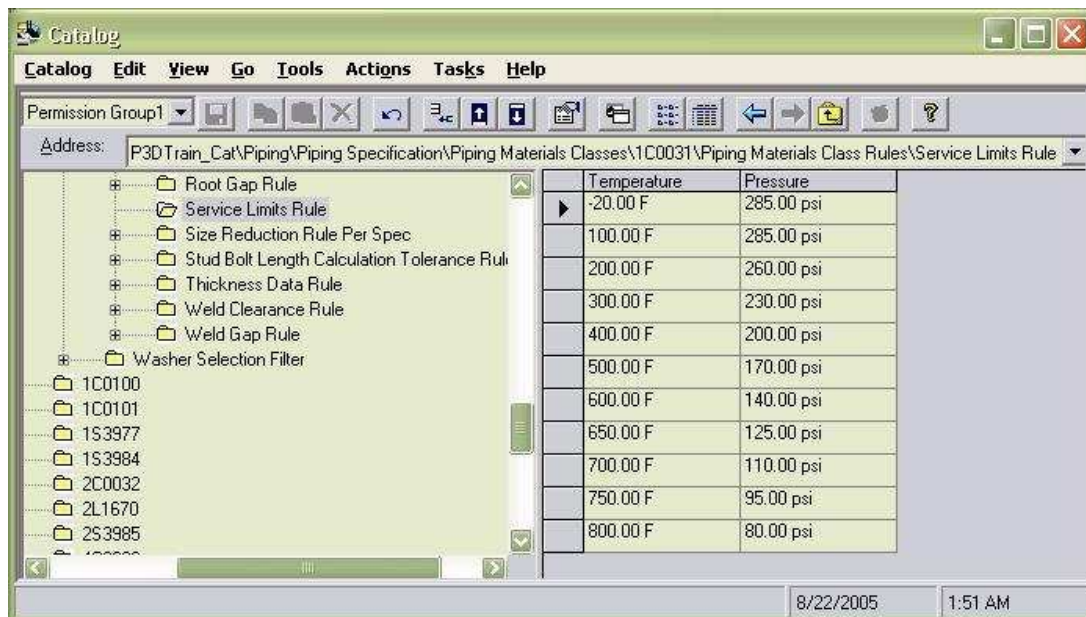
11. Open the Piping Commodity Filter node for the new piping specification, review the component data copied from the original spec.
12. If needed, define the branch components in the Piping Commodity Filter required by the branch table provided.
13. To enter the branch table preferred branching items, open the node at Piping>Piping Specification>Piping Materials Classes> CC150-1C>Piping Materials Class Rules>Branch Table
14. To generate a simplified paper-spec style view of the branch table do as follows:
    a. With the Branch Table node selected, use Actions>Add Range
    b. Enter the range values for existing data: From 89.5 To 90.5
    c. Provide a name for the range of values, e.g. "90 Degrees"
    d. Select the branch priority level: "Primary" and OK the form
    e. Fill the branch table per the table in the instructions above

Branch Size										
36	Tee									
34	Reinforcing	Tee								
32	Reinforcing	Reinforcing	Tee							
30	Reinforcing	Reinforcing	Reinforcing	Tee						
28	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Tee					
26	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Tee				
24	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Tee			
20	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Tee		
18	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Tee	
16	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Tee
14	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing
12	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing
10	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing	Reinforcing
8	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Reinforcing	Reinforcing	Reinforcing	Reinforcing
6	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Reinforcing	Reinforcing	Reinforcing	Reinforcing
4	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Reinforcing	Reinforcing	Reinforcing	Reinforcing
3	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Weldolet	Reinforcing	Reinforcing	Reinforcing	Reinforcing
2	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet
1.5	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet
1	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet
0.75	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet	Thredolet
0.5										
Header Size	36	34	32	30	28	26	24	20	18	16

Tree pane (left):
- Selection Filter
- mp Selection Filter
- ket Selection Filter
- Selection Filter
- ng Commodity Filter
- ng Materials Class Data
- ng Materials Class Rules
  - Allowable Piping Materials
  - Branch Table
    - 90 Degrees
      - Primary
      - Secondary
      - Tertiary
- Cap Screw Length Calcula
- Corrosion Allowance
- Default Change of Directic
- Field Fit Length Rule
- Field Lining Thickness Rul
- Flared Pipe Rule Per Spec
- Inside Surface Treatment I
- Joint Quality Factor
- Machine Bolt Length Calcu
- Minimum Pipe Length Rule
- Minimum Pipe Length Rule

15. Once all desired fittings and components are defined, run Tools>Verify Consistency to check for errors.

In practice, make sure that a good backup of the Catalog is made after a new spec is defined. For the moment, there is no means of exporting the new specs created in the Catalog Task out to Excel.