

Process, Power and Marine Division

SP3D Piping Reference Data

4-Additional Spec Rules



Branch Insertion Rule

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		

This rule defines the component to be used at branch intersection in the piping system as a function of the acute angle of intersection and the NPD sizes of the header and branch

The branching components are defined in order of increasing strength

Corrosion Allowance

SpecName	MaterialsCategory	FluidCode	CorrosionAllowance
1C0019			0.063in
1C0031			0.063in
1C0035			0.063in
1C0043			0.063in

SpecName	MaterialsCategory	FluidCode	CorrosionAllowance
1.6.6.1	1.6.6.2	1.6.6.4	1.6.6.6
1C0031			
	10	521	0.0625in
2C0032			
	10	521	0.0625in

This rule enables the spec writer to define the corrosion allowance that enables the calculation of wall thickness for piping commodities, where the thickness is not specifically included in the piping materials class. This property is also required for reporting of the Piping Specification.

The spec writer may define a single value for the corrosion allowance, or may specify the corrosion allowance as a function of the materials category, e.g. carbon steel or stainless steel, and the fluid code.

Joint Quality Factor

Head Start	SpecName	NominalDiameterF	NominalDiameterT	NpdUnitType	JointQualityFactor
	1C0031	0.75	1.5	in	100
		2	2	in	100
		3	24	in	100
		26	36	in	95

This rule enables the spec writer to define the joint quality factor (e) that is to be used in wall thickness and branch reinforcement calculations on the basis of the nominal piping diameter range.

This is a decimal value that represents the joint quality factor, expressed as a percentage, e.g. '95.0' to represent 95%.

Thickness Data Rule

Head Start	SpecName	NominalPipingDiameter	NominalPipingDiameterUnits	MinimumThickness	RetirementThickness	ThreadThickness	PreferredSchedule1	PreferredSchedule2	PreferredSchedule3	PreferredSchedule4	PreferredSchedule5	PreferredSchedule6
	1C0031											
		0.5 in		0.147in	0.06in		S-160					
		0.75 in		0.154in	0.06in		S-XS					
		1 in		0.179in	0.06in		S-XS					
		1.5 in		0.2in	0.06in		S-XS					
		2 in		0.154in	0.06in		S-STD					
		3 in		0.216in	0.06in		S-STD					
		4 in		0.237in	0.07in		S-STD					
		6 in		0.28in	0.1in		S-STD					
		8 in		0.25in	0.1in		S-STD					
		10 in		0.25in	0.1in		S-STD					
		12 in		0.25in	0.1in		S-STD					
		14 in		0.25in	0.12in		S-STD					
		16 in		0.25in	0.12in		S-STD					
		18 in		0.25in	0.12in		S-STD					
		20 in		0.25in	0.13in		S-STD					
		24 in		0.25in	0.15in		S-STD					
		26 in		0.3125in	0.17in		S-10	S-STD				
		28 in		0.3125in	0.19in		S-10	S-STD				
		30 in		0.3125in	0.2in		S-10	S-STD				
		32 in		0.3125in	0.21in		S-10	S-STD				
		34 in		0.3125in	0.23in		S-STD					
		36 in		0.3125in	0.24in		S-STD	S-XS				

This rule enables the spec writer to define the thickness values that are required in the calculation of piping wall thickness.

Materials Data

Head Start	DesignStandard	MaterialsGrade	Temperature	WallThicknessFrom	WallThicknessTo	CoefficientY	AllowableStress	MIITolerancePercentage	MIITolerance
	30	116	-20F			0.4	15000psi	12.5	
	30	116	100F			0.4	15000psi	12.5	
	30	116	200F			0.4	15000psi	12.5	
	30	116	300F			0.4	15000psi	12.5	
	30	116	400F			0.4	15000psi	12.5	
	30	116	500F			0.4	15000psi	12.5	
	30	116	600F			0.4	15000psi	12.5	
	30	116	650F			0.4	15000psi	12.5	
	30	116	700F			0.4	14400psi	12.5	
	30	116	750F			0.4	13000psi	12.5	
	30	116	800F			0.4	10800psi	12.5	
	30	142	-20F			0.4	15000psi	12.5	
	30	142	100F			0.4	15000psi	12.5	

This rule enables the spec writer to define the material data that are required in the calculation of piping wall thickness.

Reinforcing Pad Data

Head	SpecName	HeaderSize	BranchSize	AcuteBranchAngleFrom	AcuteBranchAngleTo	HeaderSizeUnitsOfMeasure	BranchSizeUnitsOfMeasure	MinimumReinforcingPadWidth
Start								
	1C0031							
		24	12	89.5deg	90.5deg	in	in	3.5in
		24	14	89.5deg	90.5deg	in	in	3.5in
		24	16	89.5deg	90.5deg	in	in	4in
		24	18	89.5deg	90.5deg	in	in	4.5in
		24	20	89.5deg	90.5deg	in	in	5in
		26	10	89.5deg	90.5deg	in	in	3in
		26	12	89.5deg	90.5deg	in	in	3.5in
		26	14	89.5deg	90.5deg	in	in	3.5in
		26	16	89.5deg	90.5deg	in	in	4in
		26	18	89.5deg	90.5deg	in	in	4.5in
		26	20	89.5deg	90.5deg	in	in	5in
		26	24	89.5deg	90.5deg	in	in	6in

This rule enables the spec writer to define the minimum reinforcing pad width to be used in branch reinforcement calculations on the basis of the header and branch sizes of the branch intersection and the acute angle of intersection between the header and the branch.

Reinforcing Weld Data

Head Start	SpecName	HeaderSize	HeaderSizeUnitsOfMeasure	BranchSize	BranchSizeUnitsOfMeasure	AcuteBranchAngleFrom	AcuteBranchAngleTo	MinimumReinforcingWeldSize
	1C0031							
		10 in		8 in		44.5deg	45.5deg	0.375in
		12 in		6 in		44.5deg	45.5deg	0.375in
		12 in		8 in		44.5deg	45.5deg	0.375in
		12 in		10 in		44.5deg	45.5deg	0.375in
		14 in		6 in		44.5deg	45.5deg	0.375in
		14 in		8 in		44.5deg	45.5deg	0.375in
		14 in		10 in		44.5deg	45.5deg	0.375in
		14 in		12 in		44.5deg	45.5deg	0.375in
		16 in		6 in		44.5deg	45.5deg	0.375in
		16 in		8 in		44.5deg	45.5deg	0.375in
		16 in		10 in		44.5deg	45.5deg	0.375in
		16 in		12 in		44.5deg	45.5deg	0.375in
		16 in		14 in		44.5deg	45.5deg	0.375in
		18 in		6 in		44.5deg	45.5deg	0.375in
		18 in		8 in		44.5deg	45.5deg	0.375in
		18 in		10 in		44.5deg	45.5deg	0.375in
		18 in		12 in		44.5deg	45.5deg	0.375in
		18 in		14 in		44.5deg	45.5deg	0.375in
		18 in		16 in		44.5deg	45.5deg	0.375in

This optional rule enables the spec writer to define the minimum reinforcing weld size to be used in branch reinforcement calculations on the basis of the header and branch sizes of the branch intersection and the acute angle of intersection between the header and the branch.

Permissible Tap Rule

SpecName	PermissibleTapNumber	IsPreferredTap
1C0031		
	Tap-001	FALSE
	Tap-002	FALSE
	Tap-003	TRUE
	Tap-004	FALSE
	Tap-005	FALSE
	Tap-006	FALSE
	Tap-007	FALSE
	Tap-008	FALSE
	Tap-009	FALSE
	Tap-010	FALSE

This rule enables the spec writer to define the preferred tap to be used for the piping materials class and an optional list of permissible taps. This rule is intended to be used by taps that are created by the piping designer versus taps that are created in the Piping Catalog.

Permissible Tap Number represents the unique identification of the each set of permissible tap data in the Tap Property Data of the Piping Catalog to be used for this piping materials class.

Permissible Tap Rule

SpecName	PermissibleTapNumber	IsPreferredTap
1C0031		
	Tap-001	FALSE
	Tap-002	FALSE
	Tap-003	TRUE
	Tap-004	FALSE
	Tap-005	FALSE
	Tap-006	FALSE
	Tap-007	FALSE
	Tap-008	FALSE
	Tap-009	FALSE
	Tap-010	FALSE

Head Start	TapNumber	Npd	NpdUnitType	PipingPointBasis	Id	PressureRating	EndPreparation	EndStandard	ScheduleThickness	FlowDirection
	Tap-001	0.375	in	55		591	5			1
	Tap-002	0.5	in	55		3000	421	5		1
	Tap-003	0.5	in	55		591	5			1
	Tap-004	0.75	in	55		3000	421	5		1
	Tap-005	0.75	in	55		591	5			1
	Tap-006	1	in	55		3000	421	5		1
	Tap-007	1	in	55		591	5			1
	Tap-008	1.25	in	55		3000	421	5		1
	Tap-009	1.25	in	55		591	5			1
	Tap-010	1.5	in	55		3000	421	5		1

Option:

- 0.50in HCE (Default)
- 0.38in HCE
- 0.50in SWE 3000
- 0.50in HCE (Default)
- 0.75in SWE 3000
- 0.75in HCE
- 1in SWE 3000
- 1in HCE
- 1.25in SWE 3000

Pipe Take Down Parts Rule

Head Start	SpecName	TakeDownShortC	WeldShortCode	IsPairRequired	Npd	NpdUnitType	IsWeld
	1C0031	Flange	Butt Weld	1	0.375	in	1
		Flange	Butt Weld	1	0.5	in	1
		Flange	Butt Weld	1	0.75	in	1
		Flange	Butt Weld	1	1	in	1
		Flange	Butt Weld	1	1.5	in	1
		Flange	Butt Weld	1	2	in	1
		Flange	Butt Weld	1	3	in	1
		Flange	Butt Weld	1	4	in	1
		Flange	Butt Weld	1	6	in	1
		Flange	Butt Weld	1	8	in	1
		Flange	Butt Weld	1	10	in	1
		Flange	Butt Weld	1	12	in	1
		Flange	Butt Weld	1	14	in	1
		Flange	Butt Weld	1	16	in	1
		Flange	Butt Weld	1	18	in	1
		Flange	Butt Weld	1	20	in	1
		Flange	Butt Weld	1	24	in	1
		Flange	Butt Weld	1	26	in	1
		Flange	Butt Weld	1	28	in	1

This a lookup table to determine the short code for the takedown part or a weld for a split.

Piping Commodity Procurement Data

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Head	CommodityCode	FirstSize	FirstSizeUnits	SecondSize	SecondSizeUnits	MultisizeOption	FirstSizeSchedule	SecondSizeSchedule	ClientCommodityCode	CIMISCommodityCode	VendorPartNumber	ManufacturerPartNumber	UnitCost	RequisitionNumber	InstallationManHours	MaintenanceManHours
Start																
	MBFZZDJZZADTADCZZUS	2 in		2 in			S-160	S-160	MBFZZDJZZADTADCZZUSD							
	MBFZZDJZZADTADCZZUS	2 in		2 in			S-80	S-80	MBFZZDJZZADTADCZZUSI							
	MBFZZDJZZADTADCZZUS	2 in		2 in			S-STD	S-STD	MBFZZDJZZADTADCZZUSJ							
	MBFZZDJZZADTADCZZUS	2 in		2 in			S-XXS	S-XXS	MBFZZDJZZADTADCZZUSL							
	MBFZZDJZZADTADCZZUS	2.5 in		2.5 in			S-160	S-160	MBFZZDJZZADTADCZZUSD							
	MBFZZDJZZADTADCZZUS	2.5 in		2.5 in			S-80	S-80	MBFZZDJZZADTADCZZUSI							
	MBFZZDJZZADTADCZZUS	2.5 in		2.5 in			S-STD	S-STD	MBFZZDJZZADTADCZZUSJ							
	MBFZZDJZZADTADCZZUS	2.5 in		2.5 in			S-XXS	S-XXS	MBFZZDJZZADTADCZZUSL							
	MBFZZDJZZADTADCZZUS	3 in		3 in			S-160	S-160	MBFZZDJZZADTADCZZUSD							
	MBFZZDJZZADTADCZZUS	3 in		3 in			S-80	S-80	MBFZZDJZZADTADCZZUSI							
	MBFZZDJZZADTADCZZUS	3 in		3 in			S-STD	S-STD	MBFZZDJZZADTADCZZUSJ							
	MBFZZDJZZADTADCZZUS	3 in		3 in			S-XXS	S-XXS	MBFZZDJZZADTADCZZUSL							
	MBFZZDJZZADTADCZZUS	4 in		4 in			S-120	S-120	MBFZZDJZZADTADCZZUSB							
	MBFZZDJZZADTADCZZUS	4 in		4 in			S-160	S-160	MBFZZDJZZADTADCZZUSD							
	MBFZZDJZZADTADCZZUS	4 in		4 in			S-80	S-80	MBFZZDJZZADTADCZZUSI							
	MBFZZDJZZADTADCZZUS	4 in		4 in			S-STD	S-STD	MBFZZDJZZADTADCZZUSJ							
	MBFZZDJZZADTADCZZUS	4 in		4 in			S-XXS	S-XXS	MBFZZDJZZADTADCZZUSL							