Case	Load Case	Combination Method	Load case Description	Limit Values	Remarks
1	W (HGR)	-	Spring hanger selection – Dead weight calculation	-	
2	W+T1+P1 (HGR)	-	Spring hanger selection – Maximum design temperature displacement calculation	-	Maximum design temperature is used for selection of conservative springs
3	WW+HP (HYD)	-	Hydrotest case	B31.3 ($1.33S_h$)	
4	W+P1+H (SUS)	-	Basic Sustained Stress	-	
5	T1 -T2 (EXP)	-	Thermal contribution to displacement range	Cyclic stress - low frequency, PD 5500 compliance	If T2 is higher than ambient temperature, ambient temperature shall be taken for T2
6	W+P1+T1+H+F1 (OPE)	-	Operating case with maximum design temperature	-	
7	W+P1+T2+H+F1 (OPE)	-	Operating case with minimum design temperature	-	
8	W1N1 (OCC)	-	Wind Load in dominant direction	-	
9	F1 (OCC)	-	PSV reaction or slug forces	-	
10	U1 (1 YR) (SUS)	-	Sway acceleration	-	
11	U2 (1 YR) (SUS)	-	Heave acceleration	-	
12	U3 (1 YR) (SUS)	-	Surge acceleration	-	
13	D1 (1YR) (EXP)	-	Module inertial deflections corresponding to acceleration combination 1	-	Module inertial deflections corresponding to acceleration combinations 5, 6, 7 and 8 are with the sign changes that of the acceleration combinations of 4, 3, 2 and 1 respectively
14	D2 (1YR) (EXP)	-	Module inertial deflections corresponding to acceleration combination 2	-	
15	D3 (1YR) (EXP)	-	Module inertial deflections corresponding to acceleration combination 3	-	
16	D4 (1YR) (EXP)	-	Module inertial deflections corresponding to acceleration combination 4	-	
17	D5 (EXP)	-	Loading / Unloading - Hog / Sag deflection (Amplitude)	-	
18	D6 (100yr) (EXP)	-	Module deflections due to wave motion Hog / Sag (100yr) [Amplitude]	-	1 yr values are not available, hence a reduction factor of 0.8 is used with 100 yr values for later load cases. Factor 0.8 is derived by comparing acceleration values of 1 yr and 100 yr

Case	Load Case	Combination Method	Load case Description	Limit Values	Remarks
19	L13, L14, L15, L16 (EXP)	Maximum	Maximum of module deflections	-	
20	-L10 +L11 - L12 (SUS)	Algebraic	Acceleration combination 1	-	
21	-L10 +L11 + L12 (SUS)	Algebraic	Acceleration combination 2	-	
22	+L10 +L11 - L12 (SUS)	Algebraic	Acceleration combination 3	-	
23	+L10 +L11 + L12 (SUS)	Algebraic	Acceleration combination 4	-	
24	-L10 -L11 - L12 (SUS)	Algebraic	Acceleration combination 5	-	
25	-L10 -L11 + L12 (SUS)	Algebraic	Acceleration combination 6	-	
26	+L10 -L11 - L12 (SUS)	Algebraic	Acceleration combination 7	-	
27	+L10 -L11 + L12 (SUS)	Algebraic	Acceleration combination 8	-	
28	L10 + L11 + L12 (SUS)	SRSS	Resultant of accelerations	-	
29	L6 + L20 + L13 + L17+ 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
30	L6 + L21 + L14 + L17 + 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
31	L6 + L22 + L15 + L17+ 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
32	L6 + L23 + L16 + L17 + 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
33	L6 + L24 - L16 + L17+ 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
34	L6 + L25 - L15 + L17+ 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
35	L6 + L26 - L14 + L17+ 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
36	L6 + L27 - L13 + L17+ 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
37	L6 + L20 + L13 - L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value

Case	Load Case	Combination Method	Load case Description	Limit Values	Remarks
38	L6 + L21 + L14 - L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
39	L6 + L22 + L15 - L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
40	L6 + L23 + L16 - L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
41	L6 + L24 - L16- L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
42	L6 + L25 - L15 - L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
43	L6 + L26 - L14 - L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
44	L6 + L27 - L13 - L17- 0.8L18 (OPE)	Algebraic	Equipment nozzle / restraint reactions	Applicable Code / Project allowable load table	L7 instead of L6, if L7 in the combination gives higher value
45	L4 + L28 (SUS)	Absolute	Sustained stress with wave accelerations (S_L)	B31.3 (S_h)	
46	L4 + L28 + L8 + L9 (OCC)	Absolute	Occasional stress with wind / PSV / Slug forces	B31.3 ($1.33S_h$)	
47	L5 + L19 + 2L17+ 1.6L18(EXP)	Absolute	Displacement stress range	B31.3 ($1.25[S_C + S_h]-S_L$)	
48	2L17 (FAT)	Absolute	Low cycle displacement stress range	Cyclic stress - low frequency, PD 5500 compliance	
49	L28 + L19 + 1.6L18 (FAT)	Absolute	High cycle displacement stress range	Cyclic stress - high frequency, DNV compliance	

P1 - Design Pressure, HP - Hydrostatic Test Pressure
T1, T2 - Design Maximum and Design Minimum Temperatures
} To be obtained from critical line list

U1, U2, U3 - X, Y, Z Accelerations
D1, D2, D3, D4 - X, Y, Z Module Deflections due to Wave Motion ~ To be obtained from spreadsheet
D5 - Hog/Sag Deflection due to Loading/Unloading in Y and Z directions ~ To be obtained from spreadsheet
D6 - Hog/Sag Deflection due to Wave Motion in Y and Z directions ~ To be obtained from spreadsheet
WIN1 - Wind Load ~ Profile to be obtained from Section 16 in Job Notes for Piping Stress Analysis
F1 - PSV reaction, slug / surge forces