BOLT TORQUE RECORD — BT-001

Demo plant · produced water skid · assembly per ASME PCC-1 · one record per bolt-up · retain for turnover

Owner		**Contractor job no.**		**Owner job no.**	
Isometric no.	CD-221022206-2A3S-ET-SHT2	**Joint**	BU#1 · made up at fabrication	**Location / LSD**	
System no.		**Line no.**	P-210222A/B	**Line class / spec**	A3S
Lubrication (per spec)		**Method**		**Date of assembly**	
Wrench S/N / cal		**Wrench S/N / cal #2**		**Joins**	WN flange ↔ blind flange (west dead leg)

JOINT & PRE-ASSEMBLY

Flange size & class	2" / 150# RF	**Spools clean & debris-free**		**Flange condition & cleaned**	
Flange alignment accepted		**New gasket & centered**		**Gasket type**	Spiral-wound
No. of studs	4	**Stud size**	5/8"-11 UNC	**Stud grade / length**	A193 B7M
Nut size & grade		**Hardened washers used**		**2 threads showing each side**	
Sequence marked on studs		**Lubed threads + nut face**		**Revision reason**	

TORQUE — passes 1–3 cross pattern · check pass circular until no nut turns

Target bolt stress (psi)	**K**	**Est. torque (ft-lb)**	**Target used (ft-lb)**	**1st · 33% cross**	**2nd · 66% cross**	**3rd · 100% cross**	**Check · 100% circular**
			Pass done (initial)				

No nut movement at final check		**Torque completed — initials & date**		**Status**	

Comments / NCR	

SIGN-OFF

Role	**Name / qualification**	**Signature**	**Date**
Assembler (PCC-1 Appx A level)			
Verified by			
Quality representative			

Torque values are K-factor estimates unless taken from qualified torque tables (cite in comments). Lubricate stud threads AND nut bearing face, never the gasket. New gasket every time the joint is opened. Sheet number BT-001 belongs to this joint for the life of the project; a re-torque is a new revision of the same number. Printed blank for the field: key the values into the portal afterwards.

BOLT TORQUE RECORD — BT-002

Demo plant · produced water skid · assembly per ASME PCC-1 · one record per bolt-up · retain for turnover

Owner		**Contractor job no.**		**Owner job no.**	
Isometric no.	CD-221022206-2A3S-ET-SHT2	**Joint**	BU#2 · made up at fabrication	**Location / LSD**	
System no.		**Line no.**	P-210222A/B	**Line class / spec**	A3S
Lubrication (per spec)		**Method**		**Date of assembly**	
Wrench S/N / cal		**Wrench S/N / cal #2**		**Joins**	WN flange ↔ blind flange (east dead leg)

JOINT & PRE-ASSEMBLY

Flange size & class	2" / 150# RF	**Spools clean & debris-free**		**Flange condition & cleaned**	
Flange alignment accepted		**New gasket & centered**		**Gasket type**	Spiral-wound
No. of studs	4	**Stud size**	5/8"-11 UNC	**Stud grade / length**	A193 B7M
Nut size & grade		**Hardened washers used**		**2 threads showing each side**	
Sequence marked on studs		**Lubed threads + nut face**		**Revision reason**	

TORQUE — passes 1–3 cross pattern · check pass circular until no nut turns

Target bolt stress (psi)	**K**	**Est. torque (ft-lb)**	**Target used (ft-lb)**	**1st · 33% cross**	**2nd · 66% cross**	**3rd · 100% cross**	**Check · 100% circular**
			Pass done (initial)				

No nut movement at final check		**Torque completed — initials & date**		**Status**	

Comments / NCR	

SIGN-OFF

Role	**Name / qualification**	**Signature**	**Date**
Assembler (PCC-1 Appx A level)			
Verified by			
Quality representative			

Torque values are K-factor estimates unless taken from qualified torque tables (cite in comments). Lubricate stud threads AND nut bearing face, never the gasket. New gasket every time the joint is opened. Sheet number BT-002 belongs to this joint for the life of the project; a re-torque is a new revision of the same number. Printed blank for the field: key the values into the portal afterwards.

BOLT TORQUE RECORD — BT-003

Demo plant · produced water skid · assembly per ASME PCC-1 · one record per bolt-up · retain for turnover

Owner		**Contractor job no.**		**Owner job no.**	
Isometric no.	CD-221022206-2A3S-ET-SHT2	**Joint**	BU#3 · made up at fabrication	**Location / LSD**	
System no.		**Line no.**	P-210222A/B	**Line class / spec**	A3S
Lubrication (per spec)		**Method**		**Date of assembly**	
Wrench S/N / cal		**Wrench S/N / cal #2**		**Joins**	WN flange ↔ valve V-1 lower face

JOINT & PRE-ASSEMBLY

Flange size & class	2" / 150# RF	**Spools clean & debris-free**		**Flange condition & cleaned**	
Flange alignment accepted		**New gasket & centered**		**Gasket type**	Spiral-wound
No. of studs	4	**Stud size**	5/8"-11 UNC	**Stud grade / length**	A193 B7M
Nut size & grade		**Hardened washers used**		**2 threads showing each side**	
Sequence marked on studs		**Lubed threads + nut face**		**Revision reason**	

TORQUE — passes 1–3 cross pattern · check pass circular until no nut turns

Target bolt stress (psi)	K	Est. torque (ft-lb)	Target used (ft-lb)	1st · 33% cross	2nd · 66% cross	3rd · 100% cross	Check · 100% circular
Pass done (initial)							

No nut movement at final check		**Torque completed — initials & date**		**Status**	

Comments / NCR	

SIGN-OFF

Role	Name / qualification	Signature	Date
Assembler (PCC-1 Appx A level)			
Verified by			
Quality representative			

Torque values are K-factor estimates unless taken from qualified torque tables (cite in comments). Lubricate stud threads AND nut bearing face, never the gasket. New gasket every time the joint is opened. Sheet number BT-003 belongs to this joint for the life of the project; a re-torque is a new revision of the same number. Printed blank for the field: key the values into the portal afterwards.

BOLT TORQUE RECORD — BT-004

Demo plant · produced water skid · assembly per ASME PCC-1 · one record per bolt-up · retain for turnover

Owner		**Contractor job no.**		**Owner job no.**	
Isometric no.	CD-221022206-2A3S-ET-SHT2	**Joint**	BU#4 · field joint	**Location / LSD**	
System no.		**Line no.**	P-210222A/B	**Line class / spec**	A3S
Lubrication (per spec)		**Method**		**Date of assembly**	
Wrench S/N / cal		**Wrench S/N / cal #2**		**Joins**	valve V-1 upper face ↔ PW-221022202-2A3S-PP SHT 4

JOINT & PRE-ASSEMBLY

Flange size & class	2" / 150# RF	**Spools clean & debris-free**		**Flange condition & cleaned**	
Flange alignment accepted		**New gasket & centered**		**Gasket type**	Spiral-wound
No. of studs	4	**Stud size**	5/8"-11 UNC	**Stud grade / length**	A193 B7M
Nut size & grade		**Hardened washers used**		**2 threads showing each side**	
Sequence marked on studs		**Lubed threads + nut face**		**Revision reason**	

TORQUE — passes 1–3 cross pattern · check pass circular until no nut turns

Target bolt stress (psi)	**K**	**Est. torque (ft-lb)**	**Target used (ft-lb)**	**1st · 33% cross**	**2nd · 66% cross**	**3rd · 100% cross**	**Check · 100% circular**
			Pass done (initial)				

No nut movement at final check		**Torque completed — initials & date**		**Status**	

Comments / NCR	

SIGN-OFF

Role	**Name / qualification**	**Signature**	**Date**
Assembler (PCC-1 Appx A level)			
Verified by			
Quality representative			

Torque values are K-factor estimates unless taken from qualified torque tables (cite in comments). Lubricate stud threads AND nut bearing face, never the gasket. New gasket every time the joint is opened. Sheet number BT-004 belongs to this joint for the life of the project; a re-torque is a new revision of the same number. Printed blank for the field: key the values into the portal afterwards.

BOLT TORQUE RECORD — BT-005

Demo plant · produced water skid · assembly per ASME PCC-1 · one record per bolt-up · retain for turnover

Owner		**Contractor job no.**		**Owner job no.**	
Isometric no.	CD-2290219-2A3S-SHT1	**Joint**	BU#1 · made up at fabrication	**Location / LSD**	
System no.		**Line no.**	P-2902A/B	**Line class / spec**	A3S
Lubrication (per spec)		**Method**		**Date of assembly**	
Wrench S/N / cal		**Wrench S/N / cal #2**		**Joins**	2in WN flange (item 6) ↔ valve V-1 BA902077 lower face

JOINT & PRE-ASSEMBLY

Flange size & class	2" / 150# RF	**Spools clean & debris-free**		**Flange condition & cleaned**	
Flange alignment accepted		**New gasket & centered**		**Gasket type**	Spiral-wound
No. of studs	4	**Stud size**	5/8"-11 UNC	**Stud grade / length**	A193 B7M
Nut size & grade		**Hardened washers used**		**2 threads showing each side**	
Sequence marked on studs		**Lubed threads + nut face**		**Revision reason**	

TORQUE — passes 1–3 cross pattern · check pass circular until no nut turns

Target bolt stress (psi)	K	Est. torque (ft-lb)	Target used (ft-lb)	1st · 33% cross	2nd · 66% cross	3rd · 100% cross	Check · 100% circular
Pass done (initial)							

No nut movement at final check		**Torque completed — initials & date**		**Status**	

Comments / NCR	

SIGN-OFF

Role	Name / qualification	Signature	Date
Assembler (PCC-1 Appx A level)			
Verified by			
Quality representative			

Torque values are K-factor estimates unless taken from qualified torque tables (cite in comments). Lubricate stud threads AND nut bearing face, never the gasket. New gasket every time the joint is opened. Sheet number BT-005 belongs to this joint for the life of the project; a re-torque is a new revision of the same number. Printed blank for the field: key the values into the portal afterwards.

BOLT TORQUE RECORD — BT-006

Demo plant · produced water skid · assembly per ASME PCC-1 · one record per bolt-up · retain for turnover

Owner		**Contractor job no.**		**Owner job no.**	
Isometric no.	CD-2290219-2A3S-SHT1	**Joint**	BU#2 · field joint	**Location / LSD**	
System no.		**Line no.**	P-2902A/B	**Line class / spec**	A3S
Lubrication (per spec)		**Method**		**Date of assembly**	
Wrench S/N / cal		**Wrench S/N / cal #2**		**Joins**	valve V-1 BA902077 upper face ↔ TW-2290205-4A3S-PP SHT.1

JOINT & PRE-ASSEMBLY

Flange size & class	2" / 150# RF	**Spools clean & debris-free**		**Flange condition & cleaned**	
Flange alignment accepted		**New gasket & centered**		**Gasket type**	Spiral-wound
No. of studs	4	**Stud size**	5/8"-11 UNC	**Stud grade / length**	A193 B7M
Nut size & grade		**Hardened washers used**		**2 threads showing each side**	
Sequence marked on studs		**Lubed threads + nut face**		**Revision reason**	

TORQUE — passes 1–3 cross pattern · check pass circular until no nut turns

Target bolt stress (psi)	**K**	**Est. torque (ft-lb)**	**Target used (ft-lb)**	**1st · 33% cross**	**2nd · 66% cross**	**3rd · 100% cross**	**Check · 100% circular**
			Pass done (initial)				

No nut movement at final check		**Torque completed — initials & date**		**Status**	

Comments / NCR	

SIGN-OFF

Role	**Name / qualification**	**Signature**	**Date**
Assembler (PCC-1 Appx A level)			
Verified by			
Quality representative			

Torque values are K-factor estimates unless taken from qualified torque tables (cite in comments). Lubricate stud threads AND nut bearing face, never the gasket. New gasket every time the joint is opened. Sheet number BT-006 belongs to this joint for the life of the project; a re-torque is a new revision of the same number. Printed blank for the field: key the values into the portal afterwards.