



รายชื่อบริษัทผู้ผลิตวัสดุอุปกรณ์ เพื่องานก่อสร้างหรือปรับปรุงเปลี่ยนแปลง
ระบบท่อส่งก๊าซธรรมชาติ บริษัท ปตท. จำกัด (มหาชน)
Natural Gas Transmission Approved Equipment and Material List
(GTM AEML)
PTT Public Company Limited

ลงนาม

ลงนาม

(นายพลกฤษณ์ มังคละคุปต์)

(นายอัศวินเดช พงษ์ศักดิ์)

ผู้จัดการฝ่ายวิศวกรรมและบำรุงรักษาระบบท่อส่งก๊าซธรรมชาติ

ผู้จัดการส่วนวิศวกรรมระบบท่อส่งก๊าซ

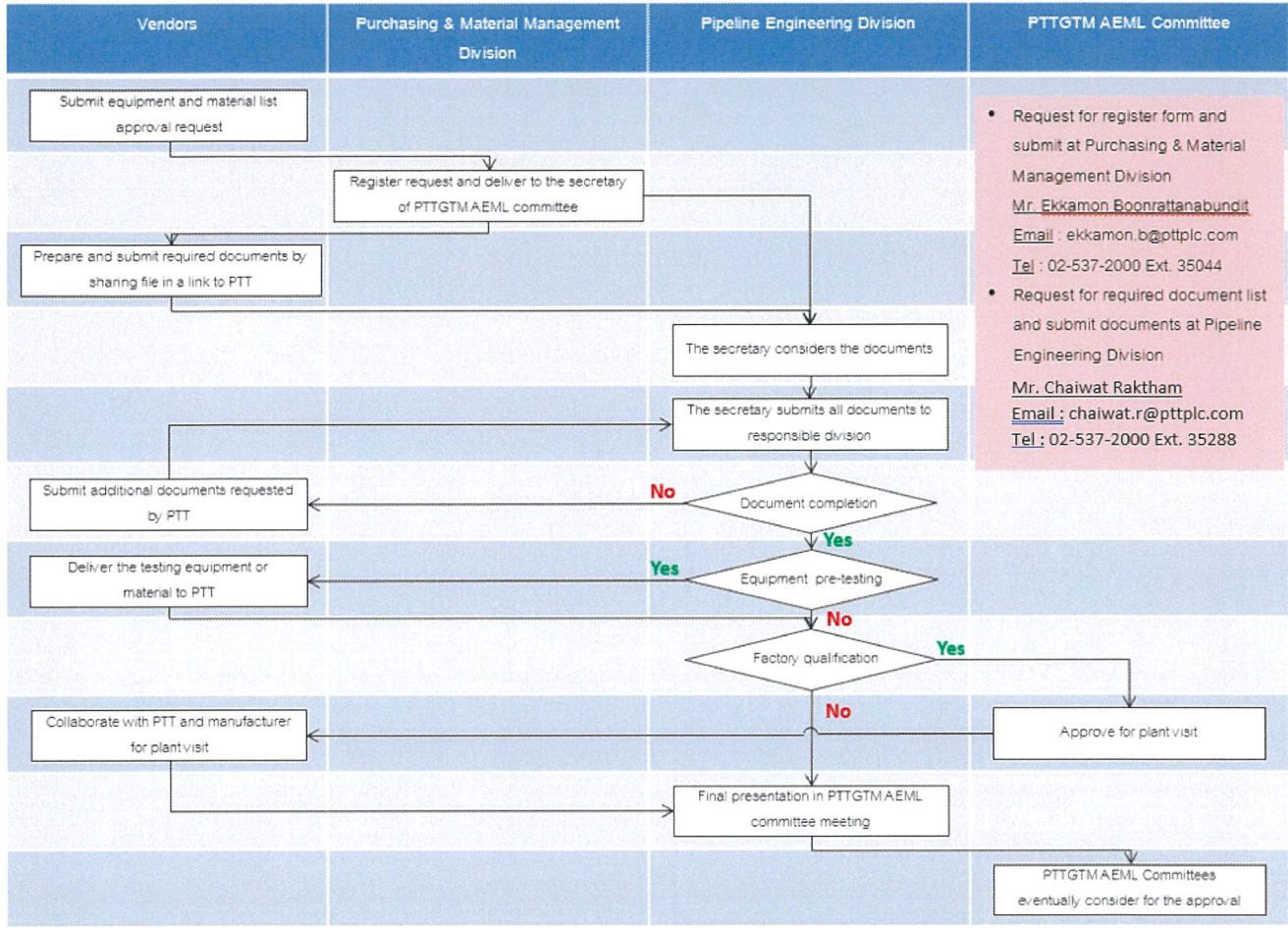
ประธานกรรมการ

กรรมการและเลขานุการ

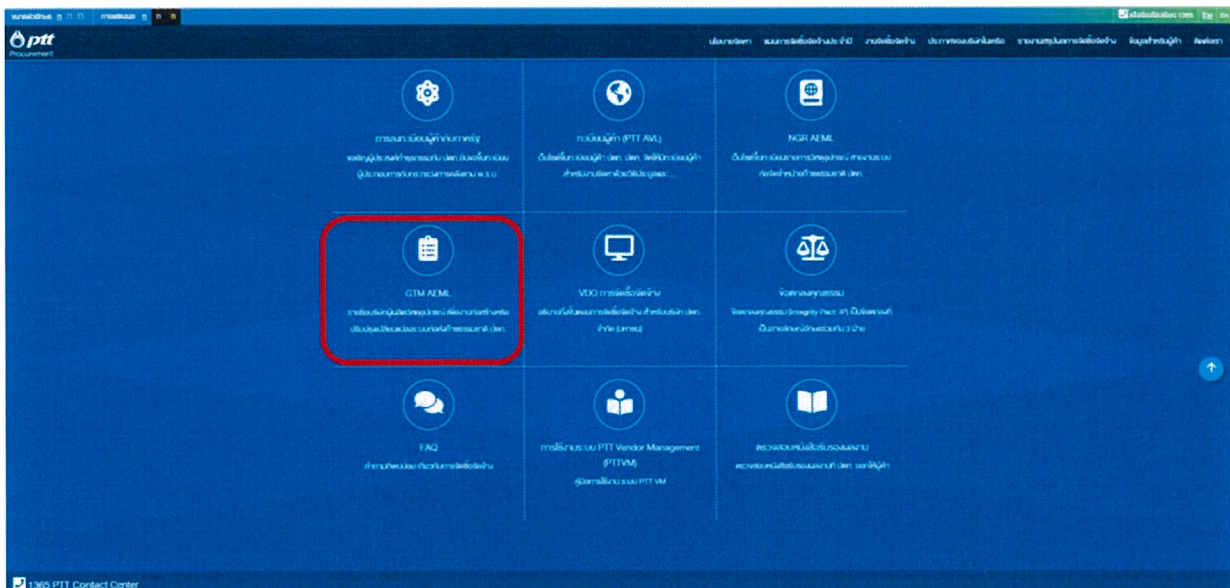
Chairman

Committee & Secretary

PTTGTM Approved Equipment and Material List Approval Process



Please find the updated GTM AEML as link <https://procurement.pttplc.com/th>




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<p>Natural Gas Transmission Engineering & Maintenance Department</p>	<p>Natural Gas Transmission Approved Equipment and Material List (GTM AEML)</p>	<p>Page 3 of 39 Revision 39 Date of Issue 4 Nov 2025</p>
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Conditions for GTM AEML Approval

1. For changing, relocating or adding new plant-based, vendor must request PTT for new plant-based approval at all cases.
2. PTT reserves the rights, at its sole discretion, to remove the equipment or material which is not purchased and used at least 2 projects in the last 3 years from GTM AEML.
3. PTT reserves the rights, at its sole discretion, to remove the equipment or material which found problems and has poor performance during operation from GTM AEML. Vendors can dispute this removal within 60 days after the announcement in PTT web page. No further disputes or complaints can be made after this due date.
4. PTT reserves the rights, at its sole discretion, to remove the equipment or material which vendor cannot be contacted, or manufacturer is out-of-date from GTM AEML.
5. All equipment and material lists required for the GTM AEML approval must have at least one authorized representative in Thailand.
6. During approval process, if vendor does not respond inquiry from PTT for more than 2 months, the request for AEML approval will be automatically cancelled.
7. For equipment and material list which sub-items specify size and pressure rating, PTT will approve to use in the smallest size and class rating to consider its performance first. If no problem within 2 years, vendor can request to use in bigger size and higher class rating. For example of these sub-items are

1. Valve and Actuator	4. Vessels and Mechanical Equipment
2. Line Pipe and Pipe Equipment	5. Pressure Control Equipment
8. For firstly approved brand in sub-item 1.1 to 1.4, PTT will allow to use at size not more than 12 inches and class rating 300 only. Vendor can request to up size or up class in case of no problem was found after use.



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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
Note						
<i>Please see Appendix 2 for Country Code</i>						
1.	Valve and Actuator					
1.1	Ball Valve					
1.1.1	Class 900 Size larger than 24"	Cameron	US, IT	2024	2027	
		Perar	IT	2024	2027	
		RMA	DE	2014	2026	
		Bohmer	DE	2014	2026	
		Pibiviesse	IT	2017	2026	
1.1.2	Class 900 Size 2" to 24"	Same as above and				
		Valvitalia	IT	2017	2028	
1.1.3	Class 600 Size larger than 24"	Same as above and				
		MSA	CZ	2017	2026	Split Body only
		Dafram	IT	2017	2026	Split Body only
		Della Foglia	IT	2024	2027	
		LVF	IT	2024	2027	
1.1.4	Class 600 Size 2" to 24"	Same as above and				
		TIV (Pietro Fiorentini)	IT	2023	2026	
1.1.5	Class 300 and Lower Size 2" to 12" (For Distribution only)	Same as above and				
		Sferova	IT	2024	2027	
		Bohmer	IT	2024	2027	
		SRI	FR	2024	2027	
		Samson	IT	2024	2027	
		Starval	KR	2025	2028	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
1.	Valve and Actuator (Continued)					
1.2	Plug Valve					
		Nordstrom	US	-	2026	
		Cameron	IT, US	2024	2027	
		Serck Audco	GB	-	2026	
		Galli & Cassina	IT	2017	2026	
		Valvitalia	IT	2018	2026	
1.3	Check Valve					
		Tom Wheatley	US	2024	2027	
		Mokveld	ND	-	2026	
		Crane	CN	2020	2026	
		Valvosider	IT	2017	2026	
		Valvitalia	IT	2018	2026	
		DHV	CN	2025	2028	Class 150 with Size 12" and lower only
1.4	Globe Valve					
		Crane	CN	2020	2026	
		Cameron	IT, US	2024	2027	
		Valvosider	IT	2017	2026	
		Valvitalia	IT	2018	2026	
		DHV	CN	2025	2028	Class 150 with Size 12" and lower only

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
1.	Valve and Actuator (Continued)					
1.5	Electric Actuator (MOV)					
		Rotork	US, GB	-	2026	
		Auma	DE	2012	2026	
		Bernard	FR	2019	2026	
		Biffi	IT	2019	2026	
1.6	Gas-over-Oil Actuator (HOV)					
		Shafer	US	-	2026	
		Rotork	IT	2017	2026	Under Rotork's commitment with PTT
		Schuck	DE	2012	2026	
		Biffi	IT	2019	2026	
1.7	Pneumatic Actuator (POV)					
		Rotork	US, DE, IT, SE	-	2026	
		Ledeen	IT	-	2026	
		Pro Control	IT	2017	2026	
		Servo Valve	IT	2017	2026	
		DVG	IT	2017	2026	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
2.	Line Pipe and Pipeline Equipment					
2.1	Line Pipe & Metal Plate for Line Pipe					
	<i>Note</i>					
	<ol style="list-style-type: none"> 1. Please see <u>Appendix 1</u> for Pipeline classification. 2. For New Transmission Main Pipeline Project, "Line Pipe for Transmission Main" will be chosen independently from the manufacturers that meet each specific project requirements and qualifications. 3. This list covers modification or repair/replace of <u>Existing</u> Transmission/Distribution Pipeline and <u>New IPP/SPP/Distribution Pipeline Project</u>. 4. All line pipe shall be made from metal plate listed in 2.1.5 except $\leq 24"$ O.D. thin wall pipe which made from metal coil or seamless pipe. 5. Typical line pipe forming are UOE, JCOE, Press Bending and Roll Bending. Welding process is SAW, unless specified in remark. 					
2.1.1	Line Pipe for Transmission Main	See Note				
2.1.2	Line Pipe for Transmission Branch	Nippon Steel and Sumitomo Metal	JP	-	2026	
		JFE / Marubeni Itochu	JP	-	2026	
		Salzgitter Mannesmann	DE	-	2026	
		Euro pipe	DE	-	2026	
		Welspun	IN	2015	2026	
		Panyu Chu Kong	CN	2014	2026	
		Seah	KR	2012	2026	
		EEW	MY	2016	2026	
		Husteel	KR	2016	2026	ERW only
		Dong Yang	KR	2016	2026	
		NCPSPC	CN	2017	2026	ERW only
		Zhongyou BSS	CN	2017	2026	
		Julong Steel Pipe	CN	2017	2026	
		Jindal	IN	2017	2026	
		Bao Steel	CN	2017	2026	
		Vallourec (Anhui Tianda)	CN	2017	2026	Seamless, up to 12" only
		HI Steel	KR	2017	2026	
		Man Industries	IN	2018	2026	SAW, DSAW
		Jiangsu Yulong	CN	2018	2026	Non-Sour Service only
		Seah Steel Vina	VN	2018	2026	ERW, Non-Sour Service, Up to API5L X52 only
		Yangzhou Chengde	CN	2024	2027	Seamless pipe only

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
2.	Line Pipe and Pipeline Equipment (Continued)					
2.1	Line Pipe & Metal Plate for Line Pipe (Continued)					
2.1.3	Line Pipe for Distribution	Same as above and				
		Canadoil Asia	TH	-	2026	
		Hyundai Steel	KR	-	2026	Manufactured by 265, Yeompo-dong-Buk-ku, Ulsan, Korea only,
		Hengyang Valin Steel Tube	CN	-	2026	
		Cnooc Kingland Pipeline	CN (Zhejiang)	-	2026	
		Shanghai Zhongyou TIPO Steel pipe	CN (Shanghai)	-	2026	
2.1.4	Aboveground Pipe (Piping)	Same as above				
2.1.5	Metal Plate	Arcelor-Mittal	FR, DE	-	2026	
		Dillinger	DE	-	2026	
		JFE Steel	JP	-	2026	
		Nippon Steel	JP	-	2026	
		Posco	KR	-	2026	
		Salzgitter	DE	-	2026	
		Sumitomo Metals	JP	-	2026	
		Voestalpine	AT	-	2026	
		Bao Steel	CN	2017	2026	If Sour Service, up to API-5L X65 only

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
2.	Line Pipe and Pipeline Equipment (Continued)					
2.2	End Closure for Scraper Launcher / Receiver					
	<i>Note</i>					
	1. End Closure shall be designed according to ASME Section VIII by original manufacturer.					
	2. End Closure shall be Quick Opening Type and U Stamp certificate is required.					
		TD Williamson	US, IN	-, 2019	2026	
		Pipeline Engineering	GB	-	2026	
		RMA	BH	2014	2026	
		Tubeturn	US	2016	2026	Model: Tool-less or better,
		Valvitalia	IT	2017	2026	
2.3	Pig Signaler					
		TD Williamson	US, IN	-, 2019	2026	
		Pipeline Engineering	GB	-	2026	
		CDI	US	2014	2026	
		INPIPE	GB	2014	2026	
		Ultraflux	FR	2015	2026	Ultrasonic Type only,

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
2.	Line Pipe and Pipeline Equipment (Continued)					
2.4	Hot Induction Bend					
		Mitsui	JP	2024	2027	
		Sumitomo	JP	2024	2027	
		Yeow Hwa Engineering	SG	-	2026	
		Dai-Ichi	JP	2024	2027	
		Sim	KR	2016	2026	
		PSI (Pantech)	MY	2017	2026	
		Welspun	IN	2019	2026	
		Jindal SAW Ltd	IN	2024	2027	
2.5	Pipeline Screw Anchor					
		Cyntech Corporation	US	-	2026	
		Pipelock Helical	TH	2024	2027	
		TrueTorque	US	2024	2027	
		TerraTorque	US	2024	2027	
		Platipus	US, UK	2024	2027	
2.6	Split Tee & Completion Plug (Lock-O-Ring)					
		TD Williamson	US, BE, IN	2020	2026	For Plant base IN, Fabricated type only
		WeldFit	US	2020	2026	
		RMA	DE	2023	2026	Extruded type only
2.7	Repair Sleeve					
		TD Williamson	US, BE, IN	2024	2027	
		WeldFit	US	2024	2027	
		RMA	DE	2024	2027	
		Plidco	US	2024	2027	

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Type of Coating	Brand	Model	Plant Base	Application		Remark	
				Applied to	Type of Work		
3. Coating							
3.1 Coating for Pipeline (Underground Pipe)							
Dual FBE	3M	226N+&8352N	US	Pipe	New Construction	Mill applied	
Liquid Epoxy * For application on condensed surface	3M	Scotchkote 323	US	Pipe/ Field Joint	New Construction, Repair, Repair for FBE	Plural Spray Application	
	3M	Scotchkote 151UW*	US	Pipe	Repair for Condensed Pipe, Underwater Pipe, Splash Zone Area		
	3M	Scotchkote 328	US	Pipe/ Field Joint	New Construction, Repair, Repair for FBE	Plural Spray Application	
	Powercrete	Powercrete R-Series	US, MX, BE	Field Joint	New Construction, Repair, Repair for FBE		
	Canusa	Canusa HBE95	US	Pipe/ Field Joint	New Construction, Repair, Repair for FBE	Plural Spray Application	
	International		Enviroline 376-F30	US	Pipe/ Field Joint	New Construction, Repair, Repair for FBE	Plural Spray Application
			Interzone 954*	US	Pipe/ Field Joint	Repair for Condensed Pipe	
	TOPPAINT Perfect		Onshore-Offshore Paint PTT-0511	TH	Pipe/ Field Joint	New Construction, Repair	Only for pipe coating work less than 200 meters long
Mastic Coating	Stopaq	All	US, NL	Pipe/ Field Joint	New Construction, Repair	Only for top-up filling at the connection of two different types of coating	
	Viscotaq	Viscowrap-HT, Viscosleeve, ViscotaqPE	US, NL	Pipe/ Field Joint	New Construction, Repair	Only for top-up filling at the connection of two different types of coating	

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Type of Coating	Brand	Model	Plant Base	Application		Remark
				Applied to	Type of Work	
3. Coating (Continued)						
3.1 Coating for Pipeline (Underground Pipe) (Continued)						
Heat Shrinkable Sleeve with Epoxy as 1st Layer	Covalence	HTLP-Series	US, MX, BE	Field Joint	New Construction, Repair	Use with S1301M/S1401M /S1401BLK Epoxy Primer, S1137 Mastic Filler
	Covalence	Dirax	US, MX, BE	Field Joint	Horizontal Directional Drilling (HDD)	Use with S1301M Epoxy Primer, S1182 Hot Melt Filler
	Canusa-CPS	GTS-Series	CA	Field Joint	New Construction, Repair	Use with Canusa E Primer
	Canusa-CPS	TBK-Series	CA	Field Joint	Horizontal Directional Drilling (HDD)	Use with Canusa E Primer
	Guardian	HSS 80	TH	Field Joint	New Construction, Repair	Use with Guardian CP-1 Epoxy Primer
	Guardian	HRSS-DD	TH	Field Joint	Horizontal Directional Drilling (HDD)	Use with Guardian CP-1 Epoxy Primer
PE Repair Stick	Covalence	PERP80	US, MX, BE	Pipe	For Open Trench	Use with S1137 Mastic Filler
	Covalence	PERP60E	US, MX, BE	Pipe	For HDD, Trenchless	Use with S1182 Mastic Filler
	Covalence	PE Melt Stick	US, MX, BE	Pipe		
	Canusa-CPS	Melt Stick : MS-1F 25-300	CA	Pipe		

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Brand	System Detail	Coating System		Repair System	
		Model	Thickness* (micron)	Model	Thickness (micron)
3. Coating (Continued)					
3.2 Coating for Piping (Aboveground Pipe)					
3.2.1 4 Layers Coating					
Ameron	Primer	Dimetcote 19	60	Amercoat 68	50
	Tie-Coat	Amercoat 71 primer	30	Amercoat 71 primer	50
	Intermediate	Amercoat 385	150	Amercoat 385	150
	Final Coat	Amercoat 450S	50	Amercoat 450S	50
Carboline	Primer	Carbozinc 11	60	Carboline 685 P	50
	Tie-Coat	Carboguard 193 primer	30	Carboguard 193 primer	50
	Intermediate	Carboguard 893	150	Carboguard 893	150
	Final Coat	Carbothane 134	50	Carbothane 134	50
Hempel	Primer	Galvosil 1570	60	Hempadur zinc 1536	60
	Tie-Coat	Hempadur 4508	30	Hempadur 4508	40
	Intermediate	Hempadur 4588	150	Hempadur 4588	150
	Final Coat	Hempathane 5521	50	Hempathane 5521	50
International Coatings	Primer	Interzinc 22	60	Interzinc 52	60
	Tie-Coat	Intergard 269	30	Intergard 269	40
	Intermediate	Intergard 475 HS	150	Intergard 475 HS	150
	Final Coat	Interthane 990	50	Interthane 990	50
Jotun	Primer	Resist 86	60	Barrier	50
	Tie-Coat	Penguard Tie coat 100	30	Penguard Tie coat 100	50
	Intermediate	Jotamastic 87	150	Jotamastic 87	150
	Final Coat	Hardtop AS	50	Hardtop AS	50
Sigmakalon	Primer	Sigma Zinc 158	60	Sigma Zinc 109 HS	60
	Tie-Coat	Sigmacover 522	40	Sigmacover 522	40
	Intermediate	Sigmacover 456	150	Sigmacover 456	150
	Final Coat	Sigmadur gloss	50	Sigmadur gloss	50
TOA Chugoku	Primer	Galbon S-HB	60	Epicon Zinc HB-2	60
	Tie-Coat	Epicon Tie Coat B	30	Epicon Tie Coat B	40
	Intermediate	Epicon F-HS	150	Epicon F-HS	150
	Final Coat	Uny Marine HS Silver	50	Uny Marine HS Silver	50
JBP	Primer	PTT - 1696	60 - 75	PTT - 1696	60 - 75
	Tie-Coat	PTT - 5532	100	PTT - 5532	100
	Intermediate	PTT - 5528	100	PTT - 5528	100
	Final Coat	PTT 41 - 24X	50 - 75	PTT 41 - 24X	50 - 75
Onshore-Offshore	Primer	PTT - 0100	60 - 75	PTT - 0100	60 - 75
	Tie-Coat	PTT - 0503	100	PTT - 0503	100
	Intermediate	PTT - 0504	100	PTT - 0504	100
	Final Coat	PTT - 412X	50 - 75	PTT - 412X	50 - 75

* Recommended Dry Film Thickness

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Brand	System Detail	Coating System		Repair System	
		Model	Thickness* (micron)	Model	Thickness (micron)
3. Coating (Continued)					
3.2 Coating for Piping (Aboveground Pipe) (Continued)					
3.2.2 3 Layers Coating					
<i>Note: Use for repair of existing pipe only. For new construction or modification, use 4 layers coating specified in 3.2.1</i>					
JBP	Primer	PTT-1696	60-75	PTT-1696	60-75
	Intermediate	PTT-5532	125-150	PTT-5532	125-150
	Final Coat	PTT-41-245	50-75	PTT-41-245	50-75
Jotun	Primer	Resist 78	75	Resist 78	75
	Intermediate	Penguard Express	125	Penguard Express	125
	Final Coat	Hard Top as Aluminium	50	Hard Top as Aluminium	50
TOA Chukoku	Primer	Galbon S HB100	75	Epicon Zinc HB-2	75
	Intermediate	Epicon F H-S	165	Epicon F H-S	165
	Final Coat	Uny Marine HS Silver	50	Uny Marine HS Silver	50
Onshore- Offshore	Primer	PTT - 0100	65 - 75	PTT - 0100	65 - 75
	Intermediate	PTT - 0504	125 - 150	PTT - 0504	125 - 150
	Final Coat	PTT - 412X	50 - 75	PTT - 412X	50 - 75
3.2.3 Condensed Pipe Coating					
<i>Note: Use for repair of existing pipe only. For new construction or modification, use 4 layers coating specified in 3.2.1</i>					
Onshore – Offshore	Primer	PTT-0100	65-75	PTT-0100	65-75
	Intermediate	PTT-0504	125-150	PTT-0504	125-150
	Final Coat	PTT-412x	50-75	PTT-412x	50-75
JBP	Primer	PTT-1696	60-75	PTT-1696	65-75
	Intermediate	PTT-5532	125-150	PTT-5532	125-150
	Final Coat	PTT-41-245	50-75	PTT-41-245	50-75
TOA Chukoku	Primer	UMEGUARD MT	150	UMEGUARD MT	150
	Final Coat	UNY MARINE HS (MT)	50	UNY MARINE HS (MT)	50

* Recommended Dry Film Thickness

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Type of Coating	Brand	Model	Source of Origin	Application		Remark
				Applied to	Type of Work	

3. Coating (Continued)

3.3 Coating for Underground Pipeline Repair/Modification (<= 1 meter long) or Underground Wrap

Mastic Coating	Stopaq	All	US, NL	Pipeline, Valve	New Construction, Repair	
	Viscotaq	Viscopaste-ST, Viscopaste-HT, ViscotaqPE, Visosealant	US, NL	Pipeline, Valve	New Construction, Repair	Use Viscotaq PE or Viscotaq PVC for Top Coat
	Polyguard	RD-6	US	Pipeline, Valve	New Construction, Repair	
	Canusa	Wrapid Bond (WB), Wrapid Bond FST (WB-FST)	CA	Pipeline, Valve	New Construction, Repair	Wrapid Coat PVC (WC-PVC) or Wrapid Coat PE (WC-PE) for Top Coat

3.4 Composite Repair System for Pipeline/Piping

- Note:
1. Applicable for the repair of corrosion, gouge, dent, dent with metal loss and dent on weld to restore strength only.
 2. In case of metal loss defect, the depth of defect shall not exceed 80% of wall thickness.
 3. Not applicable for crack and internal metal loss defect.
 4. Operator shall be certified by manufacturer.

	Belzona	SuperWrap II	US	Pipe, Fitting, Field Joint	Repair	
	CSNRI	Daimondwrap	US	Pipe, Fitting, Field Joint	Repair	
	Wrap Master	Permawrap	US	Pipe, Fitting, Field Joint	Repair	
	Carbontech	Revowrap 80, 110	ZA	Pipe, Fitting, Field Joint	Repair	

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Type of Coating	Brand	Plant Base	Remark
3. Coating (Continued)			
3.5 Coating Plant			
<i>Note: This list covers modification and repair/replace of Existing Transmission/Distribution and New IPP/SPP/Distribution Pipeline Project only. For New Transmission Main Pipeline Project, coating plant will be chosen independently from the plants that meet each specific project requirements and specifications.</i>			
	Mannesman	DE	
	Bedero shaw	MY, ID	
	Canadoil (Bedero shaw)	TH	
	Wasco	MY	
	EUPEC	DE	
	Welspun	IN	
	Wistco	KR	
	Dareyuk	KR	Distribution only
	Panyu Chu Kong	CN	
	EEW	MY	
	Nippon Steel and Sumitomo Metal	JP	Up to 24" Pipe only
	Zhongyou BSS	CN	
	Julong Steel Pipe	CN	
	NCPSPC	CN	
	Jindal	IN	
	Bao Steel	CN	
	PCI	ID	
	Man Industries	IN	
	Jiangsu Yulong	CN	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
4.	Vessels and Mechanical Equipment					
4.1	Filter					
	<i>Note</i>					
	1. Filter Body, End Closure and Filter Element shall be designed according to ASME Section VIII by original manufacturer.					
	2. Filter shall be fabricated by original manufacturer or manufacturer with certified U Stamp.					
	3. End Closure size larger than 12" shall be End Closure listed in 2.2 "End Closure for Scraper Launcher/Receiver".					
	4. Filter Element design shall not be pafic element or basket type that have to remove contaminated element from casing and reuse that casing					
	5. U Stamp certificate is required for item 4.1.1. Item 4.1.2 - 4.1.3 U Stamp requirement depends on PTT discretion.					
4.1.1	Filter, Inlet and Outlet Pipe of 14" and Larger	Parker (PECO)	US	-	2026	
		Peerless	US	-	2026	
		Pall	US	-	2026	
		Plenty	GB	2014	2026	
		Forain	IT	2017	2026	
		Valvitalia	IT	2017	2026	
4.1.2	Filter, Inlet and Outlet Pipe of 12" and Smaller, Class 600 and Higher	Same as above and				
		Pietro Fiorentini	IT	-	2026	
		Tartarini	IT	-	2026	
		RMG	DE	-	2026	
	Instromet	BE	-	2026		
4.1.3	Filter, Inlet and Outlet Pipe of 12" and Smaller, Class 300 and Lower	Same as above and				
		Pietro Fiorentini	CN (Shanghai)	-	2026	
	Tormene Americana	AR	2012	2026		

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark	
4.	Vessels and Mechanical Equipment (Continued)						
4.2	Separator						
	<i>Note</i>						
	1. Separator Body, End Closure and Separator Element shall be designed according to ASME Section VIII by original manufacturer.						
	2. Separator shall be fabricated by original manufacturer or manufacturer with certified U Stamp.						
	3. End Closure size larger than 12" shall be End Closure listed in "2.2 End Closure for Scraper Launcher/Receiver".						
	4. U Stamp certificate is required for item 4.2.1 Item 4.2.2 - 4.2.3 U Stamp requirement depends on PTT discretion.						
4.2.1	Separator, Inlet and Outlet Pipe of 14" and Larger	Peerless	US	-	2026		
		Pall	US	-	2026		
		Jord	MY, AU, KR	-	2026		
		FMC	US	2014	2026		
		Plenty	GB	2014	2026		
		Forain	IT	2017	2026		
		Valvitalia	IT	2017	2026		
4.2.2	Separator, Inlet and Outlet Pipe of 12" and Smaller, Class 600 and Higher	Same as above					
4.2.3	Separator, Inlet and Outlet Pipe of 12" and Smaller, Class 300 and Lower	Same as above					

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
5.	Pressure Control Equipment					
	<i>Note: Please see Appendix 1 for Pipeline classification</i>					
5.1	Pressure Control Valve	Fisher	US, JP	-	2026	
		Masoneilan	US	2024	2027	
		Becker	US	2024	2027	
		CCI	US, KR	2022	2025	
		Mokveld	NL	-	2026	
		Samson	ES	2025	2028	
5.2	Pressure Regulator	Pietro Fiorentini	IT	-	2026	
		Honeywell (RMG)	DE, GB	-	2026	Axial Type only(Model: HON 512),
		Fisher	RO, SG	2023	2026	
		Tartarini	IT	-	2026	- On hold model 971 and similar models of bodies and silencers design since Rev.22 - Other models are still usable
		Tormene Americana	AR	2015	2026	
5.3	Shut off Valve (Slam Shut)	Pietro Fiorentini	IT	-	2026	
		Honeywell (RMG)	DE, GB	-	2026	
		Tartarini	IT	-	2026	
		Fisher	RO, SG	2023	2026	
		Tormene Americana	AR	2015	2026	
5.4	Safety Relief Valve	Anderson-Greenwood	US	-	2026	
		Farris	US	-	2026	
		Crosby	US	-	2026	
		Consolidated	US	2024	2027	
		LESER	DE	2019	2026	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
6.	Gas Measurement Equipment					
6.1	Volume and Flow Equipment (Gas Quantity)					
6.1.1	Meter Tube and Orifice Meter (Fiscal Metering)	Daniel	US	-	2026	
		FMC	GB	-	2026	
		TMCo	US	-	2026	
6.1.2	Turbine Meter	Elster-Instromet	DE	-	2026	For Flow Computer Configuration, only SM-RI Series can be used
		Vemm Tec	DE	-	2026	
		Dressor Actaris	DE	2024	2027	
6.1.3	Ultrasonic Meter (Fiscal Metering)	Cameron	US	2017	2026	Model: CALDON 380Ci or better
		Endress Hauser	DE	2017	2026	Model: FLOWSIC600-XT Forte or better
		Krohne	NL	2024	2027	Model: Altosonic V12 or better
		Elster-Instromet	DE	2017	2026	Model: Qmax Series or better
		Daniel	RO	2020	2026	Model: 3418 or better
6.1.4	Coriolis Meter (Fiscal Metering)	Micro motion (Rosemount)	US	-	2026	
		FMC/Smith Meter	US	-	2026	
		Endress+Hauser	CH	-	2026	
6.1.5	Flow Conditioner	Emerson	US	-	2026	
		CPA	CA	-	2026	
6.1.6	Flow Computer	Emerson	US	-	2026	
6.1.7	Volume Corrector	Elster-Instromet	DE	2015	2026	Model: EK280
		Dresser Actaris	FR, DE	2023	2026	Model: EVO+
		Plum	PL	2023	2026	Model: MacBAT5
6.2	Gas Analyzer and Sampler (Gas Quality)					
6.2.1	Online Gas Chromatograph	Emerson	US	2023	2026	Model : 700XA series
6.2.2	Moisture Analyzer	Endress+Hauser	US	2022	2028	Model: J22
		Ametek	US	2024	2027	Model: 5100 and 5100HD,
6.2.3	Gas Sampler / Sampling Probe	Welker	US	-	2026	Model: IRA
		Genie	GB	-	2026	Model: 702

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
7.	Instrument & Control Equipment					
7.1	Programmable Logic Controller (PLC)	Allen Bradley	US	-	2026	
		GE Fanuc	US	-	2026	
		Modicon	US	-	2026	
		Siemens	DE	-	2026	
		Stardom Model FCN	JP	-	2026	
7.2	Compact PLC	For communication purposed See "8.9". For others purposed, typically PTT use PLC				
7.3	DCS	Yokogawa	JP	-	2026	
		Honeywell	US	-	2026	
		Emerson	US	2024	2027	
7.4	HMI / MMI	iFix	US	-	2026	
		Iconics	GB	-	2026	
		RS View	US	-	2026	
		CimPlicity	US	-	2026	
		Wonderware	US	-	2026	
		Wizcon	AT	-	2026	
		Fast/Tool	JP	-	2026	
		B&R	AT	-	2026	
7.5	Instrument Valve / Fitting	Swagelok	US	-	2026	
		Parker	US	2020	2026	
		HOKE / Gyrolok	US, KR	2020	2026	
7.6	Instrument Tubing	Swagelok	US	2022	2028	
		Alleima	US, CA, SE	2022	2028	
		Parker	US	2024	2027	
7.7	Manifold Valve for Pressure Gauge	Ashcroft	US	-	2026	
		Anderson Greenwood	US	-	2026	
		Swagelok	US	-	2026	
		Parker	US	-	2026	
		HOKE	US	2020	2026	
7.8	Manifold Valve for Pressure Transmitter	Rosemount	International	-	2026	
		Swagelok	US	-	2026	
		Parker	US	-	2026	
		HOKE	US	2020	2026	
7.9	Flow, Pressure and Temperature Transmitter	Rosemount	International	-	2026	
		Yokogawa	JP	-	2026	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
7.	Instrument & Control Equipment (Continued)					
7.10	Pressure Indicator	Ashcroft	US	-	2026	
		Wika	DE	-	2026	
		ITEC	IT	-	2026	
		Rueger SA	CH	2024	2027	
		Baumer	FR, CH	2018	2026	
7.11	Temperature Indicator	Ashcroft	US	2024	2027	
		Wika	DE	-	2026	
		ITEC	IT	-	2026	
		Rueger SA	CH	2024	2027	
		Baumer	FR, CH	2018	2026	Model: TBI100-264.244.12T,
7.12	Process Switch (Pressure Switch)	Ashcroft	US	-	2026	
		Barton	DE	-	2026	
		Wika	DE	-	2026	
7.13	Ultrasonic Meter (for Monitoring)	SICK Maihak	DE	-	2026	Model: Flowsic 600 or better
		Honeywell	DE	2024	2027	Model: USZ08 or better,
		Daniel	US	-	2026	Model: SeniorSonic or better
		Krohne	DE	2024	2027	Model: Altosonic V, Altosonic V12 or better,
		Elster-Instromet	NL	-	2026	Model: Q.Sonic or better
		Cameron	US	2015	2026	
7.14	Orifice Meter and Orifice Fitting (for Monitoring)	Daniel	US	-	2026	
		FMC	GB	-	2026	
		TMCo	US	-	2026	
		Wika	IN	2021	2026	Model: FLC
7.15	Coriolis Meter (for Monitoring)	Micro Motion (Rosemount)	US	-	2026	
		FMC/Smith Meter	US	-	2026	
		Endress+Hauser	CH	-	2026	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
8.	SCADA & Communication Equipment					
8.1	RTU	Kingfisher	AU	-	2026	Model: RTU-net
		Allen Bradley	US	-	2026	
		Modicon	US	-	2026	
		Servelec	UK, AU, BE	-	2026	Model: T-Box Lite (Only for small system or communication to SCADA via 3G/4G)
BE	2020		2026	Model: T-Box MS (Only for small system or communication to SCADA via 3G/4G)		
8.2	Radio Equipment	Motorola	US	-	2026	
		DAMM	DK	2018	2026	
8.3	PABX / IP Phone	Siemens	DE	-	2026	
		NEC	JP	-	2026	
		AVAYA	US	-	2026	
		CISCO	US	-	2026	
8.4	Fiber Optic Duct	Duraline	US, IN	-	2026	
		Dura-Mine (HDPE Ducts)	MY	-	2026	
		Parixit	IN	2016	2026	
8.5	Fiber Optic Cable	Corning	US	2014	2026	
		Prysmian	IT, CN	-	2026	
		Nexan	FR	-	2026	
		Thai Fiber Optic	TH	2016	2026	
8.6	Fiber Optic Equipment	Nokia (Alcatel Lucent)	US	2021	2026	
		Ericsson	DE	-	2026	
		Hitachi ABB (Keymile)	DE	2021	2026	
		CXR Anderson - Jacobson	CA	-	2026	
		Coriant	DE	2014	2026	
		DNWP	FI	2014	2026	
		OTN Systems	BE	2014	2026	
8.7	3G/4G Modem	ABB (VIOLA)	FI	-	2026	For SCADA & AMR System
		Inhand	CN	2016	2026	Model: IG601, IG902, IG915, AT1001 for SCADA & GMDR System
8.8	Compact PLC (Communication purposed)	Sevelec	UK, AU, BE	-	2026	Model: T-Box Lite, T-Box MS
		Stardom Model FCJ	JP	-	2026	
		Koyo	JP	2015	2026	Model: DL05&DL06

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
8.	SCADA & Communication Equipment (Continued)					
8.9	CCTV Equipment					
8.9.1	CCTV Equipment (for Block Valve & Hazardous Area)	AXIS	SE	2014	2026	
		Bosch	DE	2014	2026	
		PELCO	US	2014	2026	
		Yokogawa	JP	2014	2026	
		Hanwha	VN	2023	2026	
8.9.2	CCTV Equipment (for Pipeline ROW Monitoring)	Huawei	CN	2024	2027	
		Hanwha	VN	2023	2026	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
9.	Electrical System					
9.1	Electrical / Control Panel Equipment					
9.1.1	Terminal	Entelec	GB	2024	2027	
		Wago	DE	-	2026	
		Weidmuller	DE	-	2026	
		Phoenix Contact	US	-	2026	
		Klemsan	TR	2024	2027	
9.1.2	AC/DC Power Supply (for Panel)	Phoenix Contact	US	-	2026	
		PULS	DE	-	2026	
		Wago	DE	-	2026	
		Weidmuller	DE	-	2026	
9.1.3	Cabinet	Rittal	DE	-	2026	
		Hoffman	DE	-	2026	
		Schneider	FR, ES	2024	2027	
9.1.4	Isolator Safety Barrier	MTL	UK	-	2026	
		Pepperl+Fuchs	DE	-	2026	
		Phoenix contact	DE	-	2026	
9.1.5	Signal Surge Protection for Panel	MTL	UK	-	2026	
		Phoenix Contact	DE	-	2026	
		DENT	DE	2024	2027	
		Pepperl+Fuchs	DE	-	2026	
9.1.6	Signal Surge Protection for Field-mounted Instrument	MTL	UK	-	2026	
		Phoenix Contact	DE	2024	2027	
		Weidmuller	DE	2024	2027	
9.1.7	AC Surge Protection	Phoenix Contact	DE	-	2026	
		Weidmuller	DE	2024	2027	
		Novaris	AU, MY	2024	2027	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
9.	Electrical System (Continued)					
9.2	Power Supply					
9.2.1	Battery Charger	Yuasa	JP	2024	2027	
		AEG (Saft/Nife)	DE, SG	-	2026	
		Gutor	CH	-	2026	
		GFS (Thyree-M)	DE	2024	2027	
		STATRON	CH, MY	2019	2026	
		Gutor	MY	2014	2026	
		BORRI	IT	2014	2026	
		Benning	DE, SG	2024	2027	Model : Thyrotronic,
		Chloride	FR	2019	2026	
9.2.2	UPS	Yuasa	JP	2024	2027	
		AEG (Saft/Nife)	DE, SG	-	2026	
		Gutor	CH	-	2026	
		GFS (Thyree-M)	DE	2024	2027	
		STATRON	CH, MY	-, 2019	2026	
		Gutor	MY	2014	2026	
		BORRI	IT	2014	2026	
		Benning	DE, SG	2024	2027	Model : Enertronic
		Chloride	FR	2019	2026	
9.2.3	Battery for Charger and UPS	Yuasa	JP	-	2026	Lead-Acid
		Saft	SE	2024	2027	Ni-Cd
		Fiamm	IT	-	2026	Lead-Acid
		Energys	FR, PL	2014	2026	Lead-Acid (FR), OPZV (PL)
		Alcad	SE	2024	2027	Ni-Cd
		Hoppecke	DE	2018	2026	Lead-Acid
		GAZ	DE	2024	2027	Ni-Cd Model: KL, KM, KH, KGL, KGM,
		BAE	DE	2023	2026	Gel Type: OPzV
		Nuovoplus	TH	2024	2027	
		Sonnechein	DE	2024	2027	
9.2.4	Inverter	Leonics	TH	-	2026	
		Tecned	NL	2024	2027	Model: Tecned OM Inverter Series
9.2.5	High Voltage Transformer	Ekarat	TH	-	2026	
		Tira Thai	TH	-	2026	
		Thai Maxwell	TH	-	2026	
9.2.6	Power / Control Cable	Thai Yazaki	TH	-	2026	
		Bangkok Cable	TH	-	2026	
		DRAKA	TH	2014	2026	
		Helukabel	DE, CN	2024	2027	
		Lapp Kabel	IT	2024	2027	
		Phelps Dodge	TH	2024	2027	
Belden	CN	2024	2027			

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
9.	Electrical System (Continued)					
9.2	Power Supply (Continued)					
9.2.7	Medium Voltage Switchgear	Mitsubishi Electric	JP	-	2026	
		Toshiba	JP	-	2026	
		ABB	TH	-	2026	
		Schneider	Europe, TH	-	2026	
		Siemens	Europe, TH	-	2026	
		Fuji Electric	TH	2020	2026	
9.2.8	Low Voltage Switchgear	Mitsubishi Electric	JP	2024	2027	
		Toshiba	JP	2024	2027	
		ABB	Europe, TH	-	2026	
		Schneider	Europe, TH	-	2026	
		Siemens	Europe, TH	2024	2027	
		Fuji Electric	TH	2024	2027	
9.2.9	Busduct	LG / Siemens	DE	-	2026	
		ABB	Europe, TH	-	2026	
		Toshiba	JP	-	2026	
		Mitsubishi Electric	JP	-	2026	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
9.	Electrical System (Continued)					
9.3	Explosion Protected Equipment					
9.3.1	Explosion Proof Electric Equipment (Power Receptacle, Plugs, Switch, EX Lighting, Junction Box, Control Station)	Legrand	FR	-	2027	All shall have certification from either FM, ATEX, CSA, UL.
		ABB	Europe	-	2027	
		Crouse-Hinds	US	-	2027	
		Shimada Electric, LCS	JP	-	2027	Any equipment type controlled by Thai law, shall be complied to TIS. If equipment has only Thailand certification, It is allowed to use in Zone 2 only.
		Miyaki Electric	JP	-	2027	
		Philips	NL	-	2026	
		Iwasaki Electric	JP	-	2027	
		Ito Denki	JP	-	2027	
		Mori Denki	JP	-	2027	
		Bartec	DE	-	2027	
		Hawke	US	-	2027	
		Victor (Smith-Victor)	Europe	-	2027	
		O-Z / GEDNEY	US	-	2027	
		Eye	JP	-	2027	
		ROSE	DE	-	2027	
		STAHL	DE	-	2027	
		Weidmuller (Klippon)	DE	-	2027	
		Warom	CN	-	2026	
		Alloy Industry Co., Ltd.	TH	-	2026	
		Appleton	US, FR, CN	2019	2027	
Dialight	MX, MY	2024	2027			
9.3.2	Explosion Proof Cable Fitting and Accessories	Crouse-Hinds	US	2024	2027	
		STAHL	DE	2024	2027	
		Hawke	US	-	2026	
		Peppers	GB	-	2026	
		CMP	GB	2016	2026	
		CCG	ZA	2024	2027	
		Alloy	TH	2025	2028	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
10.	Safety System					
10.1	HIPP System	The main components of HIPP system are comprised of <ol style="list-style-type: none"> 1. Main Action Valve: choose from item 1.1, 5.1 or 5.3 2. Actuator: choose from item 1.5, 1.6, 1.7, 5.1 or 5.3 3. Pressure Transmitter: choose from item 7.8 4. System Approval: by certified personnel 5. Other components: follow this GTM AEML 				
10.2	Line Break Detection System					
10.2.1	Electronic Line Break Control	Emerson	US	2024	2027	Model: LineGuard 2300
		Biffi	IT	2024	2027	Model: ELBS-20
10.3	Fire and Gas Alarm and Protection System					
10.3.1	Portable Gas Detector	Drager	DE	2024	2027	
		MSA	US	-	2026	
		BW	GB	-	2026	
		GFG	DE	2018	2026	Model: 460(with IR sensor, 3EC),
10.3.2	Fire and Gas Alarm Panel	Simplex Grinnell	US	-	2026	
		Kidde Fenwal	US	-	2026	
		Det-Tronics	US	-	2026	
		NOTIFIER	US	-	2026	
		General Monitor	US	-	2026	
10.3.3	Fire and Gas Protection System	Autronica	NO	2014	2026	
		Kidde Fenwal	US	-	2026	
		Det-Tronics	US	-	2026	
		Simplex Grinnell	US	2024	2027	
		NOTIFIER	US	-	2026	
		General Monitor	US	-	2026	
10.3.4	Smoke Detector	Honeywell	NL	2024	2027	
		Kidde	US	2024	2027	
		Simplex Grinnell	US	-	2026	
		Edwards Systems Technology	US	-	2026	
		MSA	GB, US	-	2026	
		Ansul	NL	2024	2027	
		NOTIFIER	US	-	2026	
10.3.5	Heat Detector	Autronica	NO	2014	2026	
		Ansul	US	2024	2027	
		Kidde	US	2024	2027	
		Simplex Grinnell	US	2024	2027	
		Edwards Systems technology	US	2024	2027	
		MSA	GB	-	2026	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
10.3.6	Flame Detector	Ansul		2024	2027	
		Det-Tronics	US	-	2026	
		General Monitor	US	-	2026	
		NOTIFIER	US	-	2026	
		MSA	GB	-	2026	
		Autronica	NO	2014	2026	
10.3.7	Gas Detector (Fix Point, Open Path)	Det-Tronics	US	-	2026	
		General Monitor	US	-	2026	
		Autronica	NO	2014	2026	
		GFG	DE	2019	2026	Model: IR29 or better
10.3.8	ESD/SIS	Triconex	US	-	2026	
		Yokogawa	JP	-	2026	
		Honeywell	NL	2024	2027	

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark																											
11.	CP System																																
11.1	Transformer Rectifier	Universal	US	-	2026																												
		Corrpro	US	-	2026																												
11.2	CP Anode																																
11.2.1	Type Zinc Anode (SACP)	Any Brand and Model which complied with Specification in Remark				Remark 1. MIL-A-18001 or ASTM B418 Type I – for salt water and brackish water application 2. ASTM B418 Type II – high purity for underground and fresh water use application <table border="1" style="font-size: small; border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="text-align: left;">Mil Spec</th> <th colspan="2" style="text-align: center;">ASTM B-418-01</th> </tr> <tr> <th style="text-align: left;">A-18001K</th> <th style="text-align: center;">Type I</th> <th style="text-align: center;">Type II</th> </tr> </thead> <tbody> <tr> <td>0.10 - 0.50%</td> <td style="text-align: center;">0.10 - 0.50%</td> <td style="text-align: center;">0.005% max</td> </tr> <tr> <td>0.025 - 0.07%</td> <td style="text-align: center;">0.025 - 0.07%</td> <td style="text-align: center;">0.003% max</td> </tr> <tr> <td>0.005% max</td> <td style="text-align: center;">0.005% max</td> <td style="text-align: center;">0.0014% max</td> </tr> <tr> <td>0.006% max</td> <td style="text-align: center;">0.006% max</td> <td style="text-align: center;">0.003% max</td> </tr> <tr> <td>0.005% max</td> <td style="text-align: center;">0.005% max</td> <td style="text-align: center;">0.002% max</td> </tr> <tr> <td>0.125% max</td> <td style="text-align: center;">---</td> <td style="text-align: center;">---</td> </tr> <tr> <td>remainder</td> <td style="text-align: center;">remainder</td> <td style="text-align: center;">remainder</td> </tr> </tbody> </table>	Mil Spec	ASTM B-418-01		A-18001K	Type I	Type II	0.10 - 0.50%	0.10 - 0.50%	0.005% max	0.025 - 0.07%	0.025 - 0.07%	0.003% max	0.005% max	0.005% max	0.0014% max	0.006% max	0.006% max	0.003% max	0.005% max	0.005% max	0.002% max	0.125% max	---	---	remainder	remainder	remainder
Mil Spec	ASTM B-418-01																																
A-18001K	Type I	Type II																															
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0.005% max	0.005% max	0.0014% max																															
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0.005% max	0.005% max	0.002% max																															
0.125% max	---	---																															
remainder	remainder	remainder																															
11.2.2	Type High-Potential Magnesium Alloy Anode (SACP)	Any Brand and Model which complied with Specification in Remark				Remark <table border="1" style="font-size: small; border-collapse: collapse; width: 100%;"> <thead> <tr> <th style="text-align: center;">Element</th> <th style="text-align: center;">High-potential</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Al</td> <td style="text-align: center;">0.010% max</td> </tr> <tr> <td style="text-align: center;">Mn</td> <td style="text-align: center;">0.50 - 1.30%</td> </tr> <tr> <td style="text-align: center;">Zn</td> <td style="text-align: center;">---</td> </tr> <tr> <td style="text-align: center;">Si</td> <td style="text-align: center;">0.05% max</td> </tr> <tr> <td style="text-align: center;">Cu</td> <td style="text-align: center;">0.02% max</td> </tr> <tr> <td style="text-align: center;">Ni</td> <td style="text-align: center;">0.001% max</td> </tr> <tr> <td style="text-align: center;">Fe</td> <td style="text-align: center;">0.03% max</td> </tr> <tr> <td style="text-align: center;">Other (total)</td> <td style="text-align: center;">0.30% max</td> </tr> <tr> <td style="text-align: center;">Mg</td> <td style="text-align: center;">remainder</td> </tr> </tbody> </table>	Element	High-potential	Al	0.010% max	Mn	0.50 - 1.30%	Zn	---	Si	0.05% max	Cu	0.02% max	Ni	0.001% max	Fe	0.03% max	Other (total)	0.30% max	Mg	remainder							
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Other (total)	0.30% max																																
Mg	remainder																																
11.3	Zinc Ribbon / Zinc Ground Mat	Any Brand and Model which complied with Specification in Remark				Remark ASTM B418 Type II – high purity for underground and fresh water use																											
11.4	Insulation Joint / Insulation Flange																																
11.4.1	Insulation Joint	RMA	DE	2024	2027	Model: IK-P3 only,																											
		Zunt	IT	-	2026																												
		Nuovagiungas	IT	2012	2026																												
		Galperti	IT	2024	2027																												
		GPT	US	2025	2028																												
11.4.2	Insulation Flange (for Connecting to Instrument only)	GPT	US	2025	2028																												

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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
11.	CP System (Continued)					
11.5	DC Decoupler					
11.5.1	Solid State Type	Dairy Land Electrical Industries	US	-	2026	Remark 1. Model PCR Series: For installation in hazardous area such as across isolating flange/joint 2. Model SSD: For underground installation such as to isolate the ground mat
		DEHN	DE	2022	2028	Model: DASD 45 LP 100 T (923 402) Rating Control @ 2 kA 30 Cycles

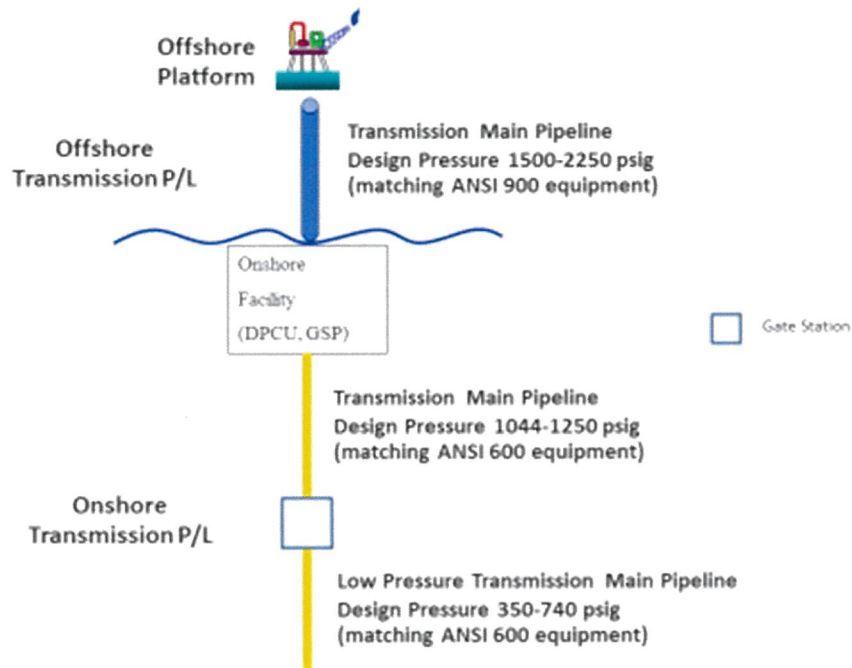
Natural Gas Transmission Engineering & Maintenance Department	Natural Gas Transmission Approved Equipment and Material List (GTM AEML)	Page 35 of 39 Revision 39 Date of Issue 4 Nov 2025
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Item	Product	Brand	Plant Base	Year Qualified	Year Expired	Remark
12. Test Equipment						
12.1	Digital Multi Meter	Fluke	US	-	2026	
12.2	Multi Function Digital Meter	Fluke	US	-	2026	
		Yokogawa	JP	-	2026	
		Beamax	GB	-	2026	
12.3	Digital Clamp Meter	Fluke	US	-	2026	
		Kyoritsu	JP	-	2026	
12.4	Decade Resistance Box	Yokogawa	JP	-	2026	
		Alphatronic	GB	-	2026	
12.5	Pressure Calibrator	Wika	GB	2022	2028	Model: CPG1500, CPH7000
		Druck	GB	-	2026	
		Ametek	US	-	2026	
		TIS	SG	-	2026	
		Beamax	US	-	2026	
		Additel	US	-	2026	
12.6	Dead Weight Tester (Hydraulic)	Wika	GB	2022	2028	
12.7	Dead Weight Tester (Pneumatic)	Wika	GB	2022	2028	
		Ametek	US	-	2026	

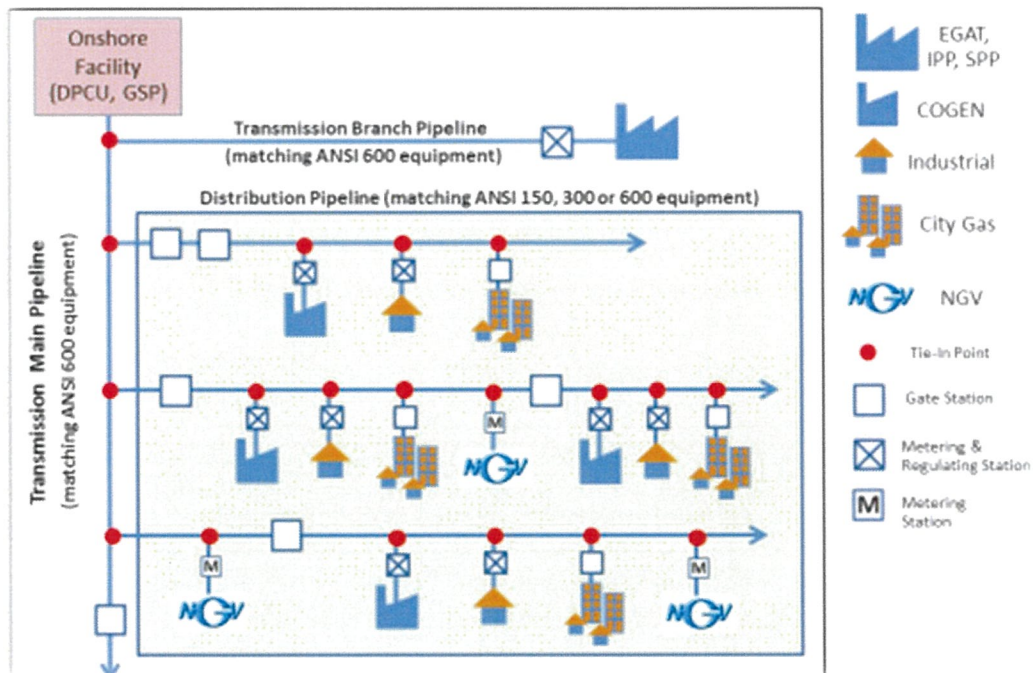
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Appendix 1: Pipeline Classification

NATURAL GAS TRANSPORTATION SYSTEM (Steel P/L)



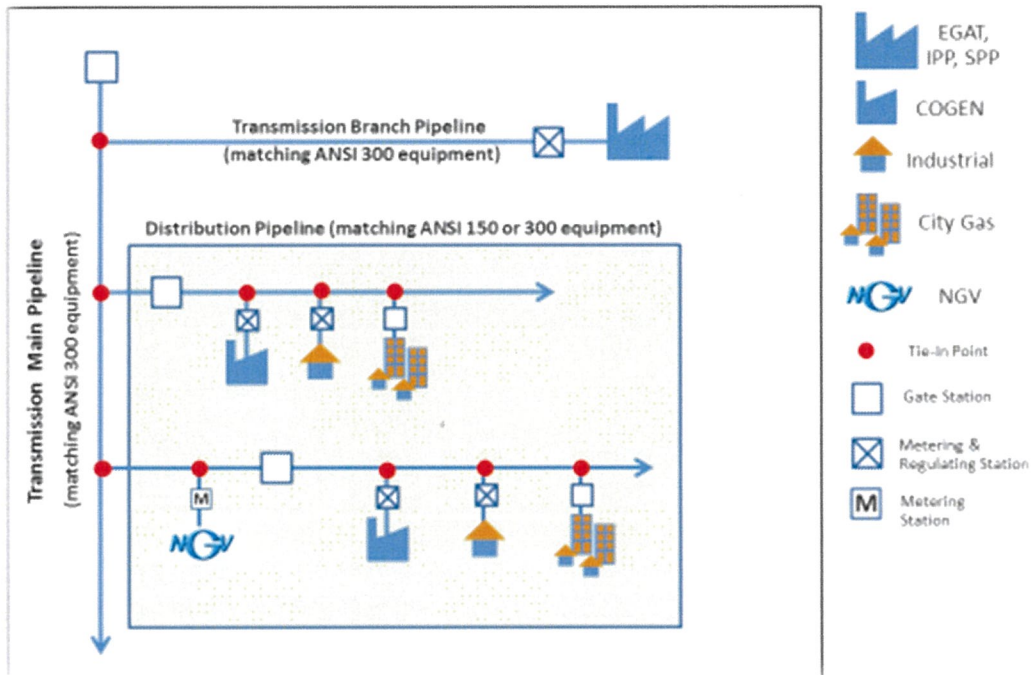
NATURAL GAS TRANSPORTATION SYSTEM (Steel P/L)



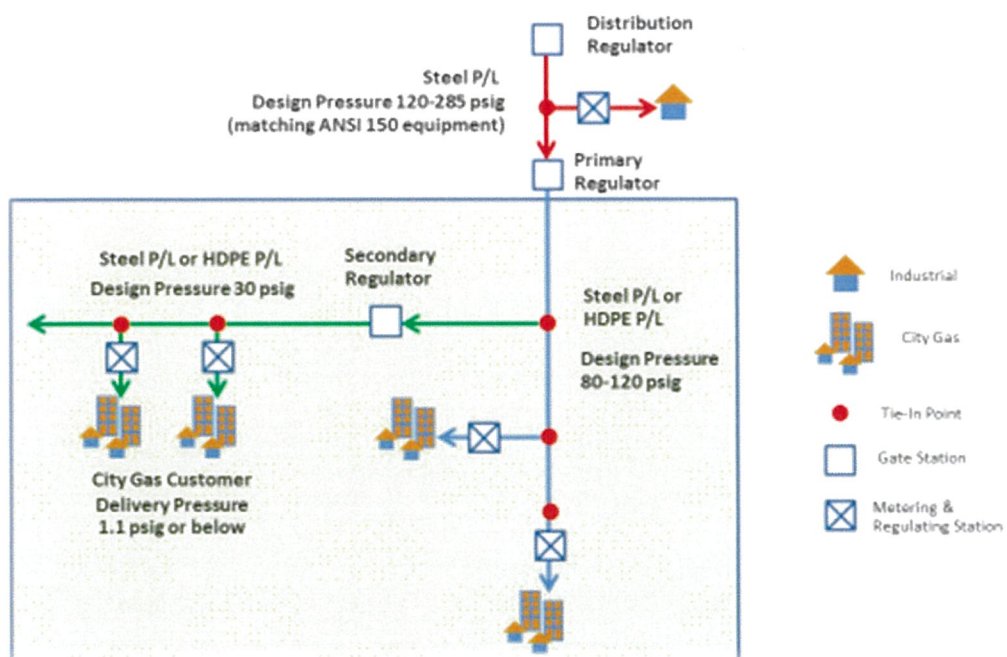
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Appendix 1: Pipeline Classification (Continued)

NATURAL GAS TRANSPORTATION SYSTEM (Steel P/L)



CITY GAS STANDARD



Tommy Deane

Appendix 2: Country Code (ISO 3166-1 alpha-2)

Country Name	Code	Country Name	Code	Country Name	Code
Afghanistan	AF	Congo	CG	Hungary	HU
Aland Islands	AX	Congo (Democratic Republic of the)	CD	Iceland	IS
Albania	AL	Cook Islands	CK	India	IN
Algeria	DZ	Costa Rica	CR	Indonesia	ID
American Samoa	AS	Cote d'Ivoire	CI	Iran	IR
Andorra	AD	Croatia	HR	Iraq	IQ
Angola	AO	Cuba	CU	Ireland	IE
Anguilla	AI	Curacao	CW	Isle of Man	IM
Antarctica	AQ	Cyprus	CY	Israel	IL
Antigua and Barbuda	AG	Czech	CZ	Italy	IT
Argentina	AR	Denmark	DK	Jamaica	JM
Armenia	AM	Djibouti	DJ	Japan	JP
Aruba	AW	Dominica	DM	Jersey	JE
Australia	AU	Dominican Republic	DO	Jordan	JO
Austria	AT	Ecuador	EC	Kazakhstan	KZ
Azerbaijan	AZ	Egypt	EG	Kenya	KE
Bahamas	BS	El Salvador	SV	Kiribati	KI
Bahrain	BH	Equatorial Guinea	GQ	Korea (North)	KP
Bangladesh	BD	Eritrea	ER	Korea (South)	KR
Barbados	BB	Estonia	EE	Kuwait	KW
Belarus	BY	Ethiopia	ET	Kyrgyzstan	KG
Belgium	BE	Falkland Islands	FK	Lao	LA
Belize	BZ	Faroe Islands	FO	Latvia	LV
Benin	BJ	Fiji	FJ	Lebanon	LB
Bermuda	BM	Finland	FI	Lesotho	LS
Bhutan	BT	France	FR	Liberia	LR
Bolivia	BO	French Guiana	GF	Libya	LY
Bonaire	BQ	French Polynesia	PF	Liechtenstein	LI
Bosnia and Herzegovina	BA	French Southern Territories	TF	Lithuania	LT
Botswana	BW	Gabon	GA	Luxembourg	LU
Bouvet Island	BV	Gambia	GM	Macao	MO
Brazil	BR	Georgia	GE	Macedonia	MK
British Indian Ocean Territory	IO	Germany	DE	Madagascar	MG
Brunei Darussalam	BN	Ghana	GH	Malawi	MW
Bulgaria	BG	Gibraltar	GI	Malaysia	MY
Burkina Faso	BF	Greece	GR	Maldives	MV
Burundi	BI	Greenland	GL	Mali	ML
Cabo Verde	CV	Grenada	GD	Malta	MT
Canada	CA	Guadeloupe	GP	Marshall Islands	MH
Cayman Islands	KY	Guam	GU	Martinique	MQ
Central African Republic	CF	Guatemala	GT	Mauritania	MR
Chad	TD	Guernsey	GG	Mauritius	MU
Chile	CL	Guinea	GN	Mayotte	YT
China	CN	Guinea-Bissau	GW	Mexico	MX
Christmas Island	CX	Guyana	GY	Micronesia	FM
Cocos Islands	CC	Haiti	HT	Moldova	MD
Colombia	CO	Heard Island and McDonald Islands	HM	Monaco	MC
Comoros	KM	Holy See	VA	Mongolia	MN

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Appendix 2: Country Code (ISO 3166-1 alpha-2) (Continued)

Country Name	Code	Country Name	Code
Morocco	MA	Sint Maarten (Dutch part)	SX
Mozambique	MZ	Slovakia	SK
Myanmar	MM	Slovenia	SI
Namibia	NA	Solomon Islands	SB
Nauru	NR	Somalia	SO
Nepal	NP	South Africa	ZA
Netherlands	NL	South Georgia and the South Sandwich Islands	GS
New Caledonia	NC	South Sudan	SS
New Zealand	NZ	Spain	ES
Nicaragua	NI	Sri Lanka	LK
Niger	NE	Sudan	SD
Nigeria	NG	Suriname	SR
Niue	NU	Svalbard and Jan Mayen	SJ
Norfolk Island	NF	Swaziland	SZ
Northern Mariana Islands	MP	Sweden	SE
Norway	NO	Switzerland	CH
Oman	OM	Syrian Arab Republic	SY
Pakistan	PK	Taiwan	TW
Palau	PW	Tajikistan	TJ
Palestine, State of	PS	Tanzania	TZ
Panama	PA	Thailand	TH
Papua New Guinea	PG	Timor-Leste	TL
Paraguay	PY	Togo	TG
Peru	PE	Tokelau	TK
Philippines	PH	Tonga	TO
Pitcairn	PN	Trinidad and Tobago	TT
Poland	PL	Tunisia	TN
Portugal	PT	Turkey	TR
Puerto Rico	PR	Turkmenistan	TM
Qatar	QA	Turks and Caicos Islands	TC
Reunion !Réunion	RE	Tuvalu	TV
Romania	RO	Uganda	UG
Russian Federation	RU	Ukraine	UA
Rwanda	RW	United Arab Emirates	AE
Saint Barthelemy	BL	United Kingdom of Great Britain and Northern Ireland	GB/UK
Saint Helena, Ascension and Tristan da Cunha	SH	United States of America	US
Saint Kitts and Nevis	KN	United States Minor Outlying Islands	UM
Saint Lucia	LC	Uruguay	UY
Saint Martin	MF	Uzbekistan	UZ
Saint Pierre and Miquelon	PM	Vanuatu	VU
Saint Vincent and the Grenadines	VC	Venezuela	VE
Samoa	WS	Viet Nam	VN
San Marino	SM	Virgin Islands (British)	VG
Sao Tome and Principe	ST	Virgin Islands (U.S.)	VI
Saudi Arabia	SA	Wallis and Futuna	WF
Senegal	SN	Western Sahara	EH
Serbia	RS	Yemen	YE
Seychelles	SC		
Singapore	SG		

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