



COMMONWEALTH OF AUSTRALIA

Sections 226 and 708

Offshore Petroleum and Greenhouse Gas Storage Act 2006

**APPLICATION FOR VARIATION OF A PIPELINE LICENCE
(PIPELINE LICENCE WA-21-PL)**

I, **STEVEN ROBERT TAYLOR**, the Delegate of the National Offshore Petroleum Titles Administrator, on behalf of the Commonwealth–Western Australia Offshore Petroleum Joint Authority hereby give notice pursuant to sections 226 and 708 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* that an application has been received from

Santos WA Southwest Pty Limited
(ACN 050 611 688)

for the variation of Pipeline Licence WA-21-PL in the offshore area of Western Australia, as set out below.

Pursuant to subsection 226(3) of the Act, a person may make a written submission to the Titles Administrator about this application within 30 days from the date of this notice.

This notice takes effect on the day on which it appears in the
Australian Government Gazette.

Made under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
of the Commonwealth of Australia.

STEVEN ROBERT TAYLOR
DELEGATE OF THE TITLES ADMINISTRATOR
ON BEHALF OF THE COMMONWEALTH–WESTERN AUSTRALIA
OFFSHORE PETROLEUM JOINT AUTHORITY

APPLICATION FOR VARIATION OF
PIPELINE LICENCE WA-21-PL

The application seeks to effect the following amendments to the licence:

1. Annexure B is varied by deleting all the current text and replacing with the following:

The route of the Greater East Spar system of pipes is described in the table hereunder, commencing at the Halyard-2 Christmas Tree (XT) Connector and terminating at the western tie-in flange on the East Spar Manifold. Coordinates are based on Geodetic Datum of Australia (GDA94).

Main Halyard Flowline System Co-Ordinates				
	Feature Name	KP	Easting (m)	Northing (m)
1.	Halyard-2 XT Connector	0.00	283 147	7 720 608
2.	Greater East Spar PLEM	0.02	283 157	7 720 584
3.	Greater East Spar Subsea Cooling Skid	0.05	283 171	7 720 557
4.	Halyard 10" Flowline KP0.0	0.06	283 175	7 720 553
5.	Halyard 10" Flowline KP1.0	1.00	283 612	7 719 875
6.	Halyard 10" Flowline KP2.0	2.00	284 204	7 719 160
7.	Halyard 10" Flowline KP3.0	3.00	284 361	7 718 445
8.	Halyard 10" Flowline KP4.0	4.00	284 811	7 717 553
9.	Halyard 10" Flowline KP5.0	5.00	285 263	7 716 662
10.	Halyard 10" Flowline KP6.0	6.00	285 715	7 715 771
11.	Halyard 10" Flowline KP7.0	7.00	286 086	7 714 869
12.	Halyard 10" Flowline KP8.0	8.00	286 535	7 713 976
13.	Halyard 10" Flowline KP9.0	9.00	286 985	7 713 084
14.	Halyard 10" Flowline KP10.0	10.00	287 434	7 712 191
15.	Halyard 10" Flowline KP11.0	11.00	287 881	7 711 297
16.	Halyard 10" Flowline KP12.0	12.00	288 330	7 710 405
17.	Halyard 10" Flowline KP13.0	13.00	288 778	7 709 512
18.	Halyard 10" Flowline KP14.0	14.00	289 226	7 708 619
19.	Halyard 10" Flowline KP15.0	15.00	289 674	7 707 729
20.	Halyard 10" Flowline KP15.6	15.59	290 088	7 707 280
21.	East Spar PLEM	15.60	290 091	7 707 279
22.	East Spar Manifold western flange tie-in spool (end)	15.61	290 101	7 707 291

Route of Spar-2 Tie-in 8" Flowline Co-Ordinates				
	Feature Name	KP	Easting (m)	Northing (m)
1.	Spar-2 Christmas Tree (start)	0.00	281 791	7 719 735
2.	Spar-2 8" Flowline	1.00	282 605	7 720 276
3.	Spar-2 8" Flowline (end) (GES PLEM)	1.68	283 154	7 720 585

2. Annexure C “Basis of Design” is varied by updating the items in bold and italics:

General Details																																		
1.	Pipeline Name (meaningful to industry)		Halyard Flowline																															
2.	Total Length of Pipeline (km)		17.290																															
3.	<i>Start point Description</i>		<i>Halyard-2 Christmas Tree Connector</i>																															
4.	<i>‘Start Point of Pipeline Coordinates (GDA94)</i> <i>a) Northing:</i> <i>b) Easting:</i>		<i>Zone 50</i> <i>283 147 mN</i> <i>7 720 608 mE</i>																															
5.	End Point Description		East Spar Manifold																															
6.	‘End’ Point of Pipeline Coordinate (GDA94) a) Northing: b) Easting:		Zone 50 7 707 290.800 mN 290 101.200 mE																															
7.	Substance to be Conveyed:		Wet Gas and Condensate																															
8.	Characteristics of Substance to be Conveyed; a) Gas Composition:		<table><tr><td>Methane (C1)</td><td>87.24 (mol %)</td></tr><tr><td>Ethane (C2)</td><td>4.98 (mol %)</td></tr><tr><td>Propane (C3)</td><td>1.92 (mol %)</td></tr><tr><td>Butane (C4)</td><td>0.87 (mol %)</td></tr><tr><td>Pentane (C5)</td><td>0.42 (mol %)</td></tr><tr><td>Hexane (C6)</td><td>0.26 (mol %)</td></tr><tr><td>Heptane (C7)</td><td>0.15 (mol %)</td></tr><tr><td>Water (H2O)</td><td>0.00 (mol %)</td></tr><tr><td>Carbon Dioxide (CO2)</td><td>3.23 (mol %)</td></tr><tr><td>Nitrogen (N2)</td><td>0.93 (mol %)</td></tr><tr><td>Helium (He)</td><td>0.00 (mol %)</td></tr><tr><td>Mercury (Hg)</td><td>0.00 (mol %)</td></tr><tr><td>Hydrogen Sulphide (H2S)</td><td>0.00 (mol %)</td></tr></table>						Methane (C1)	87.24 (mol %)	Ethane (C2)	4.98 (mol %)	Propane (C3)	1.92 (mol %)	Butane (C4)	0.87 (mol %)	Pentane (C5)	0.42 (mol %)	Hexane (C6)	0.26 (mol %)	Heptane (C7)	0.15 (mol %)	Water (H2O)	0.00 (mol %)	Carbon Dioxide (CO2)	3.23 (mol %)	Nitrogen (N2)	0.93 (mol %)	Helium (He)	0.00 (mol %)	Mercury (Hg)	0.00 (mol %)	Hydrogen Sulphide (H2S)	0.00 (mol %)
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Design Details			Halyard -1 10” Flowline	Spar-2 8” Flowline	GES PLEM	GES SCS	<i>Halyard-2 6” Tie-In Spool</i>	GES PLEM – SCS 6” Tie-In Spool																										
9.	Pipe Dimensions	Outside Diameter (mm)	328.9	268.1	168.3	168.3	<i>168.3</i>	168.3																										
		Inside Diameter (mm)	254	203.2	139.7	146.3	<i>131.8</i>	131.8																										
		Length of Pipeline (km)	15.554	1.679	0.05	0.94	<i>0.019 to 0.026</i>	0.022 (±0.003)																										
10.	Nominal Wall Thickness	Standard Wall (mm)	37.3	32.5	14.3	11.0	<i>18.3</i>	18.3																										
		Heavy Wall (mm)	37.5	N/A	N/A	N/A	<i>N/A</i>	N/A																										
11.	Design N.B. Assumes nominal	Initial Design Capacity (TJ/d)	99.0	95	150	150	<i>95 (90 MMscf/d)</i>	150																										

	contents density of 114 kg/m3	Max Design Capacity (TJ/d)	250	317	164	164	150 (141 MMscf/d)	150
		Design life (years)	20	20	20	20	10	20
		Erosional Velocity (m/s)	50	40	40	40	40	40
12.	Pipeline Corrosion Allowance	Internal (mm)	NIL	NIL	NIL	NIL	NIL	NIL
		External (mm)	NIL	NIL	NIL	NIL	NIL	NIL
13.	Pipe Steel Specification and grade	Pipeline	API 17J Duplex 2101 (7.2 mm thick)	API Spec 17J Duplex 2101	UNS 31803, 22% Cr Duplex 2205	UNS 31803, 22% Cr Duplex 2205	UNS 31803, 22% Cr Duplex 2205	UNS 31803, 22% Cr Duplex 2205
		Riser	N/A	N/A	N/A	N/A	N/A	N/A
14.	Joint type (welded, Mechanical etc)	Mechanical Graylock connectors						
15.	Pipe Free Span (m) at Location (KP)	Not Applicable						
16.	Yield Strength of Pipe Steel a) Burst Pressure: b) Collapse Pressure c) Failure Pressure	44 MPag 2.8 MPag 2.9 2848 kN						
Temperature and Pressure Details			Halyard - 1 10" Flowline	Spar-2 8" Flowline	GES PLEM	GES SCS	Halyard-2 6" Tie-In Spool	GES PLEM – SCS 6" Tie-In Spool
17.	Design Temperature	Pipeline (°C)	110	110	121	121	121	121
		Facilities (°C)	55	55	55	55	55	55
18.	Maximum Operating Temperature	Pipeline (°C)	98	105	105	105	105	105
		Facilities/stations (°C)	55	55	55	55	55	55
19.	Minimum Operating Temperature	Pipeline (°C)	-20	-20	-18	-18	-18	-18
		Facilities/stations (°C)	-18	-20	-20	-20	-20	-20
20.	Design Pressure (MPag)		22.8	22.8	34.5	22.8	34.5	34.5
21.	Inlet Pressure Range (MPag)		6.0 to 21.2	6.0 to 21.5	6.0 to 21.5	6.0 to 21.5	6.0 to 21.5	6.0 to 21.5
22.	Outlet Pressure Range (MPag)		6.0 to 21.2	6.0 to 21.5	6.0 to 21.5	6.0 to 21.5	6.0 to 21.5	6.0 to 21.5
23.	Maximum Allowable Operating Pressure (MPag)		22.8 at 110°C	22.8 at 110°C	22.8 at 110°C	22.8 at 110°C	22.8 at 110°C	22.8 at 110°C
24.	Field Test Pressure a) Proposed Field Test Pressure: b) Minimum Field Test Pressure [] x MAOP	22.80 Minimum Field Test Pressure [1.10] x MAOP						

	= [] MPag	= 25.08 MPag
Pipeline Coatings		
25.	Protective External Coating Specification and Thickness (mm):	API 17 J; outer sheath MDPE 8 mm
26.	Weight Coating Design Specification and Thickness (mm):	None
27.	Field Joint Coating:	Not Applicable
28.	Pipe-to-Pipe Joint Coating:	NORSOK M-501 System 7
Control Monitoring		
29.	Pressure and Flow Controls Description:	Located on Halyard Well and John Brookes Platform
30.	Safety and Emergency Shutdown Description:	Located on Halyard Well and John Brookes Platform
31.	Telemetry Control:	SCADA or equivalent located on John Brookes Platform
32.	Pigging Facilities a) General Facilities: b) Description of Pigging Facilities:	Not Applicable Not Applicable
33.	Provisions for cathodic protection of the pipeline:	Sacrificial Al-Zn-In Anodes at flowline end fittings
34.	Cathodic Potential Monitoring:	Not Applicable
35.	Cathodic Protection Test Posts:	Not Applicable
Valves & Inline Facilities		
36.	Fittings, Valves and Flanges specifications a) Fittings: b) Valves: c) Flanges: d) Halyard-2 Spool:	ASME B16.5; ASME VIII; DNV OS F101 API 6D; DNV OS F101 ASME B16.5; ASME VII; DNV OS F101 ASME B31.8
37.	Mainline Valves a) Number of: b) Type: c) Location (at KP): d) Details of Mainline Valves:	0
38.	Location of future Off-take Tees (at KP):	None
39.	Number of Pipeline Inlet Facilities:	0
40.	Pipeline Inlet Facilities Description:	Not Applicable
41.	Number of Pipeline Outlet Facilities:	0
42.	Pipeline Outlet Facilities Description:	Not Applicable
43.	Compressor Stations (if applicable) a) Number of: b) Location (at KP):	0

44.	Other Inline Facilities:	None
Crossings & Pipeline Stabilisation		
45.	Location of the crossing:	Not Applicable
46.	Pipeline Crossing Type:	Not Applicable
47.	Crossings Design Standard:	Not Applicable
48.	Minimum Earth Cover or Other Means of Stabilisation:	None
49.	Anchoring Details:	Not Applicable
Pipeline Management		
50.	Environmental Design Criteria Description:	100 year cyclonic criteria
51.	Marine Growth Allowance (mm):	None
52.	Risk Management Description:	DNV OS F101
PLEM-ES Manifold Tie-in Spool (Rigid Pipe)		
53.	Pipe Outside Diameter (mm)	355.6 mm
54.	Pipe Wall Thickness (mm)	19.05 mm
55.	Pipe Steel Grade and Specification:	Duplex Stainless Steel AA 928 UNS31803
56.	Pipe Length (m):	15
57.	Design Pressure (MPa):	22.8
58.	Design Temperature (°C):	55
59.	Design Code:	ASME B 31.8

3. The WA-21-PL Pipeline Route Map at Annexure A is deleted and replaced with the maps at **Attachment 1**.

Attachment 1





