

Appendices to Well History Report

I. Final Survey Plot of COPRC Dodo Canyon E-76

II. Casing and Cementing Report

Casing Summary

CANYON E-76 65-10 126-45

PI / UWI E7665-10126-45	Surface Legal Location E-76 65-10 126-45	District NEW VENTURES	Field Name Canyon	License No. EL 470
Program ILX	Well Type Appraisal	Well Configuration Type HORIZONTAL	Original KB/RT Elevation (m) 273.40	KB-Ground Distance (m) 5.20

Conductor, 20.00mKB

Set Depth (mKB)		Set Tension (daN)		String Nominal OD (mm)		String Min Drift (mm)		Centralizers Count		Scratchers Count		
20.00				508.0				none				
Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Thread		Top (mKB)	Btm (mKB)	Section Length (m)	P Burst (kPa)	P Collapse (kPa)
	Casing Joints	508.0	485.7	139.887	H-40	Welded		0.00	20.00	20.00		3,585

Surface, 603.00mKB

Set Depth (mKB)		Set Tension (daN)		String Nominal OD (mm)		String Min Drift (mm)		Centralizers Count		Scratchers Count	
603.00				244.5				12 Bow Spring Centralizers			
Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Thread	Top (mKB)	Btm (mKB)	Section Length (m)	P Burst (kPa)	P Collapse (kPa)
46	Casing Joints	244.5	226.6	53.574	K-55	LTC	-0.83	589.01	589.84		13,927
1	Float Collar	244.5	226.6	53.574	K-55	LTC	589.01	589.43	0.42		13,927
1	Casing Joints	244.5	226.6	53.574	K-55	LTC	589.43	602.71	13.28		13,927
1	Float Shoe	244.5	226.6	53.574	K-55	LTC	602.71	603.00	0.29		13,927

Intermediate, 1,908.00mKB

Set Depth (mKB)		Set Tension (daN)		String Nominal OD (mm)		String Min Drift (mm)		Centralizers Count		Scratchers Count	
1,908.00				177.8				32 Volants from 1511 to 1908, 10 micro seals from 1415 to 1535, 36 Topco bows from 1511 to 215			
Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Thread	Top (mKB)	Btm (mKB)	Section Length (m)	P Burst (kPa)	P Collapse (kPa)
1	Landing Joint	177.8	159.4	38.692	P-110	LTC	4.25	4.25	0.00		
1	Mandrel	177.8	159.4	38.692	P-110	LTC	4.25	4.25	0.00		
3	Casing Joints	177.8	159.4	38.692	P-110	LTC	4.25	1,895.07	1,890.82		
1	Float Collar	177.8	159.4	38.692	P-110	LTC	1,895.07	1,895.50	0.43		42,954
1	Casing Joints	177.8	159.4	38.692	P-110	LTC	1,895.50	1,907.53	12.03		42,954
1	Float Shoe	177.8	159.4	38.692	P-110	LTC	1,907.53	1,908.00	0.47		42,954

Production, 2,909.32mKB

Set Depth (mKB)		Set Tension (daN)		String Nominal OD (mm)		String Min Drift (mm)		Centralizers Count		Scratchers Count	
2,909.32				114.3				109 Volant Hydroforms			
Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Thread	Top (mKB)	Btm (mKB)	Section Length (m)	P Burst (kPa)	P Collapse (kPa)
1	Casing Joints	114.3	101.6	17.263	P-110	LTC	2.38	2.38	0.00		52,262
1	Mandrel Hanger	114.3	101.6	17.263	P-110	LTC	2.38	2.38	0.00		52,262
1	Pup Joint	114.3	101.6	17.263	P-110	LTC	2.38	2.38	0.00		52,262
1	Casing Joints	114.3	101.6	17.263	P-110	LTC	2.38	16.54	14.16		52,262
1	Pup Joint	114.3	101.6	17.263	P-110	LTC	16.54	17.74	1.20		52,262
10 4	Casing Joints	114.3	101.6	17.263	P-110	LTC	17.74	1,476.36	1,458.62		52,262
1	Latch Assembly	114.3	101.6	17.263	P-110	LTC	1,476.36	1,476.67	0.31		52,262
1	Seal Bore Sub	114.3	101.6	17.263	P-110	LTC	1,476.67	1,477.46	0.79		52,262
1	Liner Top Packer	114.3	101.6	17.263	P-110	LTC	1,477.46	1,478.82	1.36		52,262
10 2	Casing Joints	114.3	101.6	17.263	P-110	LTC	1,478.82	2,893.87	1,415.05		52,262
1	Float Collar	114.3	101.6	17.263	P-110	LTC	2,893.87	2,894.24	0.37		52,262
1	Casing Joints	114.3	101.6	17.263	P-110	LTC	2,894.24	2,908.64	14.40		52,262
1	Float Shoe	114.3	101.6	17.263	P-110	LTC	2,908.64	2,909.32	0.68		52,262

Cement Summary

CANYON E-76 65-10 126-45

Production

UWI E7665-10126-45	Surface Legal Location E-76 65-10 126-45	District NEW VENTURES	Field Name Canyon	License No. EL 470
Program ILX	Well Type Appraisal	Well Configuration Type HORIZONTAL	Original KB/RT Elevation (m) 273.40	KB-Ground Distance (m) 5.20

Original Hole

Wellbore Name Original Hole	Profile Type	Kick Off Depth (mKB)	Vertical Section Direction (°)
Section Des	Size (mm)	Act Top (mKB)	Act Btm (mKB)
COND1	609.6	3.60	20.00
SURFAC	311.0	20.00	603.00
INTRM1	222.0	603.00	1,908.00
PROD1	156.0	1,908.00	2,910.00

Csg Bowl, Stream Flo Crown on 1/4/2014 14:00

Type Csg Bowl	Install Date 1/4/2014				
Des	Make	Model	WP (kPa)	Service	SN
Casing Bowl	STREAM FLOW Crown	CC-22	34,500	OIL	CC-CH115x958SOWSV-10-2
Upper Spool	STREAM FLOW Crown	FBD100	34,500	OIL	FBD100-TH115x115SV-00-2

Top Section, <make> on 2/28/2014 20:00

Type Top Section	Install Date 2/28/2014				
Des	Make	Model	WP (kPa)	Service	SN
Top Wellhead Cap	Stream Flo	BX152 x 60.3mm EUE	69,000	Sweet	220940-12
Flow Block	Stream Flo	BX152 x 4 sides	69,000	Sweet	220073-9
Wing Valve (Right)	Stream Flo	Gate	69,000	Sweet	217331-35
Wing Valve (Right) Companion Flange	Stream Flo	BX152 x 12.7mm LP	69,000	Sweet	218706-21
Wing Valve (Left)	Stream Flo	Gate	69,000	Sweet	217331-37
Wing Valve (Left) Companion Flange	Stream Flo	BX152 x 12.7mm LP	69,000	Sweet	218706-22
Top Master Valve	Stream Flo	Gate	69,000	Sweet	217331-30
Bottom Master Valve	Stream Flo	Gate	69,000	Sweet	217331-36
Adapter Spool	Stream Flo	BX156 x BX152	69,000	Sweet	227368-02
Tubing Head Spool	Stream Flo	279mm R-54 x 179mm BX156	69,000	Sweet	228095-02
Casing valve (Right)	Stream Flo	Gate	69,000	Sweet	217331-33
Casing Valve (Right) Companion Flange	Stream Flo	BX152 x 12.7mm LP	69,000	Sweet	218706-18
Casing valve (Left)	Stream Flo	Gate	69,000	Sweet	217331-32
Casing Valve (Left) Companion Flange	Stream Flo	BX152 x 12.7mm LP	69,000	Sweet	218706-19
Intermediate Spool	Stream Flo	279mm R-54 x 279mm R-54	34,500	sweet	221764-1
Intermediate Casing Valve (Right)	Stream Flo	Gate	34,500	Sweet	44648-010-514
Intermediate Casing Valve (Left)	Stream Flo	Gate	34,500	Sweet	44648-010-907

Conductor, 20.00mKB

Casing Description	Wellbore	Run Date	Set Depth (mKB)	Stick Up (mKB)	Set Tension (daN)					
Conductor	Original Hole	12/11/2013	20.00	0.00						
Centralizers Count none			Scratchers Count							
Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Conn Sz (mm)	Top Thread	Section Length (m)	Top (mKB)	Btm (mKB)
	Casing Joints	508.0	485.7	139.887	H-40		Welded	20.00	0.00	20.00

Surface, 603.00mKB

Casing Description Surface		Wellbore Original Hole		Run Date 1/4/2014		Set Depth (mKB) 603.00		Stick Up (mKB) 0.83		Set Tension (daN)	
Centralizers Count 1/2 Bow Spring Centralizers						Scratchers Count					
Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Conn Sz (mm)	Top Thread	Section Length (m)	Top (mKB)	Btm (mKB)	
46	Casing Joints	244.5	226.6	53.574	K-55		LTC	589.84	-0.83	589.01	
1	Float Collar	244.5	226.6	53.574	K-55		LTC	0.42	589.01	589.43	
1	Casing Joints	244.5	226.6	53.574	K-55		LTC	13.28	589.43	602.71	

UWI E7665-10126-45	Surface Legal Location E-76 65-10 126-45	District NEW VENTURES	Field Name Canyon	License No. EL 470
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Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Conn Sz (mm)	Top Thread	Section Length (m)	Top (mKB)	Btm (mKB)
1	Float Shoe	244.5	226.6	53.574	K-55		LTC	0.29	602.71	603.00

Intermediate, 1,908.00mKB

Casing Description Intermediate	Wellbore Original Hole	Run Date 1/15/2014	Set Depth (mKB) 1,908.00	Stick Up (mKB) -4.25	Set Tension (daN)
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Centralizers Count

32 Volants from 1511 to 1908, 10 micro seals from 1415 to 1535, 36 Topco bows from 1511 to 215

Scratchers Count

Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Conn Sz (mm)	Top Thread	Section Length (m)	Top (mKB)	Btm (mKB)
1	Landing Joint	177.8	159.4	38.692	P-110		LTC	0.00	4.25	4.25
1	Mandrel	177.8	159.4	38.692	P-110		LTC	0.00	4.25	4.25
162	Casing Joints	177.8	159.4	38.692	P-110		LTC	1,890.82	4.25	1,895.07
1	Float Collar	177.8	159.4	38.692	P-110		LTC	0.43	1,895.07	1,895.50
1	Casing Joints	177.8	159.4	38.692	P-110		LTC	12.03	1,895.50	1,907.53
1	Float Shoe	177.8	159.4	38.692	P-110		LTC	0.47	1,907.53	1,908.00

Production, 2,909.32mKB

Casing Description Production	Wellbore Original Hole	Run Date 1/21/2014	Set Depth (mKB) 2,909.32	Stick Up (mKB) -2.38	Set Tension (daN)
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Centralizers Count

109 Volant Hydroforms

Scratchers Count

Jts	Item Des	OD Nominal (mm)	Nominal ID (mm)	Wt (kg/m)	Grade	Top Conn Sz (mm)	Top Thread	Section Length (m)	Top (mKB)	Btm (mKB)
1	Casing Joints	114.3	101.6	17.263	P-110		LTC	0.00	2.38	2.38
1	Mandrel Hanger	114.3	101.6	17.263	P-110		LTC	0.00	2.38	2.38
1	Pup Joint	114.3	101.6	17.263	P-110		LTC	0.00	2.38	2.38
1	Casing Joints	114.3	101.6	17.263	P-110		LTC	14.16	2.38	16.54
1	Pup Joint	114.3	101.6	17.263	P-110		LTC	1.20	16.54	17.74
104	Casing Joints	114.3	101.6	17.263	P-110		LTC	1,458.62	17.74	1,476.36
1	Latch Assembly	114.3	101.6	17.263	P-110		LTC	0.31	1,476.36	1,476.67
1	Seal Bore Sub	114.3	101.6	17.263	P-110		LTC	0.79	1,476.67	1,477.46
1	Liner Top Packer	114.3	101.6	17.263	P-110		LTC	1.36	1,477.46	1,478.82
102	Casing Joints	114.3	101.6	17.263	P-110		LTC	1,415.05	1,478.82	2,893.87
1	Float Collar	114.3	101.6	17.263	P-110		LTC	0.37	2,893.87	2,894.24
1	Casing Joints	114.3	101.6	17.263	P-110		LTC	14.40	2,894.24	2,908.64
1	Float Shoe	114.3	101.6	17.263	P-110		LTC	0.68	2,908.64	2,909.32

Production, Casing, 1/22/2014 04:00

Cementing Start Date 1/22/2014	Cementing End Date 1/22/2014	Wellbore Original Hole
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Evaluation Method Returns to Surface	Cement Evaluation Results Hold safety meeting with Schlumberger cementers prior to cementing 114.3mm production liner, rig up Schlumberger cementers to cement 114.3mm production liner, pump 9m3 of 1000kg/m3 CW8 pre-flush, stop and pressure test line to 35,000kPA (held OK), bleed off pressure, then pump 5m3 of 1200kg/m3 MUDPUSH II pre-flush spacer and then pump 21 tonnes/15.6m3 (20% excess) of 1900kg/m3 Conventional Class G Tail Cement with 0.6% Fluid Loss + 0.5% Dispersant + 0.2% Anti Foam + 0.2% Retarder + 72L/tonne Gas Control Agent from 2909.32m to 1477.35m. Drop dart and displace 18.88m3 of fresh water. Bump plug 3,500kpa over final circulating pressure of 11,200kPA at 7:30hrs on January 22nd 2014, bleed pressure and check floats (holding OK). pressure up to 28,000kPA and set liner with liner top packer, circulate out pre-flush and 2m3 of excess cement out, displace hole with fresh water, rig out cementers, flowcheck, rig up laydown truck, laydown drill pipe and heavy weight drill pipe, run in the rest of the drill pipe in the derrick, laydown drill pipe, rig up power tongs, run 114.3mm tie-back liner, space out, land mandrel seal assembly and tie into top of liner top packer, remove landing joint, pressure test packoff seal assembly, pressure test 114.3mm x 177.8mm annulus to 15,000kPA.
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Comment

Hold safety meeting with Schlumberger cementers prior to cementing 114.3mm production liner, rig up Schlumberger cementers to cement 114.3mm production liner, pump 9m3 of 1000kg/m3 CW8 pre-flush, stop and pressure test line to 35,000kPA (held OK), bleed off pressure, then pump 5m3 of 1200kg/m3 MUDPUSH II pre-flush spacer and then pump 21 tonnes/15.6m3 (20% excess) of 1900kg/m3 Conventional Class G Tail Cement with 0.6% Fluid Loss + 0.5% Dispersant + 0.2% Anti Foam + 0.2% Retarder + 72L/tonne Gas Control Agent from 2909.32m to 1477.35m. Drop dart and displace 18.88m3 of fresh water. Bump plug 3,500kpa over final circulating pressure of 11,200kPA at 7:30hrs on January 22nd 2014, bleed pressure and check floats (holding OK). pressure up to 28,000kPA and set liner with liner top packer, circulate out pre-flush and 2m3 of excess cement out, displace hole with fresh water, rig out cementers, flowcheck, rig up laydown truck, laydown drill pipe and heavy weight drill pipe, run in the rest of the drill pipe in the derrick, laydown drill pipe, rig up power tongs, run 114.3mm tie-back liner, space out, land mandrel seal assembly and tie into top of liner top packer, remove landing joint, pressure test packoff seal assembly, pressure test 114.3mm x 177.8mm annulus to 15,000kPA.

Cement Summary

CANYON E-76 65-10 126-45

Production

UWI E7665-10126-45	Surface Legal Location E-76 65-10 126-45	District NEW VENTURES	Field Name Canyon	License No. EL 470
Program ILX	Well Type Appraisal	Well Configuration Type HORIZONTAL	Original KB/RT Elevation (m) 273.40	KB-Ground Distance (m) 5.20

1, 1,477.35-2,909.32mKB

Top Depth (mKB) 1,477.35	Bottom Depth (mKB) 2,909.32	Full Return? Yes	Vol Cement Re... 2.00	Top Plug? Yes	Bottom Plug? No
Initial Pump Rate (m³/min) 0.500	Final Pump Rate (m³/min) 0.200	Avg Pump Rate (m³/min) 0.500	Final Pump Pressure (kPa) 11,200	Plug Bump Pressure (kPa) 14,700	
Pipe Reciprocated? No	Reciprocation Stroke Length (m)	Reciprocation Rate (spm)	Pipe Rotated? No	Pipe RPM (rpm)	
Tagged Depth (mKB)	Tag Method	Depth Plug Drilled Out To (mKB)	Drill Out Diameter (mm)	Drill Out Date	

Production Liner Cement

Fluid Type Production Liner Cement	Fluid Description Conventional 1900 Class G Cement	Amount (1000kg) 15.6	Class Class G	Volume Pumped (m³) 15.60
Estimated Top (mKB) 1,477.35	Estimated Bottom Depth (mKB) 2,909.32	Percent Excess Pumped (%) 20.0	Yield (m³/tonne) 0.760	Mix H2O Ratio (m³/tonne) 0.36
Free Water (%)	Density (kg/m³) 1,900.0	Plastic Viscosity (cP)	Thickening Time (hr)	1st Compressive Strength (kPa)

Cement Fluid Additives

Add	Type	Conc
Anti Foam		0.2
Dispersant		0.5
Fluid Loss		0.6
Gas Control Agent		
Retarder		0.2

III. Drilling Fluid Summary