FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Thai Rotary Engineering Public Company Limited 168 Moo 5, Sumnaktorn Sub-District, Banchang District, Rayong 21130,Thailand (Name and address of Manufacturer)
2. Manufactured for: Schlumberger, Cyclotech House, Armstrong Road, Basingstoke, RG24 8NU, UNITED KINGDOM. (Name and address of Purchaser)
3. Location of installation: PTT Exploration and Production Public Company Limited 132 Moo 2, Lankrabue Sub-District, Lankrabue District, Kamphang phet 62170, Thailand (Name and address)
4. Type: Vertical (Horizontal or vertical, tank) | TREL-V-15-U-001 (Manufacture's serial number) | None (CRN) | TREL-15502-S1562-DW-001 Rev.2 (Drawing number) | None (National Board number) | 2015 (Year built)
5. ASME Code, Section VII, Division1: 2013 Edition [Addenda, if applicable (date)] | None (Code Case Number) | None [Special service per UG-120(d)]
6. Shell: SA-516 Gr.70 (Material spec. number, grade) | 16 mm (Nominal thickness) | 3 mm (Corr. Allow.) | 781 mm (Inner diameter) | 1078 mm [Length (overall)]

Body Flanges on Shells

No.	Type	ID (mm)	OD (mm)	Flange Thk (mm)	Min Hub Thk (mm)	Material	How Attached	Location	Bolting: Num & Size	Bolting: Bolting Material	Bolting: Washer (OD,ID,Thk)	Bolting: Washer Material
1	Cl. 300 Flg.	781	1149.3	98.55	16	SA-105	Type 1,full RT	Top	1-7/8"-8UN x 320L x 28 Sets	SA193-B7	None	None

7. Seams: Note 1 [Long (welded, dbl.,sngl.,lap, butt)] | Full R.T.(spot or full)] | 0.85 (Eff., %) | None (H.T. temp.) | None (Time, hr) | Note 2 [Girth (welded, dbl.,sngl.,lap, butt)] | None [R.T. (spot or full)] | N/A (Eff., %) | 1 (No. of courses)
8. Heads: (a) Material: SA-105 (Spec. no., grade) (b) Material: Note 3 (Spec. no., grade)

	Location(Top, Bottom, End)	Minimum Thickness (mm)	Corrosion Allowance (mm)	Crow Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemisphericale Radius	Flat Diameter (mm)	Side to Pressure (Convex or Concave)
(a)	Top	115.8	0	-	-	-	-	-	781	-
(b)	Bottom	25.4	3	-	-	-	80°	-	-	Convex / Concave

Body Flanges on Heads

No.	Location	Type	ID (mm)	OD (mm)	Flange Thk (mm)	Min Hub Thk (mm)	Material	How Attached	Bolting: Num & Size	Bolting: Bolting Material	Bolting: Washer (OD,ID,Thk)	Bolting: Washer Material
(a)	-	-	-	-	-	-	-	-	-	-	-	-
(b)	-	-	-	-	-	-	-	-	-	-	-	-

9. MAWP: 3,792.12 kPa (Internal) | 101.33 kPa (External) at max. temp. 120 °C (Internal) | 120 °C (External)
Min. design metal temp. -29 °C at 3,792.12 kPa Hydro., pneu., or comb. Test pressure Hydro test at 4929.75 kPa
Proof test: Not Applicable

10. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain etc.)	No.	Diameter or size	Type	Material: Nozzle	Material: Flange	Nozzle Thickness: Nom.	Nozzle Thickness: Corr.	Reinforcement Material	Attachment Details: Nozzle	Attachment Details: Flange	Location (Insp.Open.)
Inlet (N1A)	1	NPS 4"	Cl.300 Flg.	SA-106 Gr.B	SA-105	13.49 mm	3 mm	SA-516 Gr.70	Fig UW-16.1(c)	Note 1	-
Inlet (N1B)	1	NPS 6"	Cl.300 Flg.	SA-106 Gr.B	SA-105	18.20 mm	3 mm	SA-516 Gr.70	Fig UW-16.1(c)	Note 1	-
Liquid Outlet (N2A)	1	NPS 4"	Cl.300 Flg.	SA-106 Gr.B	SA-105	13.49 mm	3 mm	SA-516 Gr.70	Fig UW-16.1(c)	Note 1	-
Liquid Outlet (N2B)	1	NPS 6"	Cl.300 Flg.	SA-106 Gr.B	SA-105	18.20 mm	3 mm	SA-516 Gr.70	Fig UW-16.1(c)	Note 1	-
Solids Outlet (N3)	1	NPS 3"	Cl.300 Flg.	SA-106 Gr.B	SA-105	11.13 mm	3 mm	N/A	Type 8 Table UW-12	Note 1	-
PSV/Vent (N4)	1	NPS 2"	Cl.300 Flg.	SA-105	SA-105	16.6 mm	3 mm	Integral	Fig UW-16.1(c)	LWN	-

11. Supports: Skirt: No (Yes or no) Lugs: None (Number) Legs: None (Number) Other: Support Lugs (Describe) Attached: Shell / Welding (Where and how)
12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report : None (Name of Part, item number, Manufacturer's name and identifying stamp)

See Attached U-4 Form

CERTIFICATE OF SHOP /FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U" Certificate of Authorization Number 34,402 expires March 2, 2016

Date August 20, 2015 Co. name Thai Rotary Engineering Public Company Limited (Manufacturer) Signed (Representative) CHANYUT S.

CERTIFICATE OF SHOP /FIELD INSPECTION

Vessel constructed by Thai Rotary Engineering Public Company Limited at 168 Moo 5, Sumnaktorn Sub-District, Banchang District, Rayong 21130,Thailand

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by HSB GLOBAL STANDARDS, HARTFORD, CONNECTICUT have inspected the component described in this Manufacturer's Data Report on AUG 20, 2015 ,and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty,expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date AUG31, 15 Signed PIPAT V. (Authorized Inspector) Commissions NB 13225 A, N [National Board(incl. endorsements)]

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Thai Rotary Engineering Public Company Limited, 168 Moo 5, Sumnaktorn Sub-District, Banchang District, Rayong 21130, Thailand
(Name and address of Manufacturer)

2. Manufactured for Schlumberger, Cyclotech House, Armstrong Road, Basingstoke, RG24 8NU, UNITED KINGDOM.
(Name and address of Purchaser)

3. Location of installation PTT Exploration and Production Public Company Limited 132 Moo 2, Lankrabue Sub-District, Lankrabue District, Kamphang phet 62170, Thailand
(Name and address)

4. Type

Vertical	Vessel	TREL-V-15-U-001
(Horizontal vertical, or sphere)	(Tank, separator, heat exch., etc.)	(Manufacturer's serial number)

None	TREL-15502-S1562-DW-001 Rev.2	None	2015
(CRN)	(Drawing No.)	(National Board number.)	(Year built)

Data Report Item Number	Remarks
12. Remarks	-Note.1 Type no.1 Butt Weld, Full RT
	-Note.2 : Shell to Cone Type No. (8) in Table UW-12
	-Note.3 : SA-516 Gr.70, Heat Treated 595 °C, 1 Hr., Diameter 781 mm(ID) x 66.64 mm(ID), Length 431.5 mm.
	Type 1 Full RT for long seams.
	-"N/A" abbreviated from Not Applicable.
	-"LWN" abbreviated from Long Weld Neck Flange.
	- Hydro test was performed in Vertical position.
	- Impact test exempted per UG-20(f), UCS-66 (a)&(b).
	- Cone Section (Bottom Head) was Heat Treated due to Fiber Elongation exceeded 5%.
	- Removable Top Head identification marked : TREL-V-15-U-001 on Peripheral Edge.

Certificate of Authorization: Type: "U" No. 34,402 Expires March 2, 2016

Date August 20, 2015 Name Thai Rotary Engineering Public Company Limited (Manufacturer) Signed Chanyut CHANYUT S. (Representative)

Date AUG 31, 15 Name PIPAT V. (Authorized Inspector) Commission NB 13225 A, N [National Board (incl. endorsement)]

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Thai Rotary Engineering Public Company Limited 168 Moo 5, Sumnaktorn Sub-District, Banchang District, Rayong 21130,Thailand
(Name and address of Manufacturer)

2. Manufactured for: Schlumberger, Cyclotech House, Armstrong Road, Basingstoke, RG24 8NU, UNITED KINGDOM.
(Name and address of Purchaser)

3. Location of installation: PTT Exploration and Production Public Company Limited 132 Moo 2, Lankrabue Sub-District, Lankrabue District, Kamphang phet 62170, Thailand
(Name and address)

4. Type: Vertical (Horizontal or vertical, tank) | TREL-V-15-U-002 (Manufacture's serial number) | None (CRN) | TREL-15502-V1564-DW-001 Rev.3 (Drawing number) | None (National Board number) | 2015 (Year built)

5. ASME Code, Section VII, Division1: 2013 Edition [Addenda, if applicable (date)] | None (Code Case Number) | None [Special service per UG-120(d)]

6. Shell: SA-516 Gr.70 (Material spec. number, grade) | 16 mm (Nominal thickness) | 3 mm (Corr. Allow.) | 578 mm (Inner diameter) | 1076 mm [Length (overall)]

Body Flanges on Shells

No.	Type	ID (mm)	OD (mm)	Flange Thk (mm)	Min Hub Thk (mm)	Material	How Attached	Location	Bolting: Num & Size	Bolting: Bolting Material	Bolting: Washer (OD,ID,Thk)	Bolting: Washer Material
1	Cl. 300 Flg.	578	914	69.9	16	SA-105	Type 1,full RT	Top	1-1/2"-8UN x 230L x 24 Sets	SA193-B7	None	None

7. Seams: Note 1 (Long (welded, dbl.,sngl.,lap, butt)] | Full (R.T.(spot or full)] | 0.85 (Eff., %) | None (H.T. temp.) | None (Time, hr) | Note 2 [Girth (welded, dbl.,sngl.,lap, butt)] | None [R.T. (spot or full)] | N/A (Eff., %) | 1 (No. of courses)

8. Heads: (a) Material: SA-105 (Spec. no., grade) | (b) Material: Note 3 (Spec. no., grade)

	Location(Top, Bottom, End)	Minimum Thickness (mm)	Corrosion Allowance (mm)	Crow Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemisphericale Radius	Flat Diameter (mm)	Side to Pressure (Convex or Concave)
(a)	Top	69.9	0	-	-	-	-	-	578	-
(b)	Bottom	16	3	-	-	-	80°	-	-	Convex / Concave

Body Flanges on Heads

No.	Location	Type	ID (mm)	OD (mm)	Flange Thk (mm)	Min Hub Thk (mm)	Material	How Attached	Bolting: Num & Size	Bolting: Bolting Material	Bolting: Washer (OD,ID,Thk)	Bolting: Washer Material
(a)	-	-	-	-	-	-	-	-	-	-	-	-
(b)	-	-	-	-	-	-	-	-	-	-	-	-

9. MAWP: 3,792.12 kPa (Internal) | 101.33 kPa (External) | at max. temp. 120 °C (Internal) | 120 °C (External)
Min. design metal temp. -29 °C at 3,792.12 kPa Hydro., pneu., or comb. Test pressure Hydro test at 4929.75 kPa
Proof test: Not Applicable

10. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain etc.)	No.	Diameter or size	Type	Material: Nozzle	Material: Flange	Nozzle Thickness: Nom.	Nozzle Thickness: Corr.	Reinforcement Material	Attachment Details: Nozzle	Attachment Details: Flange	Location (Insp.Open.)
Solid Inlet (N1)	1	NPS 3"	Cl.300 Flg.	SA-106 Gr.B	SA-105	11.13 mm	3 mm	SA-516 Gr.70	Fig UW-16.1(e)	Note 1	-
Drain (N2)	1	NPS 3"	Cl.300 Flg.	SA-106 Gr.B	SA-105	11.13 mm	3 mm	N/A	Type 8 Table UW-12	Note 1	-
PSV/Vent (N3)	1	NPS 2"	Cl.300 Flg.	SA-105	SA-105	16.64 mm	3 mm	Integral	Fig UW-16.1(c)	LWN	-
Flush Water Inlet (N4)	1	NPS 2"	Cl.300 Flg.	SA-105	SA-105	16.64 mm	3 mm	Integral	Fig UW-16.1(c)	LWN	-
Solids Outlet (N5)	1	NPS 2"	Cl.300 Flg.	SA-790 S31803	SA-182 F51	5.54mm	0 mm	SA-516 Gr.70	Fig UW-16.1(c)	Note 1	-
Level Switch for LS-6402 (N6A)	1	NPS 2"	Cl.300 Flg.	SA-105	SA-105	16.64 mm	3 mm	Integral	Fig UW-16.1(c)	LWN	-
Level Switch for LS-6401 (N6B)	1	NPS 2"	Cl.300 Flg.	SA-105	SA-105	16.64 mm	3 mm	Integral	Fig UW-16.1(c)	LWN	-
Balance Line (N7)	1	NPS 2"	Cl.300 Flg.	SA-105	SA-105	16.64 mm	3 mm	Integral	Fig UW-16.1(c)	LWN	-
Viewing Port (N8)	1	OD165 mm	Bolting Pad	SA-105	SA-105	56 mm	3 mm	Integral	Fig UW-16.1(c)	N/A	-

11. Supports: Skirt: No (Yes or no) | Lugs: None (Number) | Legs: 3 (Number) | Other: None (Describe) | Attached: Shell / Welding (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report : None
(Name of Part, item number, Manufacturer's name and identifying stamp)

See Attached U-4 Form

CERTIFICATE OF SHOP /FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U" Certificate of Authorization Number 34,402 expires March 2, 2016

Date August 8, 2015 Co. name Thai Rotary Engineering Public Company Limited (Manufacturer) Signed (Representative) CHANYUT S.

CERTIFICATE OF SHOP /FIELD INSPECTION

Vessel constructed by Thai Rotary Engineering Public Company Limited at 168 Moo 5, Sumnaktorn Sub-District, Banchang District, Rayong 21130,Thailand

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by HSB GLOBAL STANDARDS, HARTFORD, CONNECTICUT have inspected the component described in this Manufacturer's Data Report on AUG 8, 2015 ,and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty,expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date AUG 31, 15 Signed PIPAT V. (Authorized Inspector) Commissions NB 13225 A, N [National Board(incl. endorsements)]

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by: Thai Rotary Engineering Public Company Limited, 168 Moo 5, Sumnaktorn Sub-District, Banchang District, Rayong 21130, Thailand (Name and address of Manufacturer)

2. Manufactured for: Schlumberger, Cyclotech House, Armstrong Road, Basingstoke, RG24 8NU, UNITED KINGDOM. (Name and address of Purchaser)

3. Location of installation: PTT Exploration and Production Public Company Limited 132 Moo 2, Lankrabue Sub-District, Lankrabue District, Kamphang phet 62170, Thailand (Name and address)

4. Type

Vertical	Vessel	TREL-V-15-U-002
(Horizontal vertical, or sphere)	(Tank, separator, heat exch., etc.)	(Manufacturer's serial number)

None	TREL-15502-V1564-DW-001 Rev.3	None	2015
(CRN)	(Drawing No.)	(National Board number.)	(Year built)

Data Report Item Number	Remarks
12. Remarks	-Note.1 Type no.1 Butt Weld, Full RT
	-Note.2 : Shell to Cone Type No. (8) in Table UW-12
	-Note.3 : SA-516 Gr.70, Heat Treated 595 °C, 1 Hr., Diameter 578 mm(ID) x 66.64 mm(ID), Length 310.5 mm.
	Type 1 Full RT for long seams.
	-"N/A" abbreviated from Not Applicable.
	-"LWN" abbreviated from Long Weld Neck Flange.
	- Hydro test was performed in Vertical position.
	- Nozzle –Solid Inlet (N1), Neck to top Head joint, was PWHT 595 °C, 180 minutes.
	- Impact test exempted per UG-20(f), UCS-66 (a)&(b).
	- Cone Section (Bottom Head) was Heat Treated due to Fiber Elongation exceeded 5%.
	- Removable Top Head identification marked : TREL-V-15-U-002-1 on Peripheral Edge.

Certificate of Authorization: Type: "U" No. 34,402 Expires March 2, 2016

Date August 8, 2015 Name Thai Rotary Engineering Public Company Limited (Manufacturer) Signed CHANYUT S. (Representative)

Date AUG31, 15 Name PIPAT V. (Authorized Inspector) Commission NB 13225 A, N [National Board (incl. endorsement)]