3. SCOPE OF SUPPLY

1.1 Scope of Supply by CPSTL

- 2.1.1 Construction Utilities
- 3.1.1.1 Electricity and drinking water that would be supplied to the contractor to undertake this work would be charged from the contractor as per meter /estimate .The prospective contractor is required to indicate his requirements of power from the CPSTL in his offer for evaluation purposes.
- 3.1.1.2 The electrical power supply available to the contractor is 1000 Watts, 400V AC, 4 wire (TPN), 50Hz and shall be subjected to following 06 conditions.
- 3.1.1.3 The Electrical Section of CPSTL will terminate feeding cable to a suitable circuit isolating and interrupting devices such as a circuit breaker or a switch fuse at convenient location, within 100 ft. from the tank shell. This switch gears shall remain the property of CPSTL and contractor shall have no access to it.
- 3.1.1.4 It is the responsibility of the contractor to properly connect his main power distribution board to the downstream side of the CPSTL switch gear, in consultation / supervision of Electrical Engineer of CPSTL.
- 3.1.1.5 Contractor's power distribution board should consist of adequate over current and earth leakage protective device for safety of men and machinery.
- 3.1.1.6 It is the responsibility of the contractor to maintain his switch gear and cable network in good condition, so as to provide, complete safety to men and machinery.
- 3.1.1.7 Power supply will be energized after inspection by the Electrical Engineer of CPSTL, provided all requirements in clause (2) and (3) are satisfied.
- 3.1.1.8 The whole electrical installation of the contractor shall conform to IEE wiring regulations (16th Edition) published by the Institution of Electrical Engineers (I.E.E), London.

1.2 Scope of Supply by Contractor

2.2.1 Design, Manufacture, Supply, Installation, Testing and Commissioning of Internal Floating Roofs complete with all accessories of European/ Japan/USA makes as per the specification and API standard for Tank No. 17, 22 and 23 at Oil Installation, Kolonnawa.

Tank No	Diameter (m)	Capacity (m³)	Product	Density (kg ⁄m³) at 15°C	Filling Rate/ (m ³ /h)	Emptying Rate (m ³ /h)
17	19.51	4936	Petrol	725~785	1250	1000
22	18.29	2790	Petrol	725~785	1250	1000
23	18.29	3293	Petrol	725~785	1250	1000

- 2.2.2 Supply of commissioning spare parts.
- 3.2.2.1 Minimum one-year warranty from the date of commissioning for the equipment supplied.
- 3.2.2.2 Third party inspection of material test certificates, shop fabrication and testing of each internal floating roof by a reputed third party inspection company approved by CPSTL, witnessed by two CPSTL engineers at the manufacturer's shops and submission of third party inspection report to CPSTL.
- 3.2.2.3 Supply of tools, equipment and any other required materials for the inspection and testing.

- 3.2.2.4 Supply of as built detailed drawings, all test certificates, and duly furnished manufacturing data sheets along with the internal floating roofs.
- 3.2.2.5 Supply of installation, operation, workshop and spare parts manuals in English Language.
- 3.2.2.6 Internal Floating Roofs components suitably protected for transportation and suitable for abnormal weather conditions .
- 3.2.2.7 Supply of Internal Floating Roof erection procedure.
- 3.2.2.8 Supply of procedure for observing any seal damage during operations.
- 3.2.2.9 Supply of food, accommodation, internal transportation, any other local expenses for two CPSTL Engineers witnessing the testing and inspection at the manufacture's testing facility. Chargers for return air tickets and visa for CPSTL Engineers will be borne by CPSTL.
- 3.2.2.10 Training of CPSTL maintenance crew for preventive maintenance, trouble shooting and repairing at the work shop of CPSTL, Sri Lanka.

4. SCOPE OF WORK AND SPECIFICATIONS

2.1 Scope of Work by CPSTL

- 3.1.1 Necessary modification for the tanks to install internal floating roof in fixed roof tanks shall be attended by other party.
- 3.1.2 Only one modified Tanks will be released for the installation of IFR at an instance.
- 3.1.3 Next tank will be released for IFR installation approximately within 3 months from the completion, testing and commissioning of the previous tank.

2.2 Contractors' Scope of Work and Specifications

Scope of Work and Specifications for Design, Manufacture, Supply, Installation, Testing and Commissioning of Aluminium internal floating roofs (Metallic Roofs on floats) are as follows.

3.2.1 Scope of Work

- 3.2.1.1 Design, Manufacture, Supply, Installation, Testing and Commissioning of Aluminium internal floating roofs on floats have their deck above the liquid supported by closed pontoon compartments for buoyancy as per API STANDARD 650 Appendix H Section H.2.2 e inside the Fixed Roof Tank (Refer Table No. 01 for details) to minimize breathing losses and thereby reduce the overall Hydrocarbon loss from the tank.
- 3.2.1.2 The Bidder shall also carry out the jobs that are not specifically mentioned in this specification here but required for successful completion of the job in all respects as per the standards, drawings and codes. Loading, handling and transportation of all materials from supply point/store at work site/Contractor's store as per the requirement of the job.
- 3.2.1.3 It is desired that the provision of Aluminium Internal Floating Roof shall have minimum impact on safe filling capacity of the Tank.
- 3.2.1.4 Supplier shall study the drawings attached. A certificate for suitability of proposed Internal Floating Roofs shall be submitted to CPSTL.

3.2.2 Codes and standards

- API Standard 650, Welded tanks for oil storage, 12th Edition, March 2013.
- API Standard 653, Tank Inspection, Repair, Alteration and Reconstruction, 5thEdition, November2014

The applicable fabrication, erection, welding, inspection and testing requirements of Annex H of API standard 650 shall be met.

3.2.3 Specification

4.2.3.1 Material

The Manufacturer shall submit a complete material specification in his proposal. The choice of materials shall be governed by compatibility with the specified liquid. Material produced to specifications other than those listed in API STANDARD 650 Annex. H (alternative materials) may be used. Material shall be certified to meet all the requirements of a material specification listed in API STANDARD 650 Annex H, and approved by the CPSTL or shall comply with requirements as specified by the CPSTL.

The material of floating roof is Aluminium. Aluminum shall conform to the requirements of API STANDARD 650 Annex AL. Aluminum skin shall be 0.50 mm (0.020 in.) minimum nominal thickness. Extruded Aluminum floats shall be 1.2 mm (0.050 in.) minimum nominal thickness. Peripheral rim section shall be 3.0 mm minimum thickness.

4.2.3.2 General Requirements

- a. An internal floating roof and its accessories shall be designed and constructed to allow the roof to operate throughout its normal travel without manual attention and without damage to any part of the fixed roof, the internal floating roof, internal floating roof seals (except for normal wear), the tank, or their appurtenances
- b. The internal floating roof shall be designed and built to float and rest in a uniform horizontal plane (no drainage slope required).
- c. All seams in the internal floating roof that are exposed to product vapor or liquid shall be vaportight in accordance with API STANDARD 650 H.4.3.1.
- d. A vapor-tight rim (or skirt), extending at least 150 mm (6 in.) above the liquid at the design flotation level, shall be provided around both the internal floating roof periphery and around all internal floating roof penetrations (columns, ladders, stilling wells, man ways, open deck drains and other roof openings)except for drains designed to avoid product backflow onto the roof.
- e. a vapor-tight rim (or skirt), extending at least 100 mm (4 in.)into the liquid at the design flotation level, around both the internal floating roof periphery and around all internal floating roof penetrations (columns, ladders, stilling wells, manways, open deck drains and other roof openings), with the exception of penetrations for pressure-vacuum (bleeder)vents (per H.5.2.1).
- f. All conductive parts of the internal floating roof shall be electrically interconnected and bonded to the outer tank structure. This shall be accomplished by electric bonding shunts in the seal area (a minimum of four, uniformly distributed)or flexible multi-strand cables from the external tank roof to the internal floating roof (a minimum of two, uniformly distributed). All movable cover accessories (hatches, manholes, pressure relief devices, and other openings)on the internal floating roof shall be electrically bonded to the internal floating roof to prevent static electricity sparking when they are opened.
- g. Each closed flotation compartment shall be capable of being field-inspected for the presence of combustible gas. Inspection openings shall be located above the liquid level and closed compartments shall be capable of being resealed in the field after periodic inspection (to prevent liquid or vapor entry).
- h. All closed flotation compartments shall be seal welded to prevent liquid or vapor entry.
- i. Deck Drains shall be provided to return any spillage or condensate to the product. Such drains shall close automatically or extended at least 100 mm into the product to minimize the vapor loss.

4.2.3.3 Buoyancy Requirements

- a. All internal floating roof design calculations shall be based on the lower of the product specific gravity or0.7 (to allow for operation in a range of hydrocarbon service),
- b. All internal floating roofs shall include buoyancy required to support at least twice its dead weight (including the weight of the flotation compartments, seal and all other floating roof and attached components), plus additional buoyancy to offset the calculated friction exerted by peripheral and penetration seals during filling.
- c. The internal floating roof shall be designed to meet the requirements of API STANDARD 650 H.4.2.1.3 and to safely support at least two men walking anywhere on the roof while it is floating or resting on its supports without damaging the floating roof and without allowing product on the roof. One applied load of 2.2 kN(500 lbf)over 0.1 m2 (1 ft2)applied anywhere on the roof addresses two men walking.

4.2.3.4 Internal Floating Roof Support Design Loads

Internal floating roof supports and deck structural attachments (such as reinforcing pads and pontoon end gussets) shall be designed to support the load combinations listed in API STANDARD 650 H.4.2.2.2 without exceeding allowable stresses. Consideration shall also be made for non-uniform support settlement or other non-uniform load distribution.

4.2.3.5 Other Design Requirements

Aluminum load carrying members, assemblies and connections shall comply with the design requirements of the latest edition of the *Aluminum Design Manual*.

4.2.3.6 Joint Design

- a. All seams in the floating roof exposed directly to product vapour or liquid shall be welded, bolted, screwed, riveted, clamped, or sealed and checked for vapour-tightness per API Standard 650 H.6.2.
- b. Welded joints between aluminium members shall conform to API Standard 650, AL.5.1
- c. Single-welded butt joints without backing are acceptable for flotation units where one side is inaccessible.
- d. The thickness of fillet welds on material less than 4.8 mm (3/16 in.)thick shall not be less than that of the thinner member of the joint.
- e. Only austenitic type stainless steel hardware shall be used to join aluminium components to each other or to carbon steel.
- f. Manufacturer shall specify if aluminum hardware may be used to join aluminum components. Aluminum shall be isolated from carbon steel by an austenitic stainless steel spacer, an elastomeric pad, or equivalent protection. The use of plated fasteners shall be permitted only when connecting steel components.
- g. Use of any joint sealing compound, insulating material, polymer, elastomer, or adhesive shall be preapproved by the CPSTL. The joining procedure along with test results demonstrating the properties required by this paragraph shall be described completely.
- h. Any joint sealing compound, insulating material, elastomeric or adhesive shall be compatible with the product stored; specified service conditions; and with materials joined.
- i. Resulting joints shall be equivalent in serviceability (with the basic floating roof components), of a size and strength that will accept the roof design loads without failure or leakage, and shall have an expected life equal to the service life of the roof. Any non-metallic component shall be selected and fabricated to preclude absorption (under design conditions specified and permitted by this standard) of hydrocarbons, hydro-test water and specified product to be stored.

4.2.3.7 Peripheral Seals

- a. In addition to the required floating roof primary peripheral seal, secondary peripheral seals shall be provided.
- b. A peripheral seal (rim seal) that spans the annular space between the internal floating roof deck and the shell shall be provided. Peripheral seals shall be one mounted above the other, the lower is the primary peripheral seal and the upper is the secondary peripheral seal.
- c. Primary and Secondary seal material shall be able to use with gasoline(Fluoropolymers or Nitril)
- All peripheral seals and their attachment to the floating roof shall be designed to accommodate ±100 mm (±4 in.) of local deviation between the floating roof and the shell.

Type of peripheral seal

a. Peripheral seals (Primary and Secondary) shall be Vapor-mounted rim seal in a form of flexible-wiper seals.

Vapor-mounted rim seal means Peripheral seal positioned such that it does not normally contact the surface of the stored liquid. Flexible-wiper seal means a rim seal utilizing a blade or tip of a flexible material (such as extruded rubber or synthetic rubber) with or without a reinforcing cloth or mesh.

- b. The specific requirements for all floating roof peripheral seals are listed below.
 - All fasteners and washers for installation of seal joints, including fabric seal joints, shall be austenitic stainless steel. (See restrictions on contact between galvanizing and stainless steel in API STANDARD 650S.2.1.3.)
 - 2) The seals shall be designed for a temperature range extending from design metal temperature less 8 °C (15 °F)to the maximum operating temperature.
 - 3) Lengths of seal sections shall be as long as practical. No holes or openings shall be permitted in the completed seal. The seal material may be fabricated in sections resulting in seams, but any such seam shall be joined or otherwise held tightly together along the entire seam. For peripheral seals that use a fabric material to affect the seal, the requirement in the preceding sentence applies only to the fabric and not to any support devises. An adequate but minimum number of expansion joints shall be provided.
 - Provisions shall be made to prevent damage to the seal due to any overflow openings in the shell.
 - Rough spots on the shell that could damage the seal assembly shall be ground smooth. See API STANDARD 650H.6.1.
 - All metallic components shall be electrically bonded. See API STANDARD 650H.4.1.6 or C.3.1.6 for electrical bonding requirements.

4.2.3.8 Roof Penetrations

Columns, ladders, and other rigid vertical appurtenances that penetrate the deck shall be provided with a seal that will permit a local deviation of ± 125 mm (± 5 in.). Appurtenances shall be plumb within a tolerance of ± 75 mm (± 3 in.).

4.2.3.9 Roof Supports

- a. The floating roof shall be provided with adjustable supports..
- b. The height of the floating roof shall be adjustable to two positions with the tank in service to establish the low (operating) and high (maintenance) levels of the roof supports. The design of the supports shall prevent damage to the fixed roof and floating roof when the tank is in an overflow condition.
- c. The low roof position shall be the lowest permitted by the internal components of the tank including shell nozzles with internal projections.
- d. The high roof position shall provide a 2-m (78-in.) minimum clearance throughout the bottom, between the roof and the tank bottom.
- e. Supports shall be fabricated from pipe, Supports fabricated from pipe shall be notched or otherwise constructed at the bottom to provide complete liquid drainage.
- f. Aluminum supports shall be isolated from carbon steel by an austenitic stainless steel spacer, an elastomeric bearing pad, or equivalent protection.
- 4.2.3.10 Openings and Appurtenances

4.2.3.10.1 Ladder

A ladder shall be provided to access from tank bottom to Internal floating roof deck when Internal floating roof is resting on its supports. The ladder shall be attached to Internal floating roof and it shall not be attached to tank bottom.

4.2.3.10.2 Vents

Internal Floating Roof Pressure-Relieving Vents

- a. Vents suitable to prevent overstressing of the roof deck or seal membrane shall be provided on the floating roof. These vents shall be adequate to evacuate air and gases from underneath the roof such that the internal floating roof is not lifted from resting on its supports during filling operations, until floating on the stored liquid. The vents shall also be adequate to release any vacuum generated underneath the roof after it settles on its supports during emptying operations.
- b. Internal floating roofs shall be equipped with pressure-vacuum-activated vents. Pressure vacuum activated vents shall be designed to open and achieve required flow rates within the design capacities of the floating roof and floating roof support system as described in API STANDARD 650H.5.2.1.1.

Tank Circulation Vents

Tank circulation vents will be fabricated and installed by other party conforming to API Standard 650. Relevant drawings and details of the modification are attached in the Bidding Document for reference.

4.2.3.11 Liquid-Level Indication, Overfill Protection and Overflow Slots

The internal floating roof Manufacturer shall provide information defining the internal floating roof and seal dimensional profile for the CPSTLs' determination of the maximum normal operating and overfill protection liquid levels (considering tank fixed-roof support, overflow slots or any other top of shell obstructions). The floating roof Manufacturer shall provide the

design flotation level (liquid surface elevation)of the internal floating roof at which the pressure/vacuum relief vents will begin to open (to facilitate the CPSTLs' determination of minimum operating levels).

4.2.3.12 Anti-Rotation and Centering Devices

The internal floating roof shall be centred and restrained from rotating. A guide pole with rollers, two or more seal centring cables or other suitable device(s)shall be provided as required for this purpose. The internal floating roof shall not depend solely on the peripheral seals or vertical penetration wells to maintain the centred position or to resist rotation. Any device used for either purpose shall not interfere with the ability of the internal floating roof to travel within the full operating elevations in accordance with API STANDARD 650H.4.1.1.

4.2.3.13 Manholes and Inspection Hatches

4.2.3.13.1 Shell Manholes

Two tank shell manholes above the internal floating roof resting position will be fabricated and installed by other party conforming to API STANDARD 650. Relevant drawings and details of the modification are attached in the Bidding Document for reference.

4.2.3.13.2 Internal floating roof deck manholes

Two internal floating roof deck manholes shall be provided for easy access to and ventilation of the tank when the floating roof is on its supports and the tank is empty. The manholes shall have nominal opening of 600 mm and shall be provided with a bolted or secured and gasketed manhole cover. The manhole neck dimensions shall meet the requirements of API STANDARD 650H.4.1.4 and H.4.1.5.

4.2.3.14 Inlet Diffuser

Tank Inlet Diffusers will be fabricated and installed by CPSTL conforming to API STANDARD 650. Relevant drawings and details of the modification are attached in the Bidding Document for reference.

4.2.3.15 Gauging and Sampling Devices

Internal floating roof shall have provision to accommodate Stilling well for radar gauge extending up to the fixed roof and Provision in the internal floating roof for taking manual product level measurements using Dip Tape and Plumb.All such devices on the floating roof shall be installed within the plumbness tolerance of H.4.5of API Standard 650. Stilling well will be fabricated and installed by other party conforming to API standard650. CPSTL will provide relevant drawings and details of the modification for reference

4.2.3.16 Foam Dams

Internal floating roof shall have installed Integral Foam Dam to concentrate firefighting foam in the tank seal area in the case of a fire. Integral foam dam shall have bolted directly to the rim angle and the base of a secondary tank seal of the floating roof. Foam Dam shall require less foam, corrosion resistant, will last the life of tank and should comply with API STANDARD 650 Appendix-H, H.5.9.

4.2.3.17 Fabrication, Erection, Welding, Inspection, and Testing

- a. The applicable fabrication, erection, welding, inspection, and testing requirements of API STANDARD 650 Standard shall be met. A Tank physical measurement report and tank mechanical drawings will be provided to the bidder along with this document.
- b. Upon the start of internal floating roof installation, or concurrent with assembly within a tank under construction, the tank (interior shell and vertical components) shall be inspected by the floating roof erector. The purpose of this inspection shall be to confirm plumbness of all interior components, along with roundness and the condition of the shell (for the presence of damage, projections, or obstructions) to verify that the floating roof and seals will operate properly.
- c. Any defects, projections, obstructions or tank tolerance limits (exceeding those defined in 7.5 of Appendix H of API 650), which would inhibit proper internal floating roof and seal operation, that are identified by the internal floating roof erector shall be reported to the CPSTL
- d. Deck seams and other joints that are required to be or vapor-tight per API STANDARD 650 H.4.1.3 shall be tested for leaks by the shop or field joint assembler. Joint testing shall be performed by means of penetrating oil or another method consistent with those described in this standard for testing cone-roof and/or tank-bottom seams, or by any other method mutually agreed upon by the Purchaser and the roof Manufacturer.
- e. The floating roof Manufacturer shall supply all floating roof closures required for testing per API STANDARD 650 H.4.1.3, H.4.1.7, H.4.3.1, and H.6.2. Rivets, self-tapping screws, and removable sections are not acceptable for test plugs.
- f. Any flotation compartment that is completely shop-fabricated or assembled in such a manner as to permit leak testing at the fabricating shop shall be leak tested at the shop as well as retested in the field by the floating roof erector for all accessible seams. In the field assembly yard or in the erected position, the erector shall spot leak test 10 % of the flotation compartments, whether shop- or field-fabricated.
- g. CPSTL representatives may select the specific compartments to test and the test location, based on his visual inspections for indications of damage or potential. Any leaking compartments shall be repaired and re-tested by the roof Manufacturer. If the testing finds any leaks in compartments tested, except for those damaged by shipping, then 100 % of the roof compartments shall be leak tested. Unless prohibited by safety concerns, leak testing shall be at an internal pressure of 20 kPa to 55 kPa(3 lbf/in.2 to 8 lbf/in.2) gauge using a soap solution or commercial leak detection solution.
- h. Upon assembly and prior to a flotation test, the erector shall inspect to verify that the peripheral seal produces an acceptable fit against the tank shell.

4.2.3.18 Initial Flotation

A flotation test and initial fill inspection shall be conducted by the CPSTL which shall be witnessed by the supplier. CPSTL shall make water connections and supply all tank closures required for testing and remove all water connections and temporary closures (including gaskets, fasteners, test blanks, etc.) after completion of the test.

Flotation test may be done using water or product at the option of the CPSTL. During this test, the internal floating roof and all accessible compartments shall be jointly checked by supplier and CPSTL to confirm that they are free from leaks. The appearance of a damp spot on the upper side of the part in contact with the liquid shall be considered evidence of leakage.

During initial fill the internal floating roof shall be checked to confirm that it travels freely to its full height. The peripheral seal shall be checked for proper operation throughout the entire travel of the internal floating roof.

4.2.3.19 Commissioning of Internal Floating Roof

After initial floatation test the evaporation losses of the tank shall be monitored jointly for 14 days to confirm the satisfactory operation of Internal Floating Roof.

PHYSICAL MEASUREMENT REPORT



RADII MEASUREMENT REPORT

Job No : LK/CMB/00/OGC/201500130 Client : Ceylon Petroleum Storage Terminals Limited Tank : 17 CPSTL Location : CPSTL Kolonnawa Date : 26.08.2015

01 T1	01	9732
-	02	9742
	03	9743
-	04	9744
	05	9740
	06	9741
	07	9744
1.4.1	08	9744
and a la	09	9752
	10	9745
	11	9737
	12	9738
	13	9740
	14	9754
1	15	9762
10	16	9757

01 B2	01	9736	01 M2	01	9740	01 T2	01	974
	02	9746	1000	02	9750		02	975
	03	9747		03	9751	1	03	975
9	04	9748		04	9752		04	975
	05	9744		05	9748		05	975
	06	9745	3 32	06	9749		06	975
1 1 1	07	9748		07	9752		07	97
	80	9748	1.1.1.1.1	08	9752		80	970
	09	9756		09	9760		09	976
	10	9749		10	9753		10	97
	11	9741	1	11	9745		11	974
	12	9742	1	12	9746		12	97
	13	9744	2	13	9748		13	: 97
	14	9758		14	9762		14	976
	15	9750		15	9754	24	15	97
	16	9745		16	9749		16	97
02 B	01	9756	02 M	01	9764	02 T	01	976
	02	9764		02	9763		02	976
	03	9760		03	9760		03	976
	04	9765		04	9769		04	97
	05	9762		05	9760		05	97
	06	9763		06	9762		06	975
	07	9762		07	9762		07	976
	80	9764		80	9765		80	976
	09	9776		09	9776		09	977
	10	9756		10	9753		10	978
	11	9760		11	9758		11	975
	12	9761		12	9760		12	975
	13	9762		13	9763		13	976
	14	9778	1000	14	9780		14	977
	15	9769		15	9767		15	975
	16	9763		16	9761		16	975



M MIDDLE B BOTTOM

SGS Lanka (Pvt) Ltd GER ICES

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Member of the SGS Group (SGS SA)

Company No. PV 19226



RADII MEASUREMENTS OF TANK NO. 17 CPSTL KOLONNAWA

03 B	101	9771	03 M	01	0772	031	101	9771
05.0	02	0700	0.5 14	02	0704	03	02	0700
	03	9766	-	03	9764		03	9760
	00	0770		00	0770		00	0770
-	04	9/12		04	9/12		04	9/12
	05	9/62	-	05	9/03		00	9/02
	06	9756		06	9760		06	9764
	07	9760		07	9/59		07	9/58
	00	9766	_	08	9768		08	9768
	40	9700		40	9705		09	9764
	11	0750	-	14	0750		11	0753
	12	0757		12	0764		12	0766
-	13	9762		13	9764		13	9764
	14	9776		14	0779		14	0770
	16	9763		15	9765		15	0766
-	16	9764		16	9765		15	9760
-	110	37.04		110	1 3/00		110	5/04
04 B	01	9785	04 M	01	9788	04 1	01	9791
	02	9780		02	9780		02	9782
	03	9771		03	9775		03	9778
	04	9782		04	9785		04	9787
	05	9771		05	9772		05	9771
	06	9755		06	9751		06	9748
	07	9763		07	9762		07	9762
	08	9765		08	9761		08	9755
	09	9767	1.0	09	9768		09	9768
	10	9753		10	9753		10	9751
	11	9745		11	9743		11	9744
	12	9767		12	9768	21.7	12	9768
	13	9757		13	9752		13	9749
	14	9785		14	9786		14	9785
	15	9759		15	9757		15	9756
_	16	9767		16	9767		16	9768
05 B	01	9795	05 M	01	9793	05 1	01	9792
	02	9787		02	9784		02	9784
	03	9781		03	9780		03	9779
	04	9792		04	9794		04	9796
1.1.1	05	9762		05	9762		05	9764
	06	9756		06	9757		06	9758
	07	9760		07	9758		07	9756
- 74	08	9750		08	9750		08	9750
	09	9768		09	9768		09	9769
	10	9740		10	9737		10	9738
	11	9749		11	9751		11	9753
	12	9767		12	9768		12	9770
	13	9752		13	9754		13	9753
	14	9790		14	9790		14	9791
	15	9764		15	9766		15	9765
	16	9766		16	9767		16	9769

Plan view of Radii positions



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Member of the SGS Group (SGS SA)

Company No. PV 19226



RADII MEASUREMENTS OF TANK NO. 17 CPSTL KOLONNAWA

06 B	01	9782	06 M	01	9780	06 T	01	9779
	02	9777		02	9775		02	9773
544	03	9812		03	9783		03	9785
	04	9787		04	9787		04	9787
	05	9776		05	9775		05	9775
	06	9760		06	9761		06	9765
	07	9752		07	9750		07	9749
	08	9753		08	9755		08	9756
	09	9762		09	9760		09	9759
1.1	10	9747	1.1.1	10	9745	1.1.1.1	10	9746
	11	9758		11	9757		11	9759
	12	9774		12	9771		12	9766
	13	9754		13	9751		13	9748
	14	9784		14	9782		14	9779
	15	9766		15	9763		15	9761
	16	9775		16	9774		16	9772

07 B	01	9788	07 M	01	9787	07 T	01	9789
	02	9777		02	9776		02	977
	03	9785		03	9785		03	978
	04	9795		04	9795		04	979
	05	9773		05	9773		05	9770
	06	9750		06	9749		06	974
	07	9751		07	9747		07	974
	08	9748		08	9749		08	9747
	09	9763		09	9760		09	9759
	10	9738		10	9742		10	9742
	11	9748		11	9745		11	9743
	12	9772		12	9767		12	9765
	13	9748		13	9757		13	9769
-	14	9793		14	9788		14	9787
	15	9755		15	9752		15	9749
	16	9769		16	9787		16	9767
	1.01	0707			0700			070
08 B	01	9787	08 M	01	9783	08 T	01	9783
08 B	01	9787 9767	08 M	01	9783 9765	08 T	01	9783
08 B	01 02 03	9787 9767 9780	08 M	01 02 03	9783 9765 9777	08 T	01 02 03	9783 9760 9777
08 B	01 02 03 04	9787 9767 9780 9795	08 M	01 02 03 04	9783 9765 9777 9792	08 T	01 02 03 04	9783 9760 9777 9790
08 B	01 02 03 04 05	9787 9767 9780 9795 9753	08 M	01 02 03 04 05	9783 9765 9777 9792 9752	08 T	01 02 03 04 05	9783 9760 9770 9790 9747
08 B	01 02 03 04 05 06	9787 9767 9780 9795 9753 9748	08 M	01 02 03 04 05 06	9783 9765 9777 9792 9752 9747	08 T	01 02 03 04 05 06	9783 9760 9777 9790 9747 9745
08 B	01 02 03 04 05 06 07	9787 9767 9780 9795 9753 9748 9740	08 M	01 02 03 04 05 06 07	9783 9765 9777 9792 9752 9747 9739	08 T	01 02 03 04 05 06 07	9783 9760 9770 9790 9797 9797 9745 9738
08 B	01 02 03 04 05 06 07 08	9787 9767 9767 9780 9795 9753 9753 9748 9740 9737	08 M	01 02 03 04 05 06 07 08	9783 9765 9777 9792 9752 9747 9739 9738	08 T	01 02 03 04 05 06 07 08	9783 9760 9777 9790 9747 9745 9738 9727
08 B	01 02 03 04 05 06 07 08 09	9787 9767 9780 9795 9753 9748 9740 9737 9755	08 M	01 02 03 04 05 06 07 08 09	9783 9765 9777 9792 9752 9747 9739 9738 9738	08 T	01 02 03 04 05 06 07 08 09	9783 9760 9777 9790 9747 9745 9738 9738 9727 9747
)8 B	01 02 03 04 05 06 07 08 09 10	9787 9767 9780 9795 9753 9748 9740 9737 9755 9740	08 M	01 02 03 04 05 06 07 08 09 10	9783 9765 9777 9792 9752 9747 9739 9738 9738 9739	08 T	01 02 03 04 05 06 07 08 09 10	9783 9760 9777 9790 9745 9745 9738 9727 9747 9737
08 B	01 02 03 04 05 06 07 08 09 10 11	9787 9767 9780 9795 9753 9748 9740 9740 9737 9755 9740 9755	08 M	01 02 03 04 05 06 07 08 09 10 11	9783 9765 9775 9792 9752 9747 9739 9738 9751 9739 9755	08 T	01 02 03 04 05 06 07 08 09 10 11	9783 9760 9770 9790 9745 9745 9745 9745 9747 9747 9747 9747
08 B	01 02 03 04 05 06 07 08 09 10 11 12	9787 9767 9760 9795 9753 9753 9740 9737 9755 9740 9755 9740 9755 9770	08 M	01 02 03 04 05 06 07 08 09 10 11 12	9783 9765 9777 9792 9752 9747 9739 9738 9738 9751 9739 9755 9771	08 T	01 02 03 04 05 06 07 08 09 10 11 12	9783 9760 9770 9790 9745 9745 9745 9745 9747 9747 9747 9747
08 B	01 02 03 04 05 06 07 08 09 10 11 12 13	9787 9787 9780 9795 9753 9748 9740 9737 9755 9740 9737 9755 9740 9755 9740 9755 9770 9797	08 M	01 02 03 04 05 06 07 08 09 10 11 12 13	9783 9765 9777 9792 9752 9747 9739 9738 9738 9751 9739 9755 9771 9755	08 T	01 02 03 04 05 06 07 08 09 10 11 12 13	9783 9760 9777 9799 9747 9745 9738 9727 9747 9731 9755 9774 9755
08 B	01 02 03 04 05 06 07 08 09 10 11 12 13 14	9787 9767 9780 9795 9753 9748 9740 9740 9737 9755 9740 9755 9740 9755 9770 9797 9793	08 M	01 02 03 04 05 06 07 08 09 10 11 12 13 14	9783 9765 9777 9792 9752 9747 9739 9738 9738 9739 9739 9755 9771 9795 9791	08 T	01 02 03 04 05 06 07 08 09 10 11 12 13 14	9783 9760 9777 9790 9747 9745 9738 9727 9747 9747 9755 9774 9755 9774
08 B	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	9767 9767 9780 9795 9753 9748 9740 9740 9737 9755 9740 9755 9740 9755 9770 9797 9793 9757	08 M	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	9783 9765 9777 9792 9752 9747 9739 9738 9738 9738 9738 9739 9755 9771 9795 9771	08 T	01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	9783 9760 9777 9790 9745 9731 9731 9731 9755 9774 9774 9774 9774 9774 9774 9774

0,00	0.4	0102
9753	05	9752
9748	06	9747
9740	07	9739
9737	08	9738
9755	09	9751
9740	10	9739
9755	11	9755
9770	12	9771
9797	13	9795
9793	14	9791
9757	15	9755
9759	16	9757

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Member of the SGS Group (SGS SA) Company No. PV 19226



RADII MEASUREMENTS OF TANK NO. 17 CPSTL KOLONNAWA

09 B	01	9764	09 M	01	9768	09 T	01	9773
	02	9753		02	9755		02	9757
C 10-2	03	9783		03	9787		03	9793
	04	9767		04	9772		04	9768
	05	9757		05	9757		05	9758
	06	9743		06	9747	0.000	06	9755
0	07	9737		07	9735		07	9733
	08	9719		08	9720		08	9715
	09	9737		09	9734		09	9737
	10	9736	1.1.1	10	9735		10	9729
	11	9761		11	9761		11	9760
	12	9772		12	9765		12	9758
	13	9782		13	9778		13	977
	14	9773		14	9775		14	9770
	15	9747		15	9744		15	974
	16	9759		16	9756		16	9752
10 B	01	9775	10 M	01	9776	10 T	01	9776
	02	9760	1.414	02	9762		02	9763
	03	9795		03	9795		03	9795
	04	9767		04	9766		04	9765
	05	9757		05	9757		05	9757
	06	9755		06	9755	1	06	9755
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03	9/95		03	9/95	03	9/95
04	9767		04	9766	04	9765
05	9757		05	9757	05	9757
06	9755		06	9755	06	9755
07	9734		07	9735	07	9735
08	9717		08	9718	08	9718
09	9757		09	9760	09	9762
10	9728		10	9729	10	9730
11	9755		11	9755	11	9755
12	9755		12	9753	12	9750
13	9765		13	9764	13	9763
14	9761		14	9762	14	9762
15	9731		15	9731	15	9731
16	9751		16	9751	16	9750
	03 04 05 06 07 08 09 10 11 12 13 14 15 16	03 9795 04 9767 05 9757 06 9755 07 9734 08 9717 09 9757 10 9728 11 9755 12 9755 13 9765 14 9761 15 0731 16 9751	03 9793 04 9767 05 9757 06 9755 07 9734 08 0717 09 0757 10 9728 11 9755 13 9765 14 9761 15 0751	03 9793 03 04 9757 04 05 9757 05 06 9755 06 07 9734 07 08 0717 08 09 0757 09 10 9728 10 11 9755 11 12 9755 12 13 9765 13 14 9761 14 15 0751 16	03 9785 04 9795 04 9767 04 9768 05 9757 05 9757 06 9755 06 9755 07 9734 07 9735 08 9717 08 9718 09 0757 09 9769 10 9728 10 9729 11 9755 12 9753 12 9755 12 9753 13 9765 13 9765 14 9761 14 9762 15 0731 15 9731 16 9751 16 9751	03 9785 03 9795 03 04 97767 04 97767 05 06 06 9757 05 9767 05 06 06 9755 06 9755 06 9755 06 07 9734 07 9735 07 08 9717 08 9728 09 09 09 09 0757 08 07 9735 10 11 9755 11 9755 11 11 9755 11 9755 11 12 9755 12 13 12 9755 12 13 12 13 14 9765 13 13 14 9761 14 9762 14 15 0731 15 15 15 15 15 15 16 9751 16 16 9751 16 15 15 15 16 9751 16 15 15 15 15

Note :

Radii Measurements were taken as per API MPMS chapter 2 section 2B.

Pvt) Ltd SGS Lanka (

SGS Lanka (Pvt) Ltd Regd. Office 3rd Fl, 140 Vauxhall St. Colombo-2 Sri Lanka t+94 (0)11 537 62 80 f+94 (0)11 537 62 81 e sgs.lanka@sgs.com www.sgs.com

Member of the SGS Group (SGS SA)

Company No. PV 19226

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1 2 1	0 11						42 9,158 9	42 9,156 9	30 0460 0	38 9,170 9	31 9,169 9	35 9,168 9	34 9,166 9	40 9,100 9 47 0 150 0	39 9,153 9	37 9,151 9	38 9,157 9	34 9,162 9	34 9,151 9	38 9,136 9	3/ 9,136 9	
	9				-		9,105 9,1	9,101 9,1	9,107 9,1	9,120 9,1	9,127 9,1	0,129 9,1	9,126 9,1	9,129 9,1	9,117 9,1	9,121 9,1	9,131 9,1	9,133 9,1	9,133 9,1	9,129 9,1	9,134 9,1 0,425 0,4	- 100
	7 8			1			9,176 9,126	9,168 9,127	9,100 9,130	9.166 9.136	9,162 9,126	9,161 9,127	9,161 9,134	9,162 9,12/	9,153 9,140	9,147 9,141	9,147 9,142	9,145 9,141	9,141 9,138	9,144 9,135	9,137 9,136	9,139
8 41	5 6			6	- Constant	100 M	,154 9,120	,149 9,116	411 8,114	152 9.122	,156 9,121	,157 9,111	,156 9,114	,154 9,114 166 0.117	.153 9.119	,149 9,158	,150 9,115	,145 9,114	,135 9,111	,140 9,117	142 9,129	9,139
RMINALS LIMITE KKA 35. 18, 19, 22, 23	3 4						4 9,156 9	5 9,150 9	r 0440 0	6 9,148 9	0 9,143 9	4 9,140 9	5 9,133 9	9 9,12/ 9	4 9.136 9	3 9,137 9	2 9,134 9	5 9,134 9	1 9,136 9	6 9,139 9	6 9,138 9	1 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9,136 9
I STORAGE TEI IAWA SRI LAN TS OF TANK NC TS OF TANK NC	2	×. 	\$2				9,134 9,13	9,129 9,13	9,133 9,14	9,142 9,13	9,143 9,15	9,146 9,16	9,140 9,16	9,135 9,16	9.139 9.15	9,148 9,15	9,144 9,14	9,139 9,14	9,136 9,14	9,132 9,13	9,134 9,13	9,13/ 9,1: al Distances of Ta
PETROLEUN KOLONN EASUREMEN No 22 No 22	1						9,136	9,137	9,136	9,120	9,123	9,132	9,138	9,142	9,130	9,152	9,148	9,151	9,150	9,126	9,134	9,137 able No 9: Radii

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*		4									+	and a second sec			All	ALL ALL	a start	and the second		All and a second		9P				-	
								-	of the second se	A Constant of the second				Part -		and the second		pr.								-	
2, 23 & 41					1. Contraction of the second s					A CONTRACTOR	ANN ANN		1997 1997														
Os. 18, 19, 2	0						>		1	11	16		04	06	93	06	88	83	74	11	182	176	11	153	147	er 22cont	
OF TANK N	19 2			Ser. W						9,175 9,2	9,172 9,2	A, 162 9,2	9,16/ 9,2	9 149 9 1	9.151 9.1	9,149 9,1	9,148 9,1	9,152 9,	9,154 9,	9,153 9,	9,157 9,	9,151 9,	9,150 9,	9,149 9,	9 143 9.	f Tank numb	
UREMENTS	18									9,157	9,156	9,153	9,152	9,104	9.159	9,163	9,172	9,158	9,157	9,155	9,155	9,152	9,148	9,149	9,147	Distances of	
ICAL MEASI Io 22 Measureme	17									9,159	9,153	9,153	9,138	9,143	9,129	9,118	9,117	9,137	9,138	9,138	9,140	9,143	9,145	9,145	9,143	lo 9: Radial	
Tank N Radial A	2 Station		6 0			2		7 M			¥.			0		4 M		2	ß			2	_		2	Table N	

Paae 6 of 10

23 23 24 1 2 23 24 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 4 5 6 1 1 2 3 4 4 5 6 1 1 2 3 4 4 5 6 1 1 2 3 4 4 5 6 1 1 2 3 4 4 5 6 1 1 2 3 4 4 5 6 1 1 1 2 3 4 5 6 1 1 1 2 3 4 5 6 6 1 1 1 1 1 1 1 1 1 1 1 1 1		Tank No Radial Me	3 Station No	<u>⊃</u> ⊻ 0		0	5	7 M			9		5 M		n	4 M		3 N N				D	1 M		Table A	
The form th		23 asuremei	1				9,031	9,038	9,042	9,055	9,062	9.080	9,082	9,090	9,100	9,103	9,100	9,123	9,127	9,131	9,139	9,126	9,135	9,137	lo 11: Radia	
An ALA WAY AND A THE ALE ALL ALL ALL ALL ALL ALL ALL ALL AL	S OF TAI	Its	2		+		9,013	9,017	9,019	9,027	9,034	9.054	9,059	9,064	9,069	9,076	9,089	9,093	9,096	9,103	9,131	9,133	9,135	9,136	I Distance	
4 5 6 7 8 9 10 11 12 13 14 15 6 7 8 9 10 11 12 13 14 15 8 966 8967 8997 9018 9006 9274 9273 9274	NK NOS.	/cont	3				8,983	8,988	8,999	9,004	9,008	9.014	9,025	9,043	9,060	9,073	9.095	9,099	9,104	8,109	9,110	9,125	9,133	9,135	s of Tank I	
5 6 7 8 9 10 11 12 13 14 15 8 9 10 11 12 13 14 15 8 9 10 11 12 13 14 15 8 9 10 11 12 13 14 15 8 9 10 11 12 13 14 15 8 9 10 11 12 13 14 15 8 9 10 11 12 13 13 13 13 13 13 13 13 13 14 15 13 14 15 14 15 13 14 12 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15 14 15	18, 19, 22		4				8,985	9,000	9,010	9,016	9,025	9.036	9,043	9,048	9,052	9,053	9.064	9,077	9,089	8,102	9,115	9,125	9,128	9,133	number 23	
C 7 8 9 10 11 12 13 1 12 13 14 15 13 14 15 1 11 12 13 14 15 13 14 15 1 12 13 14 12 13 14 15 1 12 13 14 12 13 14 15 1 13 14 12 13 14 15 10 11 12 13 13 13 13 11 12 13 13 13 13 13 11 12 13 13 13 13 13 13 12 13 14 12 13 14 12 14 13 14 12 12 13 13 13 13 14 15 14 12 14 12 14 15 14 15 12 14 12 14 14 14 15 15 15 15 15 15 15 15 15 16 16 16 16 </td <td>23 & 41</td> <td></td> <td>5</td> <td>5.</td> <td></td> <td></td> <td>8,961</td> <td>8,967</td> <td>8,978</td> <td>8,986</td> <td>9,999</td> <td>9.011</td> <td>9,016</td> <td>9,021</td> <td>9,037</td> <td>9,046</td> <td>9,006</td> <td>9,075</td> <td>9,082</td> <td>8,098</td> <td>9,118</td> <td>9,129</td> <td>9,132</td> <td>9,135</td> <td></td> <td></td>	23 & 41		5	5.			8,961	8,967	8,978	8,986	9,999	9.011	9,016	9,021	9,037	9,046	9,006	9,075	9,082	8,098	9,118	9,129	9,132	9,135		
7 8 9 10 11 12 13 14 15 9018 9,066 9,123 9,189 9,284 9,274 9,274 9,274 9,018 9,076 9,127 9,193 9,288 9,244 9,274 9,274 9,018 9,076 9,127 9,193 9,288 9,244 9,276 9,274 9,274 9,023 9,076 9,127 9,193 9,286 9,274 9,275 9,245 9,274 9,275 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,245 9,246 9,245			9				8,987	8,994	9,008	9,018	9,025	9.041	9,049	9,049	9,060	9,060	9,083	9,087	9,095	3,102	9,100	9,114	9,121	9,128		
8 9 10 11 12 13 14 15 9,066 9,123 9,192 9,293 9,274 9,274 9,066 9,123 9,193 9,293 9,274 9,272 9,076 9,123 9,193 9,286 9,276 9,272 9,076 9,123 9,193 9,286 9,277 9,266 9,084 9,123 9,183 9,274 9,273 9,243 9,087 9,183 9,214 9,276 9,266 9,266 9,084 9,113 9,184 9,243 9,277 9,243 9,087 9,183 9,214 9,274 9,273 9,243 9,087 9,183 9,214 9,217 9,243 9,217 9,087 9,183 9,216 9,216 9,216 9,216 9,087 9,183 9,213 9,217 9,194 9,087 9,183 9,217 9,194 9,194 9,087 9,183 9,217 9,194 9,194 9,087 9,183 9,217 9,194 9,194 9,087 9,144 9,183 9,217 9,194 9,084 9,143 9,144			7				9,018	9,023	9,024	9,023	9,027	9.035	9,044	9,050	9,054	9,061	620.6	9,084	9,094	8,100	9,112	9,116	9,126	9,133		
9 10 11 12 13 14 15 9 10 11 12 13 14 15 9 10 11 12 13 14 15 9,123 9,192 9,293 9,286 9,272 9,272 9,120 9,193 9,288 9,273 9,273 9,273 9,120 9,193 9,284 9,274 9,272 9,273 9,133 9,184 9,261 9,273 9,243 9,243 9,133 9,184 9,261 9,213 9,243 9,243 9,155 9,184 9,261 9,213 9,243 9,243 9,156 9,183 9,214 9,263 9,263 9,263 9,155 9,184 9,207 9,190 9,190 9,190 9,156 9,183 9,217 9,193 9,217 9,190 9,144 9,183 9,207 9,193 9,216 9,190 9,144 9,183 9,217 9,190 9,190 9,190 9,144 9,183 9,217 9,190 9,190 9,190 9,144 9,183 9,213 9,146 9,148 9,148 <td></td> <td>8</td> <td>8</td> <td></td> <td></td> <td></td> <td>9,066</td> <td>9,071</td> <td>9,076</td> <td>9,082</td> <td>9,084</td> <td>9.087</td> <td>9,089</td> <td>9,087</td> <td>9,084</td> <td>9,087</td> <td>9 092</td> <td>9,094</td> <td>9,102</td> <td>8,100</td> <td>9,111</td> <td>9,117</td> <td>9,123</td> <td>9,131</td> <td></td> <td></td>		8	8				9,066	9,071	9,076	9,082	9,084	9.087	9,089	9,087	9,084	9,087	9 092	9,094	9,102	8,100	9,111	9,117	9,123	9,131		
10 11 12 13 14 15 9,192 9,293 9,209 9,274 9,272 9,192 9,293 9,293 9,274 9,272 9,193 9,286 9,272 9,272 9,193 9,286 9,272 9,272 9,193 9,286 9,274 9,272 9,193 9,286 9,274 9,272 9,184 9,267 9,273 9,272 9,183 9,244 9,277 9,193 9,183 9,244 9,267 9,265 9,266 9,183 9,215 9,214 9,194 9,194 9,183 9,207 9,183 9,214 9,160 9,160 9,183 9,207 9,182 9,214 9,194 9,194 9,183 9,207 9,182 9,214 9,160 9,160 9,183 9,207 9,182 9,194 9,194 9,183 9,204 9,213 9,194 <td></td> <td></td> <td>6</td> <td></td> <td>-</td> <td></td> <td>9,123</td> <td>9,120</td> <td>9,127</td> <td>9,132</td> <td>9,133</td> <td>9,153</td> <td>9,158</td> <td>9,159</td> <td>9,159</td> <td>9,154</td> <td>9 148</td> <td>9,144</td> <td>9,148</td> <td>9, 14/ 0 115</td> <td>9,144</td> <td>9,141</td> <td>9,140</td> <td>9,140</td> <td></td> <td></td>			6		-		9,123	9,120	9,127	9,132	9,133	9,153	9,158	9,159	9,159	9,154	9 148	9,144	9,148	9, 14/ 0 115	9,144	9,141	9,140	9,140		
11 12 13 14 15 11 12 13 14 15 9,283 9,293 9,294 9,272 9,272 9,286 9,280 9,272 9,272 9,272 9,285 9,281 9,272 9,272 9,272 9,286 9,267 9,272 9,272 9,272 9,286 9,267 9,272 9,272 9,272 9,286 9,267 9,277 9,286 9,266 9,261 9,274 9,252 9,266 9,266 9,249 9,274 9,263 9,204 9,272 9,249 9,241 9,198 9,198 9,198 9,249 9,241 9,194 9,194 9,196 9,217 9,123 9,194 9,194 9,196 9,207 9,182 9,204 9,204 9,204 9,207 9,182 9,194 9,198 9,198 9,207 9,182 9,194 9,196 9,196 9,109 9,116 9,1160 9,1160 9,1160 9,161 9,148 9,148 9,148 9,148 9,150 9,166 9,142 9,148			10				9,192	9,193	9,180	9,180	9,184	9,184	9,189	9,183	9,187	9,188 0.180	9,188	9,183	9,179	0 165	9,160	9,149	9,150	9,147	No.	
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13 14 15 9,276 9,274 9,274 9,279 9,272 9,272 9,279 9,272 9,272 9,276 9,265 9,265 9,277 9,265 9,266 9,276 9,266 9,266 9,277 9,243 9,243 9,276 9,266 9,266 9,277 9,243 9,243 9,276 9,266 9,266 9,276 9,266 9,266 9,277 9,243 9,243 9,277 9,243 9,194 9,194 9,194 9,194 9,160 9,160 9,160 9,166 9,160 9,160 9,146 9,160 9,160 9,146 9,160 9,160 9,146 9,160 9,160 9,146 9,160 9,160 9,146 9,160 9,160 9,146 9,160 9,160 9,146 9,148 9,148 9,146 9,146 9,160 9,146 9,146 9,148 9,146 9,146 9,148 9,146 9,146 9,148 9,146 9,1			12				9,309	9,294	9,281	9,267	9,243	9,236	9,229	9,214	9,204	9,191 0 183	9.182	9,173	9,161	0 157	9,156	9,146	9,144	9,140		
14 15 9,272 9,272 9,266 9,266 9,266 9,267 9,266 9,266 9,266 9,266 9,266 9,266 9,266 9,266 9,266 9,266 9,266 9,266 9,194 9,194 9,169 9,169 9,169 9,169 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,160 9,148 9,148 9,148 9,148 9,148			13				9,280	9,279	9,278	9,2/6	9,270	9,267	9,261	9,253	9,241	9,231	9.209	9,194	9,176	0,150	9,123	9,146	9,142	9,140		
15 9,2172 9,2166 9,2169 9,1150 9,			14	14 A.			9,274	9,272	9,266	9,260	9,243	9,232	9,215	9,204	9,198	9,194 9,190	9.179	9,169	9,160	0,148	9,150	9,150	9,14080	9,144	anka.	u.
			15				9,274	9,272	9,266	9,260	9,243	9,232	9,215	9,204	9,198	9,194	9.179	9,169	9,160	9,130	9,150	9,150	9,148	9,144		

CEVLON PETROLEUM STORAGE TERMINALS LIMITED KOLONNAWA SRI LANKA PHYSICAL MEASUREMENTS OF TANK NOS. 18, 19, 22, 23 & 41

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Research and the

Tank No 23 Radial Measurements cont --/

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	20			All all		and the second		9,123	9,125	9,129	9,132	9,139	9,140	9,148	9,152	9,157	9,160	9,165	9,165	9,172	9,175	9,177	9,180	9,181	9,183	9,118	9,122	9,128	umber 23					
No No	19		r 		No.			9,114	9,116	9,120	9,124	9,122	9,119	9,125	9,125	9,126	9,122	9,125	9,125	9,124	9,128	9,132	9,134	9,136	9,135	9,133	9,135	9,137	s of Tank n					
	18	3	99°					9,170	9,166	9,163	9,160	9,158	9,152	9,157	9,162	9,158	9,148	9,145	9,153	9,152	9,148	9,149	9,151	9,148	9,146	9,143	9,142	9,140	I Distance:					
	17							9,256	9,251	9,240	9,236	9,231	9,228	9,221	9,214	9,198	9,196	9,186	9,182	9,183	9,180	9,175	9,171	9,163	9,156	9,144	9,143	9,139	011 : Radie					
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DRAWINGS

- Drawing of Tank No 17
- Drawing of Tank No 22
- Drawing of Tank No 23





