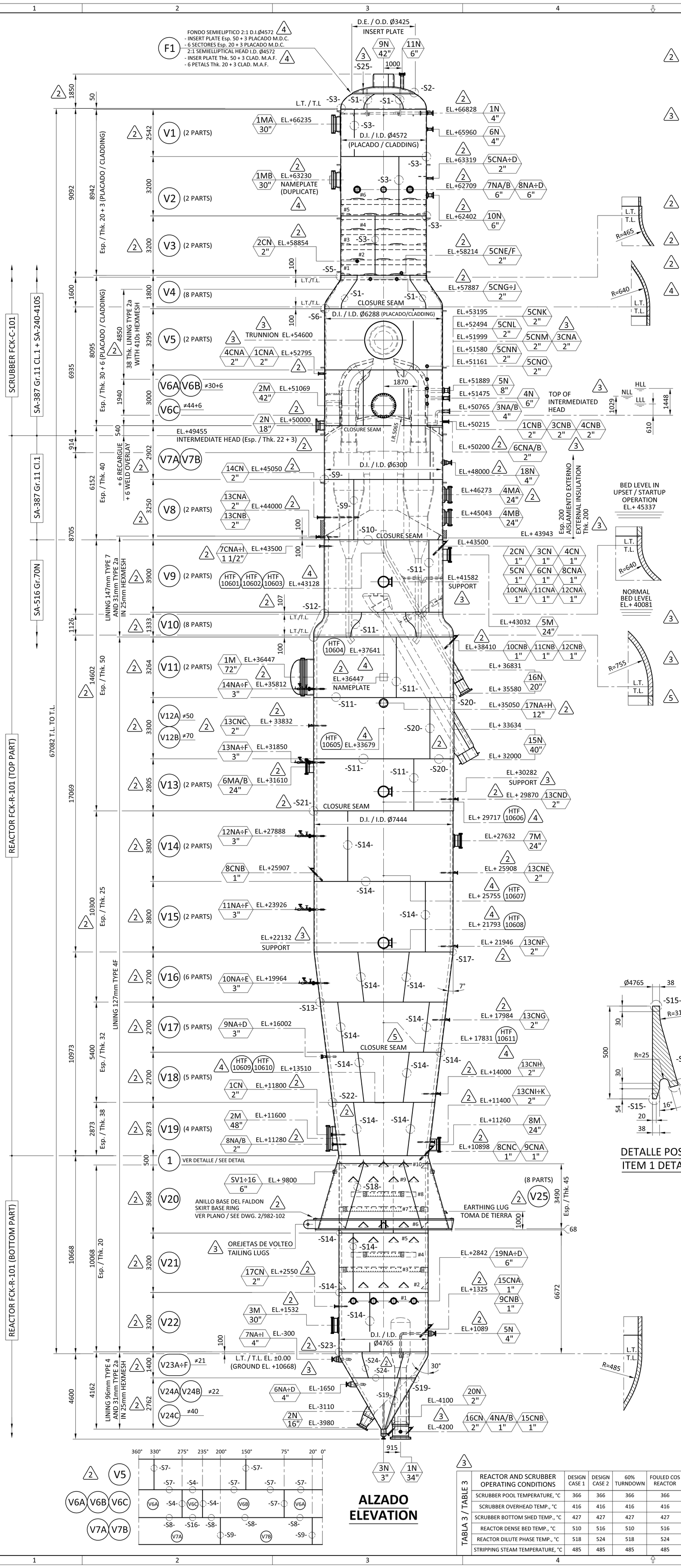

CODIGO	ASME SECT. VIII DIV. 1 Ed. 2013	CODE
SELLO U ~~/ U2 / 5~~	SI / YES	STAMP U ~~/ U2 / 5~~
REG. "NATIONAL BOARD"	NO	NATIONAL BOARD REGISTRATION
ESPECIFICACIONES	020700342 / I213	SPECIFICATIONS
INSPECCION	SEE ITP 2/982-100 (V-020700342-I213-FCK-R-101-0013)	INSPECTION
MARCADO CE (MODULO)	NO	CE MARKING (MODULE)

DATOS DE DISEÑO		DESIGN DATA
PRESION DE DISEÑO	VER TABLA 1 / SEE TABLE 1	DESIGN PRESSURE
TEMPERATURA DE DISEÑO	VER TABLA 1 / SEE TABLE 1	DESIGN TEMPERATURE
PRESION DE TRABAJO	--	OPERATING PRESSURE
TEMPERATURA DE TRABAJO	VER TABLA 3 / SEE TABLE 3	OPERATING TEMPERATURE
PRESION PRUEBA HIDROSTATICA	SHOP TEST: 10.8 Kg/cm2 (10.59 Barg) FIELD TEST NEW: 10.8 Kg/cm2 (10.59 Barg) FIELD TEST FUTURE: 9.9 Kg/cm2 (9.71 Barg)	HYDROSTATIC TEST PRESSURE
MARGEN CORROSION	VER TABLA 2 / SEE TABLE 2	CORROSION ALLOWANCE
SERPENTIN / CAMISA	--	COIL / JACKET
DENSIDAD DEL LIQUIDO		LIQUID DENSITY
SERVICIO ~~ACIDO / LETAL~~	N/A	~~ACID / LETHAL~~ SERVICE
TIPO DE FONDOS	TOP (SCRUBBER): SEMIELLIPTICAL 2:1 BOTTOM (REACTOR): CONICAL	TYPE OF HEADS
RADIOGRAFIADO	RT-1	RADIOGRAPHY
OTROS E.N.D.	(VER NOTA 9 / SEE NOTE 9)	OTHER N.D.T.
TRATAMIENTO TERMICO	SI / YES (VER NOTA 8 / SEE NOTE 8)	STRESS RELIEVING
COEFICIENTE SOLDADURA	1 (SHELL / HEADS)	JOINT EFFICIENCY
AISLAMIENTO	200 mm / HC (DENSITY 100 Kg/m3 MIN.)	INSULATION
PROTECCION CONTRA FUEGO	50 (INSIDE) / 50 (OUTSIDE)	FIREPROOFING
PRESION DE VIENTO	CODE: E.020	WIND PRESSURE
FACTOR DE TERREMOTO	ASCE 7 - Ed.2010	EARTHQUAKE FACTOR
TEMP. MIN. DE DISEÑO	12.8 °C	MIN.DESIGN METAL TEMP.
ENSAYO DE IMPACTO	VER NOTA 7 / SEE NOTE 7	IMPACT TEST
M.A.W.P. (INTERNA)	4.2 Kg/cm2 @ 552°C (SHELL V8)	M.A.W.P. (INTERNAL)

ESPECIFICACION MATERIALES	REACTOR	SCRUBBER	MATERIALS SPECIFICATION
CUERPO	SA-387 Gr.11 Cl.1 SA-516 Gr.70	SA-387 Gr.11 Cl.1 + SA-240-410S	SHELL
FONDOS	SA-516 Gr.70 (BOTTOM CONE)	SA-387 Gr.11 Cl.1 + SA-240-410S (TOP & INT.)	HEADS
SOPORTES (~~Cunas~~, faldon, ~~patas, silletas, ptitos~~).	SA-516 Gr.70		SUPPORTS (~~Saddles~~, skirt, ~~legs, brackets, others~~).
UNION FALDON - ENVOLVENTE	SA-266 Gr.2 (ANILLO FORJADO / FORGED RING)		SKIRT TO SHELL JUNCTION
PERNOS Y TUERCAS DE ANCLAJE	SA-325 (BY OTHERS)		ANCHOR BOLTS & NUTS
ANILLOS RIGIDIZADORES	N/A	N/A	STIFFENING RINGS
CHAPAS REFUERZO	SA-387 Gr.11 Cl.1 SA-516 Gr.70	SA-387 Gr.11 Cl.1	REINFORCING PADS
CLIPS EXTERNOS	SA-387 Gr.11 Cl.1 SA-516 Gr.70	SA-387 Gr.11 Cl.1	EXTERNAL CLIPS
INSERT PLATES	SA-387 Gr.11 Cl.1 SA-516 Gr.70	SA-387 Gr.11 Cl.1 + SA-240-410S	INSERT PLATES
TUBULADURAS — BRIDAS / FORJAS	SA-182 F11 CL.2 SA-336 F11 Cl.2 SA-105 / SA-266 Gr.2	SA-182 F11 CL.2 + 410S W.O. SA-336 F11 Cl.2 + 410S W.O.	FLANGES / FORGINGS — NOZZLES
TUBULADURAS — TUBOS CHAPA	SA-387 Gr.11 Cl.1 SA-516 Gr.70	SA-387 Gr.11 Cl.1 + 410S W.O.	NECK PLATES — NOZZLES
TUBULADURAS — TUBOS	SA-335 P11 / SA-106 Gr.B	SA-335 P11 + 410S W.O.	NECK PIPES — NOZZLES
TUBULADURAS — ACCESORIOS	SA-234 WP11 / SA-234 WPB	SA-234 WP11 + 410S W.O.	FITTINGS — NOZZLES
SERPENTIN / CAMISA	--	--	COIL / JACKET
TORNILLOS / TUERCAS PRESION	SA-193 Gr.B7/B16 / SA-194 Gr.2H/4		PRESSURE BOLTS / NUTS
JUNTAS	4.5 Thk. SPIRAL WOUND GRAPHITE FILLER WITH S.S. 316 WINDING, CS SOLID CENTER RING AND SS 316 INNER RING		GASKETS
OREJETAS DE IZADO / VOLTEO	SA-387 Gr.11 Cl.1 / SA-516 Gr.70		LIFTING / TAILING LUGS
TOMA DE TIERRA / PLACA CARACT.	AISI 304		EARTH LUG / NAMEPLATE
ELEMENTOS INTERNOS — REACTOR	CYCLONES: SA-516 Gr.70 / SA-106 Gr.B		REACTOR — INTERNAL ELEMENTS
ELEMENTOS INTERNOS — REACTOR	STRIPPPER SHEDS: SA-204 Gr.C		REACTOR — INTERNAL ELEMENTS
ELEMENTOS INTERNOS — REACTOR	REST OF INTERNALS: SEE DETAIL DWG´S		REACTOR — INTERNAL ELEMENTS
ELEMENTOS INTERNOS — SCRUBBER	SHEDS: SS 410S		SCRUBBER — INTERNAL ELEMENTS
ELEMENTOS INTERNOS — SCRUBBER	SHED SUPPORT BEAMS: SS 410S		SCRUBBER — INTERNAL ELEMENTS
ELEMENTOS INTERNOS — SCRUBBER	WASH OIL DISTRIBUTOR: SS304, 410S		SCRUBBER — INTERNAL ELEMENTS
ELEMENTOS INTERNOS — SCRUBBER	INTERNAL PIPING: SS304, 410S		SCRUBBER — INTERNAL ELEMENTS

PESO Y CAPACIDAD (APROX.)		WEIGHT AND CAPACITY (EST.)
PESO FABRICADO	565000 Kg (INCLUDING CYCLONES AND REFRACTORY SUPPLY IN SHOP)	FABRICATED WEIGHT
PESO TRANSPORTE	VER PLANO / SEE DWG. 2/982-121 2 (V-020700342-I213-FCK-R-101-0111/112/123) 4	SHIPPING WEIGHT
CAPACIDAD	2035 m3	CAPACITY
PESO PRUEBA HIDRAULICA TALLER	2581000 Kg	HYDRAULIC TEST WEIGHT-SHOP

PREPARACION SUPERFICIES		SURFACE PREPARATION
CHORREADO GRADO	SI / YES AS PER DOCUMENT NUMBER: V-020700342-I213-FCK-R-101-0065 (IDESA REF: 2/982-FP-1)	SANDBLASTING GRADE
PINTURA		PAINTING
DECAPADO Y PASIVADO (INT./EXT.)	NO	PICKLING & PASSIVAT. (INT./OUT.)

	LOCATION	DESIGN PRESSURE Kg/cm2 (g)	DESIGN FLUID TEMPERATURE °C	METAL DESIGN TEMPERATURE °C
-TABLA 1- CONDICIONES DE DISEÑO	SCRUBBER TOP	3.88	524	524
	SCRUBBER BOTTOM (SEE NOTE)	3.88	524	524
-TABLE 1- DESIGN CONDITIONS	EXTERNALLY INSULATED DILUTE PHASE	3.99	552	552
	INTERNALLY INSULATED DILUTE PHASE	3.99	552	343
	DENSE BED, STRAIGHT SIDE AN CONE	5.84	543	343
	STRIPPER & BOTTOM CONE	6.52	543	343
	INTERMEDIATE HEAD	0.56 (ΔP Up)	524	524

NOTE: FOR SCRUBBER, THE PRESSURE RESULTING FROM MAXIMUM LIQUID HEAD IN THE LOWER SECTION OF THE VESSEL MUST BE ADDED TO THE DESIGN PRESSURE OF THE SCRUBBER BOTTOM.

-TABLA 2- MARGEN DE CORROSION	SCRUBBER TOP (EXT. / INT.)	0.25mm / 3mm CLADDING
	SCRUBBER BOTTOM (EXT. / INT.)	0.25mm / 6mm CLADDING
	REACTOR DILUTE PHASE EXT. INSULA. (EXT. / INT.)	0.25mm / 3mm
	REACTOR INT. LINED SECTION (INT.)	1.5mm
	REACTOR DENSE PHASE (INT.)	1.5mm
	REACTOR STRIPPER (INT.)	1.5mm
	INTERM. HEAD (SCRUBBER SIDE / REACTOR SIDE)	3mm SS 410S CLADDING / 1.5mm
	SKIRT (EXT. / INT.)	1.5mm / 1.5mm
	ANCHOR BOLTS	3mm (DIA.)
-TABLE 2- CORROSION ALLOWANCE	INTERNALS — REACTOR — STRIPPER SHEDS	10mm TOTAL C.A.
	INTERNALS — REACTOR — CYCLONES	3mm TOTAL C.A.
	INTERNALS — REACTOR — REST OF INTERNALS	SEE DETAIL DWG´S
	INTERNALS — SCRUBBER — SHEDS	3mm TOTAL C.A.
	INTERNALS — SCRUBBER — SHED SUPP. BEAMS	6mm TOTAL C.A.

CARGAS EN FUNDACIONES FOUNDATION LOADS			EMPTY	OPERATION	TEST	CONSTRUCTION (WITHOUT SUPPORTING STRUCTURE)
	WEIGHT (Kg) 2		800000	1660000	2695000	600000 2
WIND	SHEAR (Kg)		N/A 4	N/A 4	N/A 4	16350
WIND	B. MOMENT (Kg x m)		N/A 4	N/A 4	N/A 4	560000
SEISMIC	SHEAR (Kg)		N/A 4	204000	N/A	59100 2
SEISMIC	B. MOMENT (Kg x m)		N/A 4	4453000	N/A	2287000 2

TABLA 3 / TABLE 3 — REACTOR AND SCRUBBER OPERATING CONDITIONS	DESIGN CASE 1	DESIGN CASE 2	60% TURNDOWN	FOULED COS REACTOR
SCRUBBER POOL TEMPERATURE, °C	366	366	366	366
SCRUBBER OVERHEAD TEMP., °C	416	416	416	416
SCRUBBER BOTTOM SHED TEMP., °C	427	427	427	427
REACTOR DENSE BED TEMP., °C	510	516	510	516
REACTOR DILUTE PHASE TEMP., °C	518	524	518	524
STRIPPING STEAM TEMPERATURE, °C	485	485	485	485

DIMENSION / DIMENSION	TOLERANCIAS GENERALES GENERAL TOLERANCES
>2000	±2
>1000	±1.2
>315	±0.8
>120	±0.5
>30	±0.3
>6	±0.2
≤6	±0.1
MECANIZADO TIPO MEDIO/MEDIUM MACHING	±10 ±7 ±5 ±3 ±2 ±1 ±0.5
ELEMENTO SOLDADO/WELDED STRUCTURE	±10 ±7 ±5 ±3 ±2 ±1 ±0.5

PROYECCION/PROJECTION

MODERNIZACION REFINERIA de TALARA
PETROPERU, S.A.

PETROPERU — TECNICAS REUNIDAS

PROJECT: MODERNIZACION REFINERIA DE TALARA	CONTRAC TR PROJECT Nº: 02070
PURCHARSE ORDER No. 020700342-I213	EQUIPMENTS / TAGS No. FCK-R-101
DOCUMENT CODE : PLG-0003	DOCUMENT No. V-020700342-I213-FCK-R-101-0003-F

REVIEW RESPONSE BY PURCHASER: :

☐ REJECTED ☐ REVIEWED WITH COMMENTS ☒ REVIEWED WITHOUT COMMENTS
☐ COMMENTS AS NOTED ☐ REVIEWED AS BUILT ☐ FOR INFORMATION
☐ VOID

DATE : 02-12-2016

VENDOR IDENTIFICATION : IDESA

DOCUMENT TITLE : GENERAL ASSEMBLY

VENDOR DOCUMENT NUMBER 2/982-101 (1/4) Rev. 5

REV.		DATE	SIGNAT.	DATE	SIGNAT.	DATE	SIGNAT.
	OBJETO DE LA REVISION Subject of Revision	ISSUED (D)		REVIEWED (Pr.E.)		APPROVED (T.M.)	
5	DONDE SE INDICA / AS INDICATED	02.12.16	Jesús C	02.12.16	Soledad	02.12.16	
4	DONDE SE INDICA / AS INDICATED	06.10.16	JESUS C.	06.10.16	SOLEDAD	06.10.16	BEGOÑA
3	DONDE SE INDICA / AS INDICATED	05.02.16	JESUS C.	05.02.16	SOLEDAD	05.02.16	BEGOÑA
2	DONDE SE INDICA / AS INDICATED	21.09.15	JESUS C.	21.09.15	SOLEDAD	21.09.15	BEGOÑA
1	ACTUALIZADO / UPDATED	04.05.15	JESUS C.	04.05.15	SOLEDAD	04.05.15	BEGOÑA

CLIENTE: Client: T.R. / PETROPERU	N°. ORDEN: Job N°: 2/982
OBRA: Job: REACTOR FCK-R-101 / SCRUBBER FCK-C-101	
DESIGNACION: Designation: CONJUNTO GENERAL GENERAL ASSEMBLY	
PLANO N°: Drawing N°: 2/982-101 (1/4)	REV. 5 — SIZE A1 — SCALE 1:100

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