



LOW ACTIVITY WASTE PRETREATMENT SYSTEM

HANFORD SITE, RICHLAND WA
PROJECT NUMBER 31269 (T5L01)

DATA SHEET NUMBER 202LP-IXA-IX-TK-210

FOR

LEAD BREAK TANK
202LP-IXA-IX-TK-210

PREPARED FOR

Washington River Protection Solutions, LLC

Revision: B

Status: Preliminary



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DATA SHEET REVISION PAGE

Project Name: LOW ACTIVITY WASTE PRETREATMENT SYSTEM Discipline: Mechanical

Client: Washington River Protection Solutions, LLC

Revision Signatures

B. SEVERSON	4/17/2017	D. SKEATH	4/17/2017
Prepared By	Date	Approved By (SDE)	Date
L ULBRICHT	4/17/2017	P. BELL	4/17/2017
Checked By	Date	Approved By (QA)	Date
TBV		D. PRIEBE	4/17/2017
Verified By (if required)	Date	Approved By (PEM)	Date

Status	Rev No	Date	Prepared By	Pages	Description of Changes
Preliminary	A	1/4/2017	B. Severson	5	Issued for 60% Design Review
Preliminary	B	4/17/2017	B. Severson	5	Issued for Bid

Safety Related Quality Level
 Yes No Full QA Enhanced QA Commercial QA



IX LEAD BREAK TANK
ITEM No. : 202LP-IXA-IX-TK-210
QUANTITY REQUIRED : 1

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REV

DESIGN / OPERATING REQUIREMENTS

1	SERVICE:	40 years	PROCESS CONTENTS:	LAW STREAM, ELUTION STREAM, AND REGENERATION STREAM
2				
3				
4	DESIGN PRESS. @ TEMP. - INTERNAL (AT TOP) :	1 PSIG @ 170 °F	Δ P ACROSS INTERNALS :	By Vendor
5	DESIGN PRESS. @ TEMP. - EXTERNAL :	2 Vacuum PSIG @ 170 °F	S.G. OF PROCESS FLUID :	1-1.35
6	MIN. DESIGN METAL TEMPERATURE (MDMT) :	10 °F @ Atm PSIG	DESIGN LIQUID LEVEL :	24 1/2" from Bottom HOLD
7	OPERATING PRESSURE - INTERNAL :	0 PSIG @ 153 (see note 1, sht 4) °F	HEAD JOINT EFFICIENCY :	1.0
8	MIN. OPERATING TEMPERATURE :	60 °F @ 0 PSIG	SHELL JOINT EFFICIENCY :	1.0
9	MAWP BASIS :	CALCULATED BY VENDOR, PER 15-2-026		
10	CORROSION ALLOWANCE:	SHELL AND HEADS: 1/16 IN.	NOZZLES: 1/16 IN.	INTERNALS: 1/16 IN.
11	CYCLIC SERVICE :	N/A	LETHAL SERVICE :	N/A
12	CONSTRUCTION CODE:	ASME SECTION VIII, DIV. 1	STAMPING:	No
13	NATIONAL BOARD REGISTRATION:	N/A	LETHAL STAMP :	NOT REQ'D.
14	CAPACITY:	MAX: 408 GAL HOLD (see note 2, sht. 4)	OPERATING :	250 GAL HOLD - (see note 2, sht 4)
15	WIND:	N/A	EXPOSURE	N/A
16	SEISMIC:	Seismic Design Category 2, Limit State C	BASIC WIND SPEED :	N/A MPH
17	QUALITY LEVEL:	FULL QUALITY ASSURANCE (FQA)	IMPORTANCE FACTOR :	N/A
			FUNCTIONAL CLASSIFICATION	SAFETY SIGNIFICANT
				SOIL PROFILE TYPE : N/A

INSPECTION AND TESTING

20	RADIOGRAPHY:	15-2-026, 3.3.9.3	ULTRASONIC:	15-2-026, 3.3.9.3
21	MAGNETIC PARTICLE:	N/A	CHARPY IMPACT:	Per Construction Code AT MDMT °F
22	LIQUID PENETRANT:	15-2-026, 3.3.9.3	HARDNESS:	15-2-026, 3.3.9.1, 3.3.9.6
23	HYDROTEST :	15-2-026, 3.3.9.7	FUTURE FIELD TEST :	N/A (CORRODED)
24	MIN. HYDROTEST TEMPERATURE:	15-2-026, 3.3.9.7 °F		

APPLICABLE SPECIFICATIONS AND STANDARDS

15-2-026 ASME Process Vessel Specification
 Design Proposal Drawings (DPD) H-16-001370, H-16-001371

MATERIALS

	PRESSURE PARTS	EXTERNAL	INTERNAL
33	PLATE :	SA240 TP316/316L	SAME
34	FORGINGS :	SA182 F316/316L, SA403 WP316/316L	SAME
35	PIPE & TUBE :	SA312 TP316/316L	SAME
36	BOLTS & STUDS :	SA193 Grade B8M (316L)	SAME
37	NUTS :	SA194 Grade 8MA (316L)	SAME
38	ROD & BAR :	SA276 TP316/316L	SAME
39	WELD FITTINGS :	SA182 F316/316L, SA403 WP316/316L	SAME
40	STRUCTURAL SHAPES :	SA276/479 TP316/316L	SAME
41	GASKETS :	N/A	
42	CLADDING & WELD OVERLAY :	N/A	

FABRICATION

46	WELD PRESSURE JOINT REQUIREMENTS :	15-2-026	SEAL WELD INTERNAL PARTS TO PRESSURE BOUNDARY :	Yes
47	POST WELD HEAT TREATMENT:	Per Construction Code	PWHT BASIS :	Per Construction Code
48	INTERNAL COATING :	None		
49	SURFACE PREPARATION :	internal surfaces to meet 2B surface finish per ASTM A480		
50	EXTERNAL COATING :	None		

APPURTENANCES

54	LIFTING LUGS :	See DPD & 15-2-026	TAILING LUG :	See 15-2-026	VESSEL DAVIT :	N/A
55	LADDER AND PLATFORMS:	N/A	PIPE SUPPORTS / GUIDES :	See DPD	GROUNDING LUGS :	See 15-2-026
56	INSULATION:	N/A	THK : N/A IN.	DENSITY: N/A LB/FT ³	SUPPORTS:	N/A
57	FIREPROOFING:	N/A	THK : N/A IN.	DENSITY: N/A LB/FT ³	SUPPORTS:	N/A

PRELIMINARY LOADS (TO BE COMPLETED BY VENDOR)

	SHIPPING	ERECTION	EMPTY	OPERATING	FIELD TEST
WEIGHTS:	By Vendor LBS	By Vendor LBS	By Vendor LBS	By Vendor LBS	By Vendor LBS
61	WIND SHEAR AT BASE =	N/A LBS	MOMENT AT BASE =	N/A FT - LBS	
62	SEISMIC SHEAR AT BASE =	LBS	MOMENT AT BASE =	FT - LBS	



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For IX-TK-210 see DPD Drawing H-16-001371 for Nozzle Schedule and any additional notes

Note 1 : There are two operating cases for the Break Tanks
Case 1: GRS pump standby mode -internal pressure = Atmospheric @ 77 F
Case 2: GRS pump recirculation mode -internal pressure = Atmospheric @ 153 F

Note 2: Maximum capacity is the vessels liquid carrying capacity up to the vessel overflow nozzle.
Head space volume is not included.

HOLD: Final vessel capacity and operating level is on hold pending finalization of gas generation rates

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NOZZLE LOADS

		Allowable Forces (lbs)			Allowable Moments (ft-lbs)		
NPS	Sch	Fx Lateral	Fy Axial	Fz Lateral	Mx Outplane Bending	My Torsion	Mz Inplane Bending
1	80s	300	300	300	70	150	70
2	80s	850	850	850	225	500	225
3	80s	1,850	1,850	1,850	450	1,100	450

Notes

- Nozzles shall be capable of withstanding all allowable loads occurring in all three directions simultaneously.
- Loads were developed based on minimum wall thickness of 0.5".
- VENDOR shall be responsible for pressure vessel design including specification of adequate wall thickness or repads as required to meet these loads.

