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EXTERNAL REFERENCE / VERSION

Report

Arrangement 5 - CVNB Chemical Additive Skid(26CVNB-SFU-3000) Equipment Summary

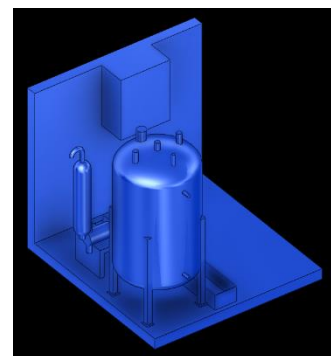
This document provides a summary of CVNB Chemical Additive Skid(26CVNB-SFU-3000)

Approval Process			
	<i>Name</i>	<i>Action</i>	<i>Affiliation</i>
<i>Author</i>	Kanda K.	29 Mar 2023:signed	IO/DG/CNST/PLD/MID/TCWS
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<i>Reviewers</i>	Berruyer F. Ciampichetti A. Gao J. Ghirelli N. Ricou E. Van hove W.	04 Apr 2023:recommended 06 Apr 2023:recommended 06 Apr 2023:recommended 03 Apr 2023:recommended	IO/DG/CNST/PLD/MID/TCWS IO/DG/CNST/PLD/MID/CMW IO/DG/CORP/FPD/PCD/CAL IO/DG/CNST/PLD/MID/TCWS IO/DG/CNST/PLD/MID/TCWS ORNL - Oak Ridge National Laborator...
<i>Approver</i>	Lioce D.	07 Apr 2023:approved	IO/DG/CNST/PLD/MID/TCWS
Document Security: Internal Use RO: Lioce Donato			
<i>Read Access</i>	LG: Arrangement 5 Cost Estimation, LG: USDA Arrangement 5, LG: Management, GG: IO DDGs (and Senior Advisors), AD: IO_Director-General, AD: External Management Advisory Board, AD: OBS - Project Control Office (PCO), AD: IDM_Controller, AD: OBS - Procurement & Contracts Division (PCD), AD: Auditors, p...		

<i>Change Log</i>			
Arrangement 5 - CVNB Chemical Additive Skid(26CVNB-SFU-3000) Equipment Summary (8U76WF)			
<i>Version</i>	<i>Latest Status</i>	<i>Issue Date</i>	<i>Description of Change</i>
v0.0	In Work	10 Mar 2023	
v1.0	Signed	13 Mar 2023	The first version for review.
v2.0	Signed	27 Mar 2023	Updated based on the reviewer's comment.
v2.1	Approved	29 Mar 2023	Updated based on the reviewer's comment. The native word file with revision track with respect to the first version is attached.

OPERATIONAL NARRATIVE

CVNB Chemical additive skid SFU-3000 injects ammonium hydroxide into the primary circuit of IBED (Integrated loop of Blanket, ELM-VS, and Divertor) and NBI (Neutral Beam Injector) PHTS (Primary Heat Transfer System) to control water chemistry.

**Disclaimer:**

- Contents of this document have been assembled, reviewed and approved as for Information Only,
- May not be used for purchasing, fabrication or construction,
- May not be used as verified input to any document (may be used as unverified assumption).

PHYSICAL ATTRIBUTES

<i>Commodity Type:</i>	Chemical injection skid
<i>Number of equipment:</i>	1 unit
<i>Approx. Footprint:</i>	1.2 m x 1.2 m (entire skid)
<i>Approx. Height:</i>	1.5 m (entire skid)
<i>Approx. Weight:</i>	2 500 kg (wet)
<i>Service Fluid:</i>	5% ammonium hydroxide solution
<i>Material Notes (wetted part):</i>	304L / 316L with composition requirement: cobalt <0.20 wt%, Niobium < 0.1 wt% and Tantalum < 0.05 wt%.
<i>Anchoring system</i>	Platform / Bolting
<i>Component configuration</i>	Assembly mounted on skid
<i>Design Life Time:</i>	20 years

WBS: Chemical & Volume Control System

PBS: 26CVNB / GBS: 14-L4-21

Functional Reference: 26CVNB-SFU-3000

REFERENCE DOCUMENTS

Sizing calculation: ITER_D_WVZ79G_v7.4

PID: ITER_D_XJ36P5_v2.4

ENVIRONMENTAL CONDITIONS

<i>Integrated Dose Rate 20yrs:</i>	≤ 10 Gy
<i>Magnetic Field:</i>	≤ 35 mT
<i>Normal temperature</i>	5 – 35 °C
<i>Normal Humidity</i>	40 – 60 %
<i>Normal Pressure relative to atm:</i>	-0.14 kPa
<i>Accidental Temperature</i>	130 °C
<i>Accidental Pressure relative to atm:</i>	-5 to +100 kPa
<i>Accidental Humidity</i>	100 %

DESIGN CODES AND SHIPPING

<i>French Law Pressure Category / Nuclear Class:</i>	Non ESPN / NC
<i>European Law:</i>	PED
<i>Fluid Type / Fluid group</i>	Liquid / Group 2
<i>Conformity Assessment Module:</i>	SEP
<i>Construction Codes:</i>	ASME VIII Div2
<i>Safety Class:</i>	SIC-1
<i>Quality Class:</i>	QC-1
<i>Seismic Class:</i>	SC1 (S)
<i>Fire:</i>	Eurocode 2h
<i>Shipping Information:</i>	Oversea packing per ASME NQA-1 Level C, DAP at ITER site

CVNB – Chemical Additive Skid (26CVNB-SFU-3000)

PARAMETERS

Parameter	Value
Nominal Temperature (°C)	18-35
Design Temperature (°C)	100
Design Pressure (MPa,abs)	1.20
Type of operation	Continuous
Thermal insulation thickness (mm)	50

PROCESS CONNECTION

I.D.	DN / Schedule	Service
1	25 / 40S	Chemical loading
2	25 / 40S	Chemical injection
3	25 / 40S	Local vent
4	25 / 40S	Local drain

CHEMICAL INJECTION PUMP

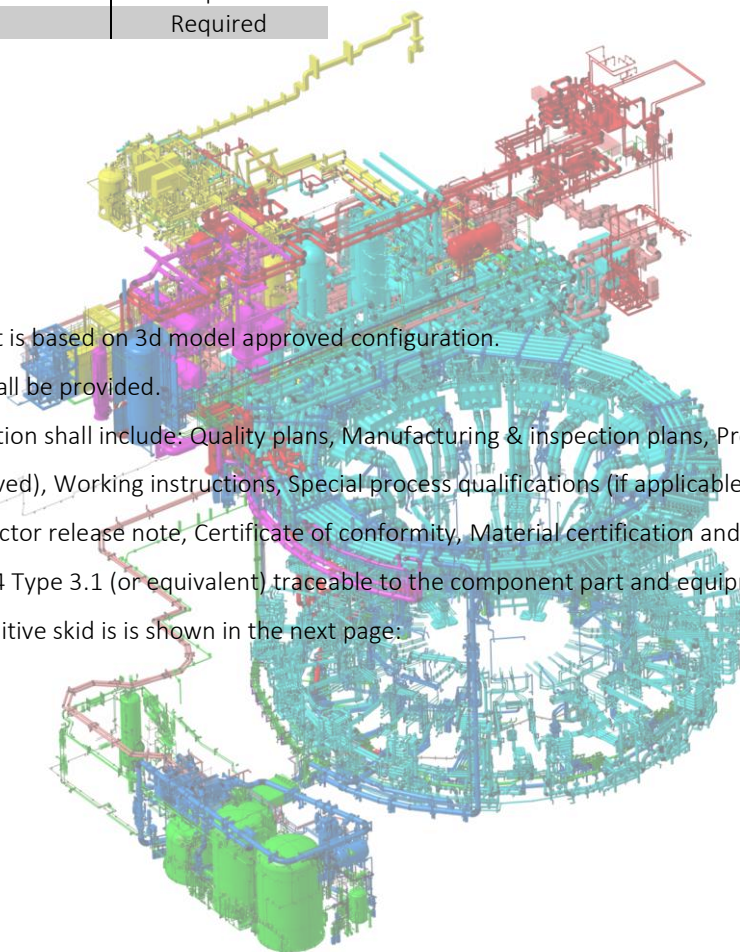
Parameter	Value
Type of pump	Positive displacement
Reference standard	API 675
Pressure at dosing point #1 (MPa,abs)	0.7
Dosing rate for dosing point #1 (L/h)	1.8
Pressure at dosing point #2 (MPa,abs)	0.4
Dosing rate for dosing point #2 (L/h)	0.02
Shaft power (kW)	1
Discharge pressure transmitter	Required
Overpressure protection valve	Required
Pressure regulating valve	Required
Motor Voltage (V)/Phase(-)/Cycle (Hz)	400 / 3 / 50

CHEMICAL ADDITIVE TANK

Parameter	Value
Tank capacity (L)	310
Retention basin for spillage	Required
Level transmitter	Required
Pressure transmitter	Required
Rapture disk for tank	Required

Notes:

1. Approximate footprint is based on 3d model approved configuration.
2. Calibration column shall be provided.
3. Minimum documentation shall include: Quality plans, Manufacturing & inspection plans, Procedures, Calculation note (where design is involved), Working instructions, Special process qualifications (if applicable), Operator qualifications, As-built drawings, Contractor release note, Certificate of conformity, Material certification and inspection documents according to EN 10204 Type 3.1 (or equivalent) traceable to the component part and equipment.
4. P&ID for chemical additive skid is shown in the next page:



CVNB – Chemical Additive Skid (26CVNB-SFU-3000)

