TECHNICAL SPECIFICATION

FOR

N03 CLOSED COOLING WATER
HEAT EXCHANGER
PLATE PACK CHANGE OUT

PWO 31400664 (Engineering Support)
PWO 31595895 (Work Completion)

Revision: 01
Date 5/23/2024

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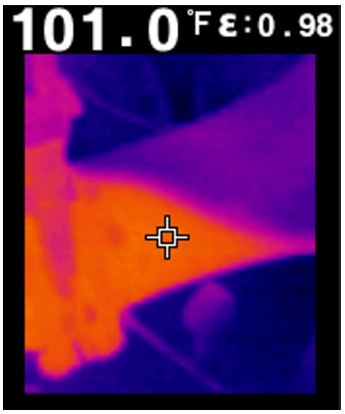
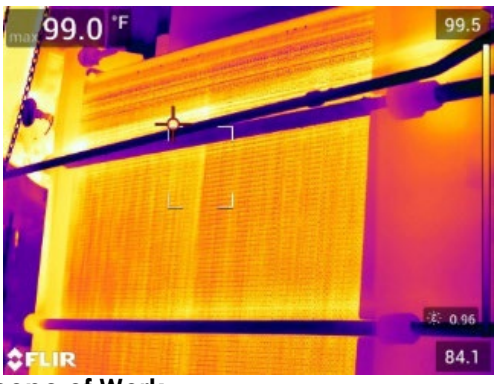
SectionDescription

1.1. General

1.2. Basis of Request

The current N03 Closed Cooling Water (CCW) Heat Exchangers were installed in 1994. Although the riverside of the plate packs has been acid cleaned, no maintenance has been performed on the CCW side, because chemistry samples have provided no indications of contamination. After, 30 years of operation, potential fouling has occurred on the CCW side of the plate pack. The fouling leads to decreased heat transfer and higher temperatures on equipment cooled by the CCW system, such as the Turbine Lube Oil Coolers, Generator Exciter, and Seal Oil Coolers. The original indicator of the condition were thermal inversions on the discharge of the coolers, as indicated by the 2 colors on the first photo below (cold and dark on top, hot and orange on the bottom), caused by potential low flow conditions. This was confirmed by submitting thermal images of the "A" plate pack to the manufacturer, ALFA-LAVAL, as indicated by the temperature lines on the plates on the second and third picture (orange and yellow stripes). To improve the reliability and efficiency of the heat exchanger the plate pack needs to be replaced or refurbished. Due to the lead time of a new plate pack and the uncertainty of the currently install pack's condition, a new titanium plate pack is needed to ensure the work can be completed in the Fall 2025 outage. The old plate pack can then be refurbished if the condition of it allows and installed in the following outage and its pack sent out to be kept as a spare under a separate work order.





1.3. Scope of Work

1.3.1. Base

Purchase a new titanium plate pack in FY25 due to a 14–16-week lead time. Perform the install during Fall 2025 N03 outage in FY26, into either the "A" or "B" CCW heat exchanger. The installation shall take approximately 1 week to complete.

1.3.2. Optional Per JEA

The old plate pack shall be sent out for refurbishment/replacement as determined by its condition and installed in the following outage under a separate work order and PO to the same vendor.

2.0 Contractor Responsibilities

2.1 Provide "in kind" titanium plate pack for CCW Heat Exchanger.
- Upgrade Gasket Material to EDPM due to chemicals for cleaning.
- (Optional Line) Add an additional 56 plates to the plate pack.

2.2 Remove old titanium plate pack and install new plate pack, replacing all end plate gaskets and seals during the fall 2025 N03 Outage from Oct. 16 to Nov. 05, 2025.

2.3 Support CCW Heat Exchanger testing and remediate any leaks or issues.

2.4 (Optional Per JEA) Send old plate pack to their shop for refurbishment/replacement under a separate work order.

3.0 JEA Responsibilities

3.1 Provide a project manager/coordinator to assist in the timely removal of the old equipment and ordering/installation of the new CCW Heat Exchanger plate pack.

3.2 Support the replacement of the existing plate pack by isolating any instrumentation, controls, water, and power to provide a safe work environment.
- De-energize and tag out CCW and River Water Pumps.
- Isolate and tag out CCW and River Water sides of Heat Exchanger.

3.3 JEA to restore system lineups and coordinate with vendors/contractors to perform heat exchanger testing.

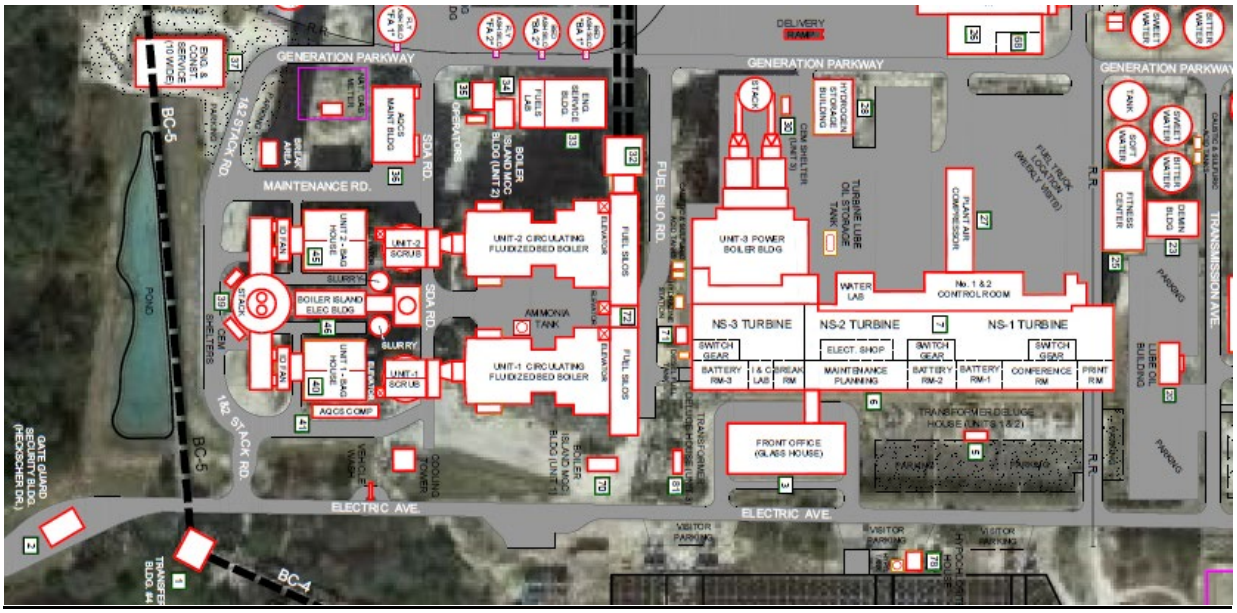
4.0 Startup and Commissioning

4.1 The Contractor shall provide startup assistance and immediately remediate any leaking fittings/alignment adjustments.

5.0 Supporting Documentation

5.1 **Site Location:** 4377 Heckscher Dr, Jacksonville, FL 32226

- NS-3 TURBINE BUILDING ON THE GROUND FLOOR

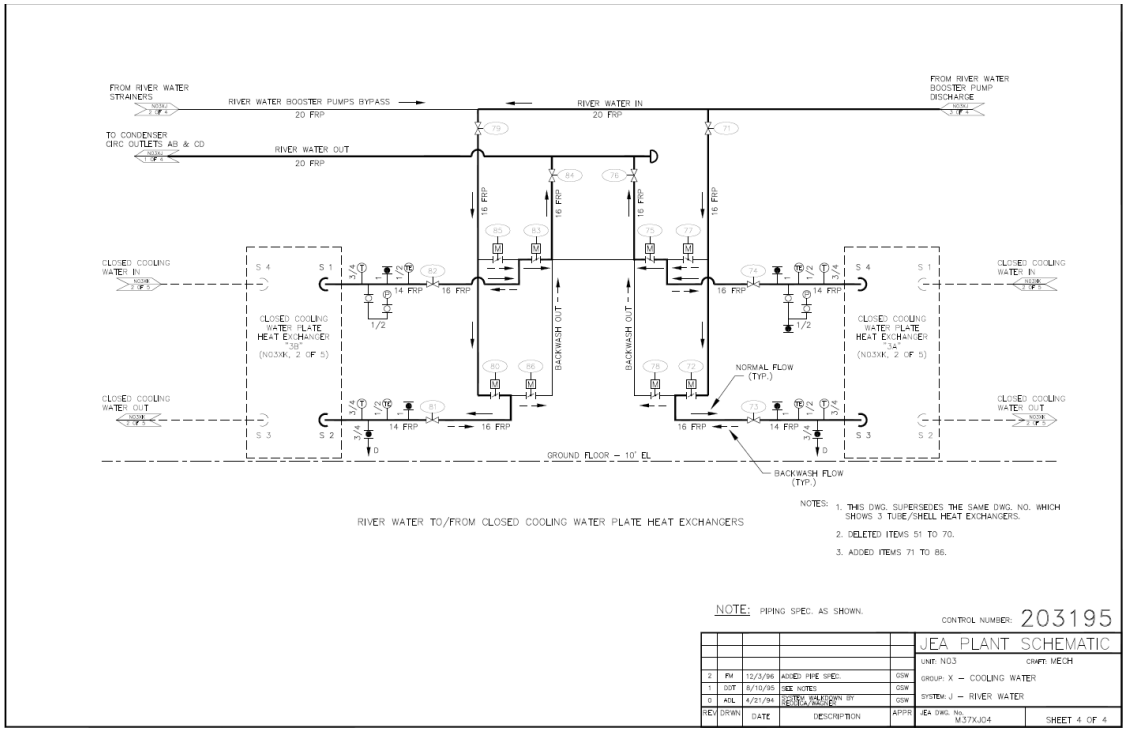


5.2 **Equipment Images:**

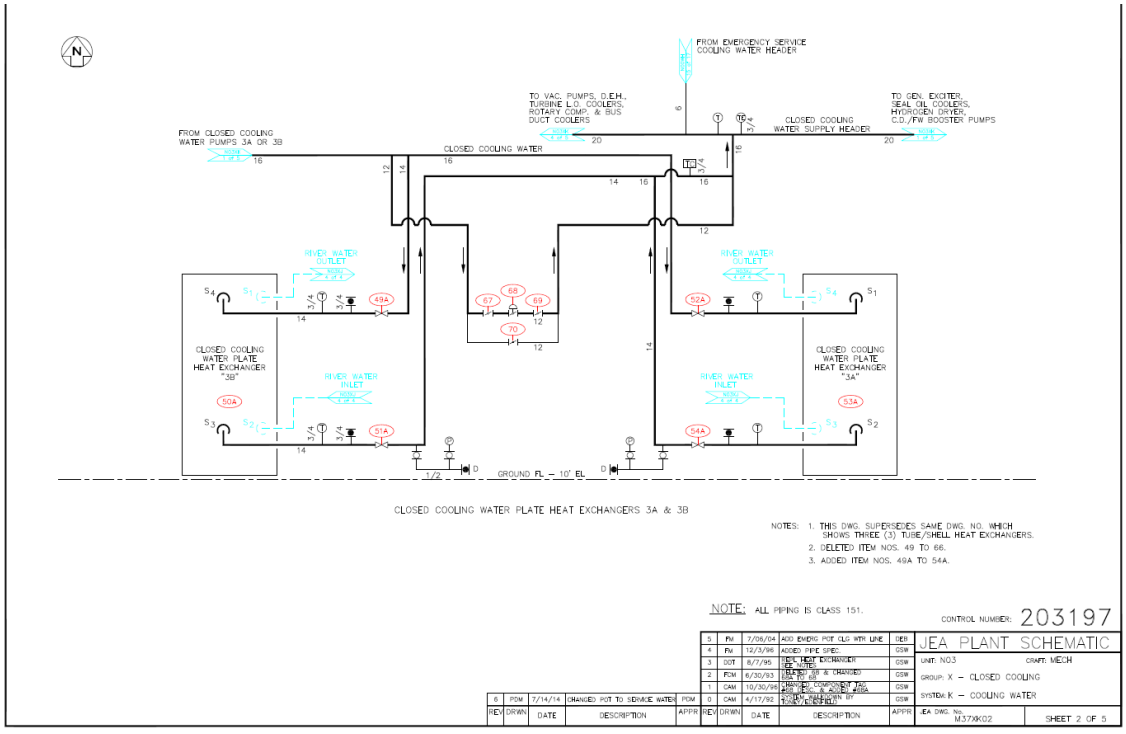
- "A" CLOSED COOLING WATER HEAT EXCHANGER W/ COVERS REMOVED

5.3 Existing System P&ID

A. Reference JEA Drawing: M37XJ04
CONTROL NUMBER: 203195



B. Reference JEA Drawing: M37XK02
CONTROL NUMBER: 203197



Equipment / System Specification

A. Process Parameters / Operating Conditions

PHE Model Type: M30-FM

Fluids		:	HOT SIDE WATER	COLD SIDE RIVER WATER
Flow rates		lb/h	2160000	2067951
Inlet temperature		F	109	90
Outlet temperature		F	95	104.6
Pressure drops		psi	4.89	4.48

Total Surface Area: 8695 SQ. FT.
Flow Regimen Fluids: Counterflow

Connection Locations	IN	:	S4	S2
	OUT	:	S3	S1
	EXTRA :			T1 T2
Material in Connections:			NBR/TITANIUM	NBR/TITANIUM
Total Number of Plates: 442				
Plates	Material	:	Titanium	
	Thickness	:	0.5mm	
Gasket Material: NBR				
Design Pressure: 100 psig				
Design Temperature: 150 F				
Liquid Volumes (US Gallon)		:	366	366
Total Unit Dry Weight: 12,000 lb				

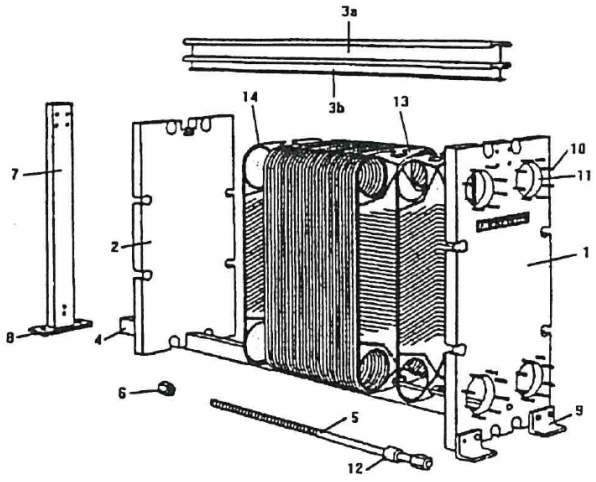
B. Bill of Materials

BACKGROUND

Given are standard AS<E/ASTM materials of construction.

No.	Item	Qty. per Unit	Material	Notes	Dimensions
1.	Frame Plate	1	SA516-70	1	
2.	Pressure Plate	1	SA516-70	1	
3a.	Carrying Bar	1	Carbon Steel	1	3600mm
3b.	Welded T-Profile	1	SA479, 304SS		
4.	Guide Bar	1	SA479, 304SS		3600mm
5.	Tightening Bolt	6	SA193, B7		3450mm 1.5"-6UNC
	Tightening Bolt	4	SA193, B7		3450mm 2"-4.5UNC
6.	Tightening Nut	6	SA194, 2H	2	1.5"-6UNC
	Tightening Nut	4	SA194, 2H	2	2"-4.5UNC
7.	Support Column	1	Carbon Steel	1	
8.	Support Foot	1	SA36	1	
9.	Frame Foot	2	SA36	1	
10.	Stud Bolt	72	SA193, B7	2	
11.	Connection Liner	6	Nitrile, Titanium Ring		
12.	Bearing Box	4			
13.	Channel Plate Gasket	444	Nitrile, glued		
14.	Channel Plate	442	SB256, Gr.1 Titanium		
15.	Inspection Port Cover	2	Carbon Steel, Titanium Clad		
Not Shown	OSHA Shroud	1	Aluminum	3	

Notes: (1) Painted, (2) Zinc Plated, (3) Not Shown



SUBMITTAL REQUIREMENTS

AT A MINIMUM THE FOLLOWING MUST BE INCLUDED INFORMATIOIN MUST BE PROVIDED IN BID SUBMITTAL.

- BASE PRICING FOR "IN KIND" PLATE PACK, WITH UPGRADED EDPM GASKETS AND OPTIONAL ADDITIONAL 56 PLATES, IN FY25
    - SEPARATE PO FOR BILLING OF PLATE PACK ONLY
    - EXPLANATION OF ANY REQUIRED DOWN PAYMENT OR MILESTONE PAYMENTS
    - TO INCLUDE LEAD TIME

- PLATE PACK INSTALLATION COST FOR FY26
    - SEPARATE PO FOR BILLING OF INSTALLATION
    - TO INCLUDE ESTIMATED INSTALLATION TIME

- REFURBISHMENT OF REMOVED PLATE PACK IN FY26
    - TO INCLUDE
        - REFURBISHMENT STANDARDS
        - PRICING FOR REFURBISHMENT
        - TIME TO COMPLETE REFURBISHMENT
        - COMPONENT PRICING INCASE SOME PARTS NEED REPLACEMENT
        - IF DURING REFURBISHMENT IT IS DETERMINED THAT THE PACK IS NOT SALVAGEABLE DOES THE EXPENDED COST APPLY TO A NEW PACK
        - THE COST OF A REPLACEMENT PACK IN THE EVENT IT IS DETERMINED TO BE NEEDED

- PLATE PACK INSTALLATION COST FOR FY27
    - SEPARATE PO FOR BILLING OF INSTALLATION
    - TO INCLUDE ESTIMATED INSTALLATION TIME