



QUOTED SERVICE REPORT

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Service Request Number: 1-85166230275

Status: Completed

Requestor: Raul Cozza

JOHNSON CONTROLS SALISBURY WILMINGTON CB - 0N28

812 First State Blvd

Wilmington, DE 19804-3573

(866) 589-9275

Service Site:

DUPONT EXPERIMENTAL STATION

DUPONT EXPERIMENTAL

Rt 141 Lancaster Pike

Wilmington, DE 19880-0000

Bill To:

E I DUPONT DENEMOURS CO

1325779

Attn Accounts Payable Department

Po Box 80040

Wilmington, DE 19880-0040

Purchase Order: 2600050895

Blanket Purchase Order:

Customer Authorization:

Customer Work Order:

Quoted Amount: \$18,996.00

Service Requested:

2600050895

CHILLER #7 ANNUAL MAINTENANCE (2019 YEAR-START)

REFRIGERANT LEAK TEST Chiller and DOCUMENT LEAKS found (repair "minor" leaks, if possible)

TAKE an ADDITIONAL Refrigerant Sample for Analysis to Confirm High Moisture Content Discovered by the Original Sample taken

TRANSFER R-134A Charge to Storage Tank & Record Total Weight (Leaving 5psi on Chiller)

ASSIST DuPont's Intrumentation Techs with the REMOVAL, CALIBRATION, & REINSTALLATION of CHILLER's Pressure Transducers & RTD Temp Sensors

FURNISH and INSTALL Compressor Oil Filters, and ALL REFRIG FILTER-DRIERS

FURNISH and INSTALL Gearbox Oil Filters and Oil (*Gear/Motor Oil furnished by DuPont*)

INSPECT Gears and Internal Gearbox Components

DISASSEMBLE Motor Coupling, CLEAN, MEASURE/RECORD Cold Alignment

REPACK Motor Coupling with Grease and REASSEMBLE

DISASSEMBLE Compressor Coupling and CLEAN

MEASURE/RECORD Compressor Axial Thrust & Coupling Cold Alignment, REASSEMBLE Coupling

VACUUM out Compressor Motor

BRUSH CLEAN all Oil Cooler Tubes (Gear & Compressor)

PERFORM Maintenance/Calibration on VANE ACTUATOR, INTERSTAGE, & HOT GAS Valves

TRANSFER R-134A Charge back into Chiller & RECORD Quantity of Transfer

DOCUMENT all Tasks and Provide DuPont with a Comprehensive Report

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Lynn Dolphin

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Service Provided:				
Date	Activity Number	Activity Status	Work Performed	By
03/19/2019	1-134HU502	Completed	<p>CHILLER #7 ANNUAL MAINTENANCE (2019 YEAR-START) JCI QUOTE#: 1-13001ZDN</p> <ul style="list-style-type: none"> • Prepped for job & ordered necessary material • Removed Refrigerant Sample from Evaporator while Chiller was running (04/02/2019). Shipped out to Lab for Chemical Analysis in order to confirm the High Moisture content (132 PPM) indicated by the Original Sample taken (12/28/2018) • 2nd Sample Report came back on 04/10/2019. Refrigerant Condition was reported as Normal and Moisture content (35 PPM) is well within the acceptable limit • REFRIGERANT LEAK TESTED the entire Chiller with Electronic Detector & Soap Bubbles (Static Refrigerant Pressure was approximately 70 PSIG) <p>LEAKS FOUND:</p> <ul style="list-style-type: none"> [1] 1/2" Threaded Piping in Comp. Disch. Line for Transducer & Guage <ul style="list-style-type: none"> - Replaced w/ New Piping & Appropriate Sealant [2] Liquid Refrig Filter Drier Inlet & Outlet Angle Valve Packings <ul style="list-style-type: none"> - Cleaned Stems, Tightened Packings, Leaking Stopped [3] Evaporator 6" Sight Glass Packing Gland <ul style="list-style-type: none"> - Sight Glass will need to be replaced <ul style="list-style-type: none"> • Performed Transfer of Chiller Charge into YORK Central Recovery Tank <ul style="list-style-type: none"> - TOTAL DESIGN CHARGE: 8,970 LBS - TOTAL R-134A RECOVERED: 8,030 LBS (04/19/2019) - DEFICIT = 940 LBS (10.47% LOW) - LAST DATE OF CONFIRMED FULL CHARGE: 01/18/2018 (457 Days) 	Kevin Frazee

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			<ul style="list-style-type: none"> Removed all of the Chiller's ASHCROFT Pressure Transducers & delivered to DuPont's Instrumentation Techs for Annual Calibration 	
03/21/2019	1-134ZLCPV	Completed	<ul style="list-style-type: none"> Isolated Main Liquid Refrigerant Filter-Driers. Removed & Replaced w/ Sporlan RC10098 Cores Replaced Head Gasket. Pressure Tested w/ Nitrogen. Evacuated Canister & left a Nitrogen Holding Charge until Chiller Evacuation was performed Replaced Oil Return Line Filter, and the Compressor Oil Filter used last season Replaced Gearbox Oil Charge (Oil furnished by DuPont) Replaced the Gearbox Oil Filter used last season Inspected Oil Return System Components Disassembled Low Speed Coupling Guard & Degreased Area Disassembled Low Speed Coupling Removed Old Grease, Cleaned Hubs & Sleeves, Inspected O-Ring and Gasket Seals Removed HIGH Speed Coupling Guard Disassembled, Inspected, & Cleaned the 3" YORK-FLEX Coupling 	Kevin Frazee

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Date	Activity Number	Activity Status	Work Performed	By
03/28/2019	1-134ZOOJ2	Completed	<p>Started DRIVELINE INSPECTION:</p> <ul style="list-style-type: none"> • COMPRESSOR AXIAL THRUST= 0.013" @ 0 PSIG • H.S. AXIAL SHIMS= 0.191" (0.096" + 0.095") • COMP/GEAR RIM SEPARATION (W/O SPACERS, SHAFTS PUSHED IN)= 0.248" • PINION GEAR FLOAT*= 0.085" • BULL GEAR FLOAT*= 0.050" • MOTOR SHAFT FLOAT*= 0.506" <p>*FLOAT Measurements were taken with BOTH Couplings UNCOUPLED*</p> <ul style="list-style-type: none"> - CALCULATED AXIAL MISALIGNMENT= -0.002" (Within SPEC of +/- 0.025") - GEARBOX SHAFT RADIAL SEAL CLEARANCES are Currently 0.002"-0.003" over Max Spec of 0.004" (as Noted last year) <ul style="list-style-type: none"> • Visually Inspected Gearbox Gears **Slight Radial Wear (approx 1" wide) on the Forward Side of Bull Gear Teeth remains from last year** **Gearbox Bearing Inspection is Recommended on next Annual** <ul style="list-style-type: none"> • Visually Checked Gear Oil Spray Pattern (Good) (Spray Pressure @ 12 psig) • Set Motor Oil Supply Pressure to 10 psig <ul style="list-style-type: none"> • MEASURED COLD ALIGNMENT of LOW SPEED SHAFT w/ LASER and HIGH SPEED SHAFT w/ DIALS • RECORDED for RECORDS <p>**HOT ALIGNMENT CHECK IS ALWAYS RECOMMENDED FOR BOTH**</p>	Kevin Frazee

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Date	Activity Number	Activity Status	Work Performed	By
04/02/2019	1-134ZOOK5	Completed	<ul style="list-style-type: none"> • Re-Installed all of the Chiller's ASHCROFT Pressure Transducers (Calibration Checked and Recorded by DuPont Instrumentation) • Verified Operation and Calibrated both High Pressure Safety Switches (OPEN @ 185 PSIG on RISE / CLOSE @ 175 PSIG on FALL) • Inspected ALLEN BRADLEY Control System • Performed Maintenance/Calibration on VANE ACTUATOR, INTERSTAGE, & HOT GAS Valves • Drained, Cleaned, Flushed, Filled, & Vented Air on all Oil Coolers (Gear & Compressor) 	Kevin Frazee
04/29/2019	1-13FO6G5A	Completed	<ul style="list-style-type: none"> • Repacked Low Speed Coupling with Fresh Grease • Reassembled Coupling and Evenly Torqued to Rated Spec (100 Ft/Lbs) • Re-Installed Motor Coupling Guard • Cleaned Motor • Cleaned YORK-FLEX High Speed Coupling, Reassembled, Torqued to Rated Spec (100Ft/lbs) • Re-Installed High Speed Coupling Guard • Drained 5 Gallons of Shaft Seal Oil from Atmospheric Tank CALCULATED SHAFT SEAL LEAK RATE (since last Maintenance) = 3.214 ml/hr • ADDED 5 Gals. of NEW York "K" Oil to Comp. (Customer Supplied) to achieve 1/2 TSG 	Kevin Frazee
05/23/2019	1-13QRP46S	Completed		Kevin Frazee

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Date	Activity Number	Activity Status	Work Performed	By
05/31/2019	1-13M3X7NW	Completed	<p>** NITROGEN PRESSURE TEST, EVACUATION, & VACUUM HOLD TEST were Performed and covered under SR# 1-85961918063 (" Evap Sight Glass Replacement") **</p> <p>** Due time constraints with the delivery of the New Sight-Glass, DuPont requested the Chiller be re-charged, made operational, and have the Sight Glass replaced at a later date **</p> <ul style="list-style-type: none"> • Transferred Full Design R-134A Charge back into CHILLER (05/22-23/2019) CURRENT TOTAL CHILLER CHARGE = 8,790LBS • DuPont Operators Started Chiller CHILLER STARTUP on 05/23/2019: CHILLER RUNTIME TOTAL= 87,995Hrs (DISPLAYED) / 89,740Hrs (ACTUAL) • CHILLER OPERATION is Currently STABLE <p>*** A more thorough Inspection of Performance is RECOMMENDED when Chiller Load can be increase to Max ***</p>	Kevin Frazee

Materials Used:	
Description	
OIL FILTER ELEMENT	
SPORLAN ACTIVATED DRIER	
CTG FLT **F-48 / 026 20990 000	
NIMH POWER STICK FOR DTE	

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Refrigerant Tracking:											
Activity #	Action Taken	Type	Amount	Asset ID	Customer Tag	Serial Number	Model Number	Circuit ID	Circuit Tag	Leak Location	Leak Rate
1-13M3X7N W	Add Refrig Lk Tst Rep Rcov Rcl	R-134a	940	1-EIZYN96	CHILLER #7	MRP626904	OM3000	1-YEV9W18	Circuit 1	PIPING	10.48

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Service Order Warranty Terms and Conditions

PARTS WARRANTY:

Johnson Controls, Inc. (JCI) warrants that original equipment, parts or components manufactured or labeled by JCI shall be free from defects in material and workmanship under normal usage and proper installation and maintenance for a period of one (1) year from the date of shipment. Equipment, parts or components not manufactured or labeled by JCI shall carry a warranty from defects in material and workmanship under normal usage and proper installation and maintenance for a period of ninety (90) days from the date of shipment. Notwithstanding the foregoing, in the event JCI is reasonably able to identify a warranty for a period longer than the ninety (90) days applicable to equipment, parts or components not manufactured or labeled by JCI, it will assign all assignable rights under such warranty to Customer and reasonably cooperate in the enforcement of any warranty claim. Recertified or replacement parts installed on equipment and still under the original equipment manufacturer's warranty are covered for ninety (90) days or the remainder of the original equipment manufacturer warranty period, whichever is longer. For large tonnage chillers, JCI will warrant under normal usage and proper installation and maintenance for a period of one (1) year from the date of shipment: screw compressors, motors, control panels and components, VFD's and components and Liquid Cooled Solid State Starters and components. For small tonnage chillers, JCI will warrant under normal usage and proper installation and maintenance for a period of one (1) year from the date of shipment: scroll compressors, condenser coils, control panels and components, screw compressors (DXS and Mustang), and fan motors. In the event of a valid warranty claim, the Customer's remedy shall, at JCI's sole discretion and subject to the exclusions herein, be limited to repair or replacement of the subject equipment, part or component conditioned upon the return to JCI of any defective equipment, part or component. This Parts Warranty does not cover any shipping, handling or transportation charges or any associated labor costs.

LABOR WARRANTY:

Johnson Controls, Inc. (JCI) warrants its workmanship or that of its agents in relation to installation of materials for a period of ninety (90) days from date of installation or with respect to service work for a period of ninety (90) days from the date of service. Customer acknowledges that re-performance shall be its exclusive and only remedy with regards to any services provided by JCI. Customer shall bear all labor costs associated with the repair or replacement of failed material that is outside the scope of this express labor warranty. All warranty labor shall be executed during JCI normal business hours.

These warranties do not extend to any equipment which has been repaired by others, abused, altered, or misused in any way, or which has not been properly and reasonably maintained.

THESE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE OF MERCHANTABILITY AND FITNESS FOR A SPECIFIC PURPOSE. UNDER NO CIRCUMSTANCES SHALL JCI BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARISING FROM OR RELATING TO ANY DEFECT IN MATERIAL OR WORKMANSHIP OF EQUIPMENT OR THE PERFORMANCE OF SERVICES.

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