INVENTORY 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

pc 003212 No.

THE WARD COMPANIES
TRANSFORMER DEPT.

DIV: _____

Purchased From:			Original Cost:
Town:		State:	Incoming Freight:
Received Via:	Date:	Our P.O. No.:	Total Investment:
Sold To:			Shop Order No.:
Cust. P.O. No.:		Date Billed:	Invoice No.:

TRANSFORMER DATA: _____ TRANSFORMER

MFG: Ward	KVA: 50		Phase: 1	Cycles: 60	Class: OA
PRI. Volts: 23000	°C Rise: 65	Imp: 2.0	Type:	Form:	Insul. Class:
SEC. Volts: 277/480Y	Pol: SUBT	H.V. Bil: KV	L.V. Bil: KV	Ser. No. 80C318	
No. Taps: 4 — 2½% Taps — 2 Up — 2 Down		Gals. Oil:	Year Built:	No.:	
H.V. Bush: ☐ Stud ☐ Eyebolt ☐ Spade ☐ Wall ☐ Cover ____ Holes	Loc: Area:	HT. Top H.V. Bush:	Max. HT.	C. & C. Wt.	
L.V. Bush: ☐ Stud ☐ Eyebolt ☐ Spade ☐ Wall ☐ Cover ____ Holes	Loc: Area:	HT. Less H.V. Bush:	Ship. Height:	T. & F. Wt.	
H.V. Terminal Enclosure: ☐ Throat	☐ Air ☐ Oil Chamber	Wide:	Ship. Width:	Oil Wt.	
L.Y. Terminal Enclosure: ☐ Throat	☐ Air ☐ Oil Chamber	Deep:	Ship Depth:	Total Wt.	

Pothead: ☐ H.V. ☐ L.V. ☐ Top ☐ Bottom	☐ Oil Level Gauge ☐ w/c	☐ Live Front ☐ Dead Front
Tank Design: ☐ Straight ☐ Oblong ☐ Round ☐ Flat	☐ Temperature Gauge ☐ w/c	☐ Radial Feed ☐ Loop Feed
Radiators: ☐ Rd. Tubes ☐ Panels ☐ Removable	☐ Wdg. Temp. Gauge ☐ w/c	☐ Bushing Wells
☐ Welded Top ☐ Bolted Top ☐ Sealed Tank ☐ Gas-Oil-Sealed	☐ Pres./Vac. Gauge ☐ w/c	☐ Load Break Inserts
☐ Conservator (Removable ☐ Yes ☐ No) ☐ Relief Pipe	☐ Pres./Vac. Reg. Valve	☐ Load Break Bushing
☐ Auto. Gas Sealed ☐ Free Breathing	☐ Pres. Relief Device ☐ w/c	☐ LBOR Switch - POS.
☐ Oil ☐ Silicon ☐ RTemp ☐ Water-Cooled	☐ Pres. Relief Valve	☐ Dual Voltage Switch
☐ Gas - Type _____ ☐ Other _____	☐ Sudden Pres. Relay ☐ S.I. Rel.	☐ Delta - Wye Switch
83.055 Subt	☐ Drain Valve ☐ Lower	☐ Arresters ( ) _____ KV
L-G- 800	☐ Tap Changer ☐ Ext. ☐ Int.	☐ _____ Deep Compartment
H-G- 800 } 1000	☐ Fans ( ), _____ V., _____ PH.	☐ Fuses - Type _____
H-L- 1000	☐ Fan Cont. _____ V., _____ PH.	☐ Bayonet ☐ ELSP Back-Up
	☐ Bushing C.T. ☐ H.V. _____ ☐ L.V. _____	☐ NX ☐ ARC Strangler ☐ Clip Style
	☐ Arrester MTGS. ☐ H.V. ☐ L.V.	☐ Drywell Canister ☐ Loadbreak ☐ Non-Loadbreak
	☐ Oil Pump	☐ Internal Weak Link
	☐ TCUL	☐ ELS Bayonet
		☐ EFD

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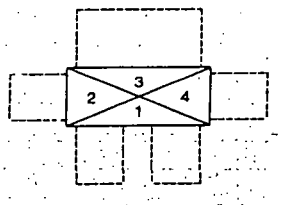


TRANSFORMER TEST DATA

KVA	PH.	CY.	PRI. V.	SEC. V.
AMBIENT TEMP. °F	TOP OIL TEMP. °C	HUMIDITY %		

INSULATION RESISTANCE:

TEST	TEST RESULTS IN MEGOHMS	TEST KV	GUARD
LOW TO GROUND &	3000	1000	
HIGH TO GROUND &	6000	1000	
HIGH TO LOW:	3000	1000	

WINDING RESISTANCE: (IN OHMS)

$X_1 - X_2$		$H_1 - H_2$	
$X_1 - X_3$		$H_1 - H_3$	
$X_2 - X_3$		$H_2 - H_3$	
$X_0 - X_1$		$H_0 - H_1$	

TRANSFORMER TURNS RATIO: (POLARITY: ☒ SUBTRACTIVE ☐ ADDITIVE)

VOLTAGE	TAP NU.	% TAP	H – H /X – X	H – H /X – X	H – H /X – X	CALCULATED
	1		87.226			
	2		85.142			
	3	100%	83.055			
	4		80.970			
	5		78.886			
			OUT ON	100% TAP	23000	

DIELECTRIC INSULATION TESTS:

APPLIED	WINDING	VOLTAGE RATING	TEST VOLTAGE APPLIED IN KV	DURATION OF TESTS IN SECS.
POTENTIAL	H	23000	37.5	60
TEST	X	277/4804	7.5	60

INDUCED POTENTIAL TEST	_____ TIMES RATED VOLTAGE ACROSS FULL WINDING; _____ KV FROM _____ KV LINE TERMINAL TO GRD; _____ CYCLES PER SEC. FOR _____ CYCLES

EXCITING CURRENT:

VOLTAGE _____ LINE CURRENT _____	A PHASE _____ AMPS., _____ %	B PHASE _____ AMPS., _____ %	C PHASE _____ AMPS., _____ %	AVERAGE _____ %

LOSSES / IMPEDANCE:

NO LOAD LOSS WATTS	LOAD LOSS WATTS	TOTAL LOSS WATTS	% IX	% IR	% IZ	CALCULATED % IZ

OIL TEST DATA: NEW oil

AVERAGE DIELECTRIC	NEUT. #	COLOR	I.F.T.	SPECIFIC GRAVITY	PCB	
30 – 30 – 30 – 30 AV.						

CHECK LIST:

	H.V. BUSH. LOC:	L.V. BUSH. LOC:	DATE TESTED: 1-18-95
☐ OIL LEVEL			TESTED BY: [signature]
☐ NO LEAKS			APPROVED BY:
☐ PRI. BUSHINGS			
☐ SEC. BUSHINGS	16°C		
☐ GAUGES	H-1-H-2-61.5	X-1-X-2-9.44	
☐ INSPECTION COVER			
☐ BUSHINGS MARKED			
☐ SEC. GRD. CONNECTED			
☐ WARD LABELS			

INVENTORY 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99

PC 003213 No.

THE WARD COMPANIES
TRANSFORMER DEPT.

DIV: _____

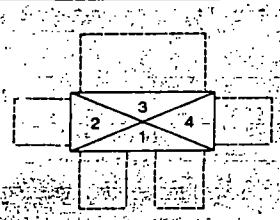
Purchased From:			Original Cost:
Town:		State:	Incoming Freight:
Received Via:	Date:	Our P.O. No.:	Total Investment:
Sold To:			Shop Order No.:
Cust. P.O. No.:		Date Billed:	Invoice No.:

TRANSFORMER DATA: _____

TRANSFORMER

MFG: UWARD	KVA: 50		Phase: 1	Cycles: 60	Class: OA
PRI. Volts: 23000	°C Rise 65	Imp: 2.0	Type:	Form:	Insul. Class:
SEC. Volts: 277/4804	Pol: Subt	H.V. Bil: KV	L.V. Bil: KV	Ser. No.: 80C317	
No. Taps: 4 – 2½ % Taps – 2 Up – 2 Down		Gals. Oil:	Year Built:	No.:	
H.V. Bush: ☐ Stud ☐ Wall ☐ Eyebolt ☐ Cover ☐ Spade ____ Holes	Loc: Area:	HT. Top H.V. Bush:	Max. HT.	C. & C. Wt.	
L.V. Bush: ☐ Stud ☐ Wall ☐ Eyebolt ☐ Cover ☐ Spade ____ Holes	Loc: Area:	HT. Less H.V. Bush:	Ship. Height:	T. & F. Wt.	
H.V. Terminal Enclosure: ☐ Throat ☐ Air ☐ Oil Chamber		Wide:	Ship. Width:	Oil Wt.	
L.V. Terminal Enclosure: ☐ Throat ☐ Air ☐ Oil Chamber		Deep:	Ship Depth:	Total Wt.	

Pothead: ☐ H.V. ☐ L.V. ☐ Top ☐ Bottom	☐ Oil Level Gauge ☐ w/c	☐ Live Front ☐ Dead Front
Tank Design: ☐ Straight ☐ Oblong ☐ Round	☐ Temperature Gauge ☐ w/c	☐ Radial Feed ☐ Loop Feed
Radiators: ☐ Flat ☐ Rd. Tubes ☐ Panels ☐ Removable	☐ Wdg. Temp. Gauge ☐ w/c	☐ Bushing Wells
☐ Welded Top ☐ Bolted Top ☐ Sealed Tank ☐ Gas-Oil-Sealed	☐ Pres./Vac. Gauge ☐ w/c	☐ Load Break Inserts
☐ Conservator (Removable ☐ Yes ☐ No) ☐ Relief Pipe	☐ Pres./Vac. Reg. Valve	☐ Load Break Bushing
☐ Auto. Gas Sealed ☐ Free Breathing	☐ Pres. Relief Device ☐ w/c	☐ LBOR Switch - POS.
☐ Oil ☐ Silicon ☐ RTemp ☐ Water-Cooled	☐ Pres. Relief Valve	☐ Dual Voltage Switch
☐ Gas - Type _____ ☐ Other _____	☐ Sudden Pres. Relay ☐ S.I. Rel.	☐ Delta - Wye Switch
83.061 Subt	☐ Drain Valve ☐ Lower	☐ Arresters ( ) _____ KV
	☐ Tap Changer ☐ Ext. ☐ Int.	☐ _____ Deep Compartment
L-G- 40	☐ Fans ( ), _____ V., _____ PH.	☐ Fuses - Type _____
H-G- 200 } 1000	☐ Fan Cont. _____ V., _____ PH.	☐ Bayonet ☐ ELSP Back-Up
H-L- 300	☐ Bushing C.T. ☐ H.V. _____ ☐ L.V. _____	☐ NX ☐ ARC Strangler ☐ Clip Style
	☐ Arrester MTGS. ☐ H.V. ☐ L.V.	☐ Drywell Canister ☐ Loadbreak ☐ Non-Loadbreak
	☐ Oil Pump	☐ Internal Weak Link
	☐ TCUL	☐ ELS Bayonet
		☐ EFD



TRANSFORMER TEST DATA

KVA	PH.	CY.	PRI. V.	SEC. V.
AMBIENT TEMP. °F	TOP OIL TEMP. °C	HUMIDITY %		

INSULATION RESISTANCE:

TEST	TEST RESULTS IN MEGOHMS	TEST KV	GUARD
LOW TO GROUND &	10,000	1000	
HIGH TO GROUND &	10,000	1000	
HIGH TO LOW:	8,000	1000	

WINDING RESISTANCE: (IN OHMS)

$X_1 - X_2$		$H_1 - H_2$	
$X_1 - X_3$		$H_1 - H_3$	
$X_2 - X_3$		$H_2 - H_3$	
$X_0 - X_1$		$H_0 - H_1$	

TRANSFORMER TURNS RATIO: (POLARITY: ☒ SUBTRACTIVE ☐ ADDITIVE)

VOLTAGE	TAP NU.	% TAP	H – H /X – X	H – H /X – X	H – H /X – X	CALCULATED
	1		87.226			
	2		85.141			
	3	100%	83.055			
	4		80.973			
	5		78.886			
			OUT ON 100% TAP 23,000			

DIELECTRIC INSULATION TESTS:

APPLIED	WINDING	VOLTAGE RATING	TEST VOLTAGE APPLIED IN KV	DURATION OF TESTS IN SECS.
POTENTIAL	H	23000	37.5	60
TEST	X	277/480Y	7.5	60

INDUCED POTENTIAL TEST: _____ TIMES RATED VOLTAGE ACROSS FULL WINDING; _____ KV FROM _____ KV LINE TERMINAL TO GRD; _____ CYCLES PER SEC. FOR _____ CYCLES

EXCITING CURRENT:

VOLTAGE _____	A PHASE	B PHASE	C PHASE	AVERAGE
LINE CURRENT _____	_____ AMPS., _____ %	_____ AMPS., _____ %	_____ AMPS., _____ %	_____ %

LOSSES / IMPEDANCE:

NO LOAD LOSS WATTS	LOAD LOSS WATTS	TOTAL LOSS WATTS	% IX	% IR	% IZ	CALCULATED % IZ

OIL TEST DATA: NEW OIL

AVERAGE DIELECTRIC	NEUT. #	COLOR	I.F.T.	SPECIFIC GRAVITY	PCB	
30 30 – 30 – 30 AV.						

CHECK LIST:

	H.V. BUSH. LOC:	L.V. BUSH. LOC:	DATE TESTED: 1-18-95
☐ OIL LEVEL			TESTED BY: [signature]
☐ NO LEAKS			APPROVED BY:
☐ PRI. BUSHINGS			
☐ SEC. BUSHINGS	OHMS. 16°C		milliOHMS
☐ GAUGES	H-1 – H-2 – 61.5		X-1 – X-2 – 9.42
☐ INSPECTION COVER			
☐ BUSHINGS MARKED			
☐ SEC. GRD. CONNECTED			
☐ WARD LABELS			

UNITED POWER SERVICES INCORPORATED

OIL TEST REPORT

CUSTOMER: Texas Gulf CITY: Aurora STATE: NC UPSI NO: 229

NAME PLATE DATA

Make	Wan. (Tag)	High Voltage	23,000	No. Radiators		Ground	
Serial No.	800317	Low Voltage	277/480Y	No. Fans		Outside	X
Company Equip. #	P-123	Impedance	2.0	Physical Dimensions	41"x51"	Inside	
Location	Sulfuric Acid M	KVA	50	Gas Headspace	Yes	Platform	
Gallons	E. 40	Phase/Cycle	1/60	Water Cooled	No	Pole	X
Fluid	Oil	Date Mfg.		Bushings Top-Side/Oil	Top/Side	Roof	
Valves	P.T.	Welded Lid	No	Conservator Tank	No	Access	321

TRANS	X	OCB		RECT.		FURN		PRECIP.		TAPC		SW.		REG.	

EQUIPMENT INSPECTION DATA

Date	Oper. Temp	Peak Temp	Fluid Level	PSI VAC	Paint	Bushing	Environment	LEAKS	RECOMMENDED SERVICE
9/90					Poor	Dirty	Clean	None	Paint

LIQUID TEST DATA

Date	D877 Dielectric	D974 Neut No	D971 I.F.T.	D1524 Color	D1524 Visual	D1298 S.G	D924 P.F.	D1533 H2O/PPM	D3612 DGA	ICP Metals	PCB PPM	Classification	Required Service
9/90	41	0.100	21.3	1.5	Clear	0.885						Marginal	TC

PCB PPM CONTENT

Date	PCB Certificate Number	1242	1254	1260	Other	Total
10/90	23184					<.01

PO Box 100922
Nashville, Tennessee 37210-0922
(615) 255 3700

UNITED POWER SERVICES INCORPORATED

OIL TEST REPORT

CUSTOMER: Texas Gulf CITY: Aurora STATE: NC UPSI NO: 230

NAME PLATE DATA

Make	Ward (Tag)	High Voltage	23,000	No. Radiators		Ground	
Serial No.	800318	Low Voltage	277/480Y	No. Fans		Outside	X
Company Equip. #	P-124	Impedance	2.0	Physical Dimensions	[illegible]	Inside	
Location	Sulfuric Acid Maint.	KVA	50	Gas Headspace	Yes	Platform	
Gallons	5,40	Phase/Cycle	1/60	Water Cooled	No	Pole	X
Fluid	Oil	Date Mfg		Bushings Top/Side/Oil	[illegible]	Roof	
Valves	P.I.	Welded Lid	No	Conservator Tank	No	Access	30'
TRANS X	DC2	RECT.	FURN.	PRECIP.	PARC	SW	REC.

EQUIPMENT INSPECTION DATA

Date	Oper Temp	Peax Temp	Fluid Level	PSI VAC	Paint	Bushing	Environment	LEAKS	RECOMMENDED SERVICE
9/90					Poor	Dirty	Clean	None	Paint

LIQUID TEST DATA

Date	D877 Dielectric	D974 Neut No	D971 I.F.T.	D1524 Color	D1524 Visual	D1298 S.G	D924 P.F	D1533 H20/PPM	D3612 DGA	ICP Metals	PCB PPM	Classification	Required Service
9/90	55	0.082	20.4	1.5	Clear	0.885						Marginal	TC

PCB PPM CONTENT

Date	PCB Certificate Number	1242	1254	1260	Other	Total
10/90	33185					BDL

P.O. Box 100922
Nashville, Tennessee 37210-0922
(615) 255-3700

U.S. EPA REGION IV

SDMS

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V. 2-040506