#### Preventive Maintenance Work Order

	*P264	026*	Date: 1/2/2025 13:24:14
Work Order No: <b>P264</b> PM ID Number:	FZ04	026*	Plan Priority: <b>P</b>
Project ID:	000		Safety? Y
Asset Number:	0005400		Asset Type: Equipment
	0016597 - SWITCHGEA	R. GE -	Asset Code: ELEC
2nd Parent Asset No.:		., •	Work Location: WPP -
Asset Process:	NON PROCESS		Origination Date: 12/8/2024 11:49
Asset Location:			Due Date: 1/3/2025
Legacy Location:			Schedule Date: 12/23/2024
0	CHARGERS BATT,	BATTERI	Closed Date
-	ELECTRICAL 052-WPP		Work Area: <b>WP</b>
•	BRIZENDINE, MATTHE		Fault Code: PERIODIC PM
Phone No:	,		Work Order Type: PM
Maint Work Group:	ELECTRICAL WTP		Status: CMP
•	BRIZENDINE, MATTHE		Compliance Type:
Assigned To:	BURRUSS, CHRISTOPH SHAKOOR, NEEL	ief Brooks, El	NATHAN
Scheduled To:			
Work Order Planner:	BRIZENDINE, MATTHE	NE	
Frequency Code:	MTH1C	Last PM Usage:	Last PM Date: 11/18/2024
Work Requested:	BATTERY CHARGER	AT WPP -	ASSET NUMBER: 0005400
	Asset. This PM is to be Please use the attached required PM. Sign and Order. Change Work Or	performed by the d Preventive Main Date the PM Chec der Status to CMI	en assigned responsibility for this Electrical Maintenance Team. tenance Checklist to perform the klist. Input the hours spent on the Work P (Complete). Return the Completed The Trades Supervisor will Review and
Supp Requireme	ent:		Meter Reading:
		CORREC	
Fuses are good. W		er chgarger off	hmed out fuses to find out if they are good or not. . We then load tested each battery and also checked ested output voltage.
All Datterles tes	ted Good		
			Completed Date: / /
Completed By:			Completed Date: / //
Completed By: SIGN OFF: Production			Maintenance:/ / :
Completed By:	on <u>/ /</u>		Maintenance://: Signed:
Completed By: SIGN OFF: Production Signed:	on// LABOR	:	Maintenance:// : Signed: MATERIAL
Completed By: SIGN OFF: Production	on <u>/ /</u>		Maintenance://: Signed:
Completed By: SIGN OFF: Production Signed:	on// LABOR	:	Maintenance://: Signed: MATERIAL
Completed By: SIGN OFF: Production Signed:	on// LABOR	:	Maintenance://: Signed: MATERIAL



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Customer City of Richmond Dept. Public Utilities

Owner	City of Richmond Dept. Public Utilities	

Site Location	Circuit Designation/Substation	Equipment ID	PAGE
Asset			NO.
PLANT			
15056RIC - MAIN CKT. BKR. SEC. INJ.	ТЕ		
PLANT			
15056RIC - MAIN CKT. BKR. SEC. INJ.	TE		
PLANT			
15056RIC - MAIN CKT. BKR. SEC. INJ.	TE		
PLANT			
15056RIC - MAIN 0	CKT.		
15056RIC - MAIN CKT. BKR. SEC. INJ. PLANT			
15056RIC - CKT. BKR. SE			
PLANT			
15056RIC - SPARE CKT. BKR. SEC. IN	ц т		
PLANT			
15056RIC - TIE CKT. BKR. SEC. INJ. TI	EST		
PLANT			
15056RIC - TRANSFORMER CKT.	BK		
PLANT			
15056RIC - MAIN CKT. BKR. SEC. INJ.	TE		
PLANT			
15056RIC - CKT. BKR. SEC	. IN		
15056RIC - TIE CKT. BKR. SEC. INJ. TI WWTP	EST		
15000RIC - MAIN	SEC		
WWTP			
15000RIC - SECONDARY	INJ		
WWTP			
15000RIC - MAIN SECONDARY INJEC	ΤΙΟ		
WWTP			
15000RIC - SEC	ON		
WWTP			
15000RIC - WWTP	SE		
15000RIC - PLNT MAIN SERVICE			
WWTP			
15000RIC - TIE SECONDARY INJECTIO	ON		
WWTP			
15000RIC - TRANSFORMER SECO	NDA		
WWTP			
16100RIC - BUS TIE VACUUM CIRCUIT	T BR		
WWTP			
16100RIC - PS	V		
WWTP			
16100RIC - V/	ACU		
16100RIC - XFMR-			
WWTP			
16100RIC - XFMR-	VA		
WWTP			
16100RIC - VACU	MUM		



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Owne	er <u>City of Richmond Dept. Public Utilities</u> er <u>City of Richmond Dept. Public Utilities</u>		
Site Location	Circuit Designation/Substation	Equipment ID	PAG
Asset		·	NO
WWTP			
16100RIC - SERVIC	E FD- VACUU		
WWTP			
16100RIC - XFMR	MAIN VACUUM		
WWTP			
16100RIC - XFMR			
WWTP			
External Document Placehol	der		
WWTP			
94500RIC - TRANSFORMER	र		
WWTP			
94500RIC - TRANSFORMER	र		
WWTP			
16100RIC - BUS TIE VACUU	JM CIRCUIT BR		
16100RIC -	SWGR		
WWTP			
WWTP			
16100RIC -	SWGRF		· · · · ·
WWTP			
16000 - MAIN MEDIUM VOL			
94500RIC - TRANSFORMER	R TEST(ALL XF		
WWTP 16100RIC -			
WWTP	V		
16100RIC - GENERATOR-	VACUUM CIR		
WWTP			
16100RIC -	SWGR		
WWTP	3001		
WWTP			
	EDER VA		
WWTP			
16100RIC - SPARE VACUU	M CIRCUIT BR		
WWTP			
16100RIC - SPARE VACUU	M CIRCUIT BR		
WWTP			
SIDE 2 RELAYS			
WWTP			
94500RIC - TRANSFORMER	र		
WWTP			
94500RIC - TRANSFORMER	र		



# Comment Summary Job #RVA22131-140



		FAGE
Custome	er City of Richmond Dept. Public Utilities	
Owne		-
	<u></u>	_
		Page:
Site Locati	on:	- Date: <u>1/13/2023</u>
Circuit Designation/Substati	on:	Duto: <u>1/10/2020</u>
Equipment	ID:	
Equipme	ent: 15056RIC - MSBH-HDP2 CKT. BKR. SEC. INJ. TEST	-
		_
COMMENTS: REPLACED WITH N	EW TRIP UNIT	
		Page:
Site Locati		Date: <u>6/3/2022</u>
Circuit Designation/Substati		_
Equipment		_
Equipme	ent: 16000 - MAIN MEDIUM VOLTAGE AIR CKT. BKR	_
COMMENTS: PASSED ALL NETA	MTS SPECIFICATIONS	
		-
		Page:
Site Locati		Date: <u>6/3/2022</u>
Circuit Designation/Substati		_
Equipment		_
Equipme	ent: 94500RIC - TRANSFORMER TEST(ALL XFMRS)	_
COMMENTS: High side of transform	ner tested only, Low side X0 bushing was leaking so we didnt mess with it because we didnt want to make	e it leak even more.
Site Locati	on:	Page:
Circuit Designation/Substati		Date: <u>11/2/2022</u>
Equipment		
Equipme	ent: 94500RIC - TRANSFORMER	_
COMMENTS: FUSES FOR FAN W	ERE BLOWN. XFMR RATED AT LOWEST VALUE UNTIL FANS ARE REPAIRED.	



NETA.	

CUSTOMER City of Richmond Dept. Public Utilities		PAGE	
ADDRESS		JOB #	RVA22131-140
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REPRESENTATIVE			
DATE <u>11/8/2022</u> AMBIENT TEMPERATURE <u>72 °F</u> -UMIDITY <u>37 %</u>	EQPT. LOCATION	DOUGLAS	DALE
SUBSTATION SWITCHGEAR	POSITION	MAIN	1
SUBSTATION SWITCHGEAR	POSITION	MAIN	
ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS			
COMMENTS:			

DEFICIENCIES:





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DATE <u>11/8/2022</u> AMBIENT TEMPERATURE <u>72</u> °F HUMIDITY <u>35 %</u>	EQPT. LOCATION	DOUGLAS	SDALE
SUBSTATION SWITCHGEAR	POSITION		
ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS			
ACCESSMENT OF BILLANEN. FACED ALL NETA WITS SPECIFICATIONS			
COMMENTS:			
DEFICIENCIES:			





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DATE 11/	/8/2022	AMBIENT TEMPER	ature <u>73</u> °F	HUMIDITY 36	%	EQPT. LOCATION			
		MAIN				POSITION		MAIN SEF	RVICE
ASSESSMENT	F OF BREAKE	ER: PASSED ALL NET	A MTS SPECIFICATI	ONS					

COMMENTS: DEFICIENCIES:

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





CUSTOMER	City of F	Richmond Dept. Public Utili	ties		PAGE	
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REPRESENTA					TELEPHONE	
DATE 11	/8/2022	AMBIENT TEMPERATURE	7 <u>2 °F</u> -IUMIDITY <u> 37 %</u>	EQPT. LOCATION	DOUGLAS	SDALE
SUBSTATION		MSBH-		POSITION		-MAIN
ASSESSMENT	OF BREAK	ER: PASSED ALL NETA MTS SPE	CIFICATIONS			
COMMENTS:						
DEFICIENCIES	S:					

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





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SUBSTATION	MSBH-		POSITION	MAI	N
	NEDDEAKED. DACCER ALL NETA MTC.	PECIEICATIONS			
NOOEOOMEN	OF BREAKER: PASSED ALL NETA MTS S				
COMMENTS:					

DEFICIENCIES:

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





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SUBSTATION MSBH-	POSITION	MSBH -	-
ASSESSMENT OF BREAKER: PASSED ALL NETA ATS SPECIFICATIONS			

COMMENTS: DEFICIENCIES: REPLACED WITH NEW TRIP UNIT

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





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	-	AMBIENT TEMPERATURE	72		37 %	EQPT. LOCATION		
		MSBH-			01 /0		SPAF	
SUBSTATION		MODIT				POSITION		
ASSESSMENT	OF BREAKEF	R: PASSED ALL NETA MTS S	PECIFIC	ATIONS				

COMMENTS: DEFICIENCIES:

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





	y of Richmond Dept. Public	Utilities			PAGE	
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DATE 11/8/20	D22 AMBIENT TEMPERATURE	: <u>72 °F</u> -IUM	/idity <u>37 %</u>	EQPT. LOCATION	DOUGLAS	SDALE
SUBSTATION	MSBH	-		POSITION	TIE	
ASSESSMENT OF B	REAKER: PASSED ALL NETA MTS	SPECIFICATIONS	; ;			
-		-				

COMMENTS: DEFICIENCIES:

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





OUNTONED		lichmond Dept. Public	Litilition			DAGE	
CUSTOMER			Unines			PAGE	RVA22131-140
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OWNER		actimona Dept. 1 abile	Ounties				
REPRESENTA		AMBIENT TEMPERATURE	- 72	°E ILINIDITY 37 %		TELEPHONE DOUGLAS	
SUBSTATION		MSBH				TRANSFORM	
SUBSTATION		MODI			FOSITION_		
ASSESSMENT	OF BREAKE	R: PASSED ALL NETA MT	6 SPECIFIC	ATIONS			

COMMENTS: DEFICIENCIES:

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





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		_		<u> </u>		00	70			
SUBSTATION		MSBL-						POSITION	 MAII	N
ASSESSMENT	OF BREAKE	ER: PASSED ALL NETA MTS S	PECIFI	CATION	IS					

COMMENTS: DEFICIENCIES:

TEST EQUIPMENT USED: DFLRORCH0080/ MEGGRCH105 / SQUARE D FULL FUI





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SUBSTATION		MSBL-					MSB -	
A00500151			DECIE					
ASSESSMENT	OF BREAK	ER: PASSED ALL NETA MTS S	PECIFI	CATIONS				

COMMENTS: DEFICIENCIES:

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER





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DATE 11		AMBIENT TEMPERATURE	64	°F HUMIDITY 35 %	EQPT. LOCATION		
		MSBL-				TIE	
ASSESSMENT	OF BREAKE	R: PASSED ALL NETA MTS S	PECIF				
COMMENTS:							
DEFICIENCIES	S:						

TEST EQUIPMENT USED: SECONDARY TEST SET/ DLRO / 1KVMEGGER



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SUBSTATION	ELECTRICAL RM	POSITION		MAIN
AOOEOOMENIT				
ASSESSMENT	OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS			

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SUBSTATION	ELECTRICAL RM	POSITION	MSBH-	
AGOEGOMENT				
ASSESSMENT	OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS			

TEST EQUIPMENT USED:

RMS310 SECONDARY TEST SET





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SUBSTATION		POSITION		MAIN
_				
ASSESSMENT	OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS			





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SUBSTATION ELECTRICAL RM POSITION MSBL-1B-	PANEL
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		-	
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SUBSTATION		POSITION	MAIN SERVICE XFMR				

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N	ETA
	7.

ADDRESS JOB # RVA22131-140 OWNER CIty of Richmond Dept. Public Utilities REPRESENTATIVE TELEPHONE DATE 6/13/2022 AMBIENT TEMPERATURE _72 _*F _tUMIDITY _32 % EQPT. LOCATION DOUGLASDALE SUBSTATION ELECTRICAL RM POSITION TIE
REPRESENTATIVE
DATE 6/13/2022 AMBIENT TEMPERATURE 72 °F HUMIDITY 32 % EQPT. LOCATION DOUGLASDALE
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SUBSTATION	ELECTRICAL RM	POSITION	TRANSFOR	MER
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SUBSTATION SG	POSITION	BUS	TIE
ASSESSMENT OF BREAKER: PASSED ALL NETA MIS SPECIFICATIONS			

COMMENTS: DEFICIENCIES:



AV	/oltyx Company						
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SUBSTATION		SG-			POSITION		PS

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:



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SUBSTATION	SG-	POSITION	MAIN	FDR-1				

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:



AV	oltyx Company					
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	9/2022		78 °F HUMIDITY 43 %		DOUGLAS	DALE 78
SUBSTATION		SG-		POSITION	XFMR-	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:



A 1	oityx Company	y					
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SUBSTATION		SG-			POSITION	XFMR-	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:



CUSTOMER City of Richmond Dept. Public Utilities PAGE OWNER City of Richmond Dept. Public Utilities Refression Date 6/13/2022 AMBIENT TEMPERATURE 78 *F - UMIDITY 43 *5 EOPT. LOCATION DOUGLASDALE SUBSTATION SG- POSITION OUGLASDALE O			
ADDRESS JOB # RVA22131-140 OWNER City of Richmond Dept. Public Utilities REPRESENTATIVE TELEPHONE DATE 6/13/2022 AMBIENT TEMPERATURE 78 °F +UMIDITY 43 % EQPT. LOCATION DOUGLASDALE	CUSTOMER City of Richmond Dept. Public Utilities	PAGE	
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REPRESENTATIVE     TELEPHONE       DATE     6/13/2022     AMBIENT TEMPERATURE     78 °F     1UMIDITY     43 %     EQPT. LOCATION     DOUGLASDALE	OWNER City of Richmond Dept. Public Utilities		
DATE 6/13/2022 AMBIENT TEMPERATURE 78 °F HUMIDITY 43 % EQPT. LOCATION DOUGLASDALE		TELEPHONE	
	DATE 6/13/2022 AMBIENT TEMPERATURE 78 °F_HUMIDITY 43 % EQPT. LOCATION		SDALE

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:



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SUBSTATION SG	POSITION		/ICE FD

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:



A Voltyx Company					NEIA.
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REPRESENTATIVE				TELEPHONE	
DATE 6/13/2022	AMBIENT TEMPERATURE 78	3 °F HUMIDITY 45 %		DOUGLAS	
SUBSTATION	SG-		POSITION	XF	MR MAIN

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:

TESTED BY: RE/JC



A toky company					
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SUBSTATION	SG		POSITION	XFMR	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:

# **Electric Power Systems**



COR WWTP			Status	No status
50/51				
		Serial Number		
		Special ID		
		Location	Richmond VA	
		Company		
		Division	Richmond	
/ Date		Asset Tag		
j.maitland		Reg. Category	Calibration	
2022-Jun-	08 15:35	Next test due		
XFMR	PHASE	Sta	tus	No status
	PHASE		tus	No status
XFMR		:	tus	No status
<b>XFMR</b> 2022-Jun-01 13:29	Comment	j.maitland	tus atus	No status Pass
<b>XFMR</b> 2022-Jun-01 13:29 2022-Jun-01 11:26	Comment	j.maitland		
XFMR 2022-Jun-01 13:29 2022-Jun-01 11:26 Relay INFO	Comment	j.maitland Sta		
XFMR           2022-Jun-01 13:29           2022-Jun-01 11:26           Relay INFO           Document Step	Comment Tested by	j.maitland Sta		
XFMR 2022-Jun-01 13:29 2022-Jun-01 11:26 Relay INFO Document Step 2022-Jun-01 11:16	Comment Tested by Commen	j.maitland Sta		
XFMR 2022-Jun-01 13:29 2022-Jun-01 11:26 Relay INFO Document Step 2022-Jun-01 11:16	Comment Tested by Commen Tested by	j.maitland Sta		
XFMR 2022-Jun-01 13:29 2022-Jun-01 11:26 Relay INFO Document Step 2022-Jun-01 11:16 2022-Jun-01 11:15	Comment Tested by Commen Tested by	j.maitland Sta t y j.maitland rmware Version		
	50/51	50/51	50/51 Serial Number Special ID Location Company Division Asset Tag j.maitland Reg. Category	50/51 Serial Number Special ID Location Richmond VA Company Division Richmond Asset Tag j.maitland Reg. Category Calibration

Electric Power Systems

ast modified 2022 ast tested 2022 Instrument SN 2021 Calibrated on 2021 Label / Value 2021 Average 20 Dropout Pickup Fest TIM Description Time ast modified 2022 ast tested 2022	Ctive Pickup, Current (1 2-Jun-01 11:20 2-Jun-01 11:20 I-Nov-01 Tested 022-Jun-01 11:20 E 022-Jun-01 11:23 2-Jun-01 11:23	Expected 6.000 A Op Op	Commo Tested Device + 10.00 %		Actual 6.100 A 6.200 A 6.200 A Status	% Error 1.67 %	Result Pass Pass Pass
ast tested 2022 strument SN 2021 Label / Value 2021 Average 20 Dropout Pickup 20 est TIM escription Time ast tested 2022 ast tested 2022 strument SN 5	2-Jun-01 11:20 I-Nov-01 Tested 022-Jun-01 11:20 E Overcurrent Character 2-Jun-01 11:23	6.000 A Op Op	Tested Device +	by j.ma Firmware Vers	sion Actual 6.100 A 6.000 A 6.200 A		Pass Pass
strument SN alibrated on 2021 Label / Value Average 20 Dropout Pickup escription Time ast modified 2022 ast tested 2022 strument SN	Tested 022-Jun-01 11:20	6.000 A Op Op	Device +	Firmware Vers	sion Actual 6.100 A 6.000 A 6.200 A		Pass Pass
Average 20 Dropout Pickup Est TIM 2022 ast tested 2022 ast tested 2022	Tested 022-Jun-01 11:20 E Overcurrent Character 2-Jun-01 11:23	6.000 A Op Op	+	-	Actual 6.100 A 6.000 A 6.200 A		Pass Pass
Label / ValueAverage20Dropout20Pickup2022estTIMescriptionTimeast modified2022ast tested2022strument SN1000	Tested 022-Jun-01 11:20 E Overcurrent Character 2-Jun-01 11:23	6.000 A Op Op	+	-	Actual 6.100 A 6.000 A 6.200 A		Pass Pass
Average 20 Dropout Pickup est TIM escription Time ast modified 2022 ast tested 2022 strument SN	022-Jun-01 11:20 E • Overcurrent Characte 2-Jun-01 11:23	6.000 A Op Op		- 10.00 %	6.100 A 6.000 A 6.200 A		Pass Pass
Dropout Pickup est TIM escription Time ast modified 2022 ast tested 2022 strument SN	E 9 Overcurrent Characte 2-Jun-01 11:23	Ор Ор	10.00 %	10.00 %	6.000 A 6.200 A	1.67 %	Pass
Pickup est TIM escription Time ast modified 2022 ast tested 2022 strument SN	Overcurrent Characte 2-Jun-01 11:23	Ор			6.200 A		
est TIM escription Time ast modified 2022 ast tested 2022 strument SN	Overcurrent Characte 2-Jun-01 11:23						Pass
escription Time ast modified 2022 ast tested 2022 Istrument SN	Overcurrent Characte 2-Jun-01 11:23	eristic Plot (IA)			Status		
ast modified 2022 ast tested 2022 Istrument SN	2-Jun-01 11:23	eristic Plot (IA)					Pa
ast tested 2022 strument SN							
strument SN	2-Jun-01 11:24		Comme	ent			
			Tested	by j.ma	aitland		
alibrated on 2021							
	-Nov-01		Device	Firmware Vers	sion		
Label / Value	Tested	Expected	+	-	Actual	% Error	Result
2.000 * Tap 20	022-Jun-01 11:24	1.2800 s	10.00 %	10.00 %	1.2418 s	-2.98 %	Pass
3.000 * Tap		0.5270 s	10.00 %	10.00 %	0.5304 s	0.65 %	Pass
4.000 * Tap		0.3700 s	10.00 %	10.00 %	0.3331 s	-9.97 %	Pass
est INS	т.				Status		Pa
escription Man	ual Current Ramp (T1)						
ast modified 2022	2-Jun-01 11:25		Comme	ent			
ast tested 2022	2-Jun-01 11:26		Tested	by j.ma	aitland		
strument SN							
calibrated on 2021	-Nov-01		Device	Firmware Vers	sion		
Label / Value	Tested	Expected	+	-	Actual	% Error	Result
Ramp 20	022-Jun-01 11:26	45.000 A	10.00 %	10.00 %	46.000 A	2.22 %	Pass
est Sea	ll in				Status		Pa
escription Docu	ument Step						
ast modified 2022	2-Jun-01 13:29		Comme	ent			
ast tested 2022	2-Jun-01 11:26		Tested	by j.ma	aitland		
strument SN							
alibrated on 2021	-Nov-01		Device	Firmware Vers	sion		
Label / Value	Tested	Expected	+	-	Actual	% Error	Result
* 20	022-Jun-01 11:26						Pass
riginator Notes							
* 20 Originator Notes	022-Jun-01 11:26						Pas

 Last modified
 2022-Jun-01 11:42

 Report generated on 12/30/2022 12:22:29 PM

Comment



#### LIQUID FILLED TRANSFORMER TESTS

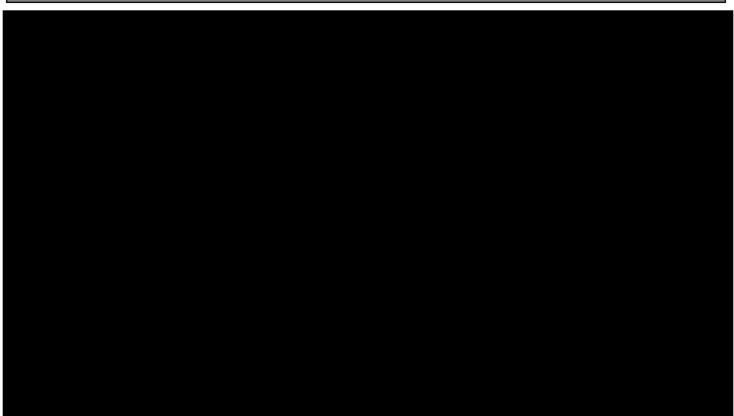


CUSTOMER City of Richmond Dept. Public Utilities PAGE	
ADDRESS JOB # F	RVA22131-140
OWNER City of Richmond Dept. Public Utilities	
REPRESENTATIVE TELEPHONE	
DATE 6/3/2022 AMBIENT TEMPERATURE 90 °F HUMIDITY 72 % EQPT. LOCATION	
SUBSTATION POSITION XFMF	ł
COMMENTS XO INSULATOR LEAKING OIL	
CONVINIENTS AD INSULATOR LEARNING OIL	
VISUAL AND MECHANICAL INSPECTION:	
Inspect physical and mechanical condition.	PASS
Inspect anchorage, alignment, and grounding.	PASS
Verify the presence of PCB labeling.	PASS
Prior to cleaning he unit, perform as-found tests, if required.	PASS
Clean bushings and control cabinets.	SEE COMMENTS
Verify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure relay.	PASS
Verify that cooling fans and/or pumps operate correctly.	PASS
Inspect bolted electrical connections for high resistance.	PASS
Verify correct liquid level in tanks and bushings.	N/A
Verify that posi ive pressure is maintained on gas-blanketed transformers.	PASS
Perform inspections and mechanical tests as recommended by the manufacturer.	PASS
Test load tap-changer in accordance with Section 7.12.	PASS
Verify the presence of transformer surge arresters.	PASS
Perform as-left tests.	PASS
Verify de-energized tap-changer position is left as specified.	PASS

TEST EQUIPMENT USED: RCH0079, RCH0090







#### NOTE: SHORT EACH WINDING ON ITSELF

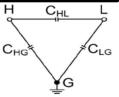
#### INSULATION RATING KEY

G = GOOD

- D = DETERIORATED
- I = INVESTIGATE
- B = BAD

- H = HIGH VOLTAGE WINDING
- L = LOW VOLTAGE WINDING
- G = GROUND
- N = NEUTRAL BUSHING





COMMENTS: DEFICIENCIES:



#### LIQUID FILLED TRANSFORMER TESTS



CUSTOMER City of Richmond Dept. Public Utilities PAGE	
ADDRESS JOB # R\	/A22131-140
	7.22101110
OWNER City of Richmond Dept. Public Utilities	
REPRESENTATIVE TELEPHONE	
DATE <u>5/23/2022</u> AMBIENT TEMPERATURE 79 °F HUMIDITY 30 % EQPT. LOCATION SUB	
SUBSTATION POSITION	
COMMENTS	
VISUAL AND MECHANICAL INSPECTION:	
Inspect physical and mechanical condition.	PASS
Inspect anchorage, alignment, and grounding.	PASS
Verify the presence of PCB labeling.	PASS PASS
Prior to cleaning he unit, perform as-found tests, if required. Clean bushings and control cabinets.	N/A
Verify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure relay.	PASS
Verify that cooling fans and/or pumps operate correctly.	PASS
Inspect bolted electrical connections for high resistance.	PASS
Verify correct liquid level in tanks and bushings.	N/A
Verify that positive pressure is maintained on gas-blanketed transformers.	PASS
Perform inspections and mechanical tests as recommended by the manufacturer.	PASS
Test load tap-changer in accordance with Section 7.12.	PASS
Varify the suscesses of two of successes as used as a subscription of the subscription	PASS
Verify the presence of transformer surge arresters.	
Perform as-left tests.	PASS
	PASS PASS
Perform as-left tests.	







#### NOTE: SHORT EACH WINDING ON ITSELF

#### INSULATION RATING KEY

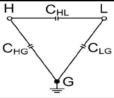
G = GOOD

- D = DETERIORATED
- T = INVESTIGATE
- B = BAD

#### H = HIGH VOLTAGE WINDING L = LOW VOLTAGE WINDING

- G = GROUND
- N = NEUTRAL BUSHING

EQUIVALENT CIRCUIT



#### EXCITING CURRENT TESTS

ASSESSMENT OF TRANSFORMER: PASSED ALL NETA ATS SPECIFICATIONS

COMMENTS: DEFICIENCIES:





CUSTOMER City of Richmond Dept. Public Utilities	PAGE
ADDRESS	JOB # RVA22131-140
OWNER City of Richmond Dept. Public Utilities	
REPRESENTATIVE	TELEPHONE
DATE 6/2/2022 AMBIENT TEMPERATURE 84 °F HUMIDITY 57 % EQPT	T. LOCATION DOUGLASDALE
SUBSTATION	POSITION BUS TIE

Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS	Z	Good	
INSULATING MEMBERS	<b>N</b>	Good	
MECHANICAL CONNECTIONS	V	Good	
STRUCTURAL MEMBERS	<b>N</b>	Good	
CUBICLE	V	Good	
RACKING DEVICES	<b>N</b>	Good	
SHUTTER	Z	Good	

Description	INSPECTED	CONDITION	CLEAN/LUBE
CONTACT FINGERS	Z	Good	
VACUUM BOTTLE	4	Good	
CONTACT EROSION INDICATOR	Z	Good	
OPERATING MECHANISM	4	Good	
CONTACT SEQUENCE	Z	Good	
GROUND CONNECTION	4	Good	
AUXILIARY DEVICES	Z	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:

TESTED BY: TP





CUSTOMER	City of Richmond Dept. Public Utilities	PAG	E
ADDRESS		JOB	# RVA22131-140
OWNER	City of Richmond Dept. Public Utilities		
REPRESENTA	TIVE	TELEPHO	NE
DATE 6/2	2/2022 AMBIENT TEMPERATURE 84 °F HUMIDITY 57 %	EQPT. LOCATION DOUG	LASDALE
SUBSTATION		POSITION	WGR :

Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS	Z	Good	
INSULATING MEMBERS	J	Good	
MECHANICAL CONNECTIONS	V	Good	
STRUCTURAL MEMBERS	J	Good	
CUBICLE	V	Good	
RACKING DEVICES	J	Good	
SHUTTER	V	Good	

Description	INSPECTED	INSPECTED CONDITION	
CONTACT FINGERS	Z	Good	
VACUUM BOTTLE	7	Good	
CONTACT EROSION INDICATOR	Z	Good	
OPERATING MECHANISM	7	Good	
CONTACT SEQUENCE	Z	Good	
GROUND CONNECTION	7	Good	
AUXILIARY DEVICES	V	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:





CUSTOMER	City of Richmond Dept. Public Utilities	PAGE	
ADDRESS		JOB #	RVA22131-140
OWNER	City of Richmond Dept. Public Utilities		
REPRESENTA	\TIVE		
DATE 6/2	2/2022 AMBIENT TEMPERATURE 84 °F HUMIDITY 57 % EQPT. LOCATION	DOUGLAS	SDALE
SUBSTATION	POSITION	SER	VICE FEEDER
SOBOLAHON		0210	
SOBSTATION		<u> </u>	
		<u>OER</u>	
<b>SUBSTATION</b>			
SUBSTATISA			

Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS	Z	Good	
INSULATING MEMBERS	4	Good	
MECHANICAL CONNECTIONS	Z	Good	
STRUCTURAL MEMBERS	4	Good	
CUBICLE	Z	Good	
RACKING DEVICES	4	Good	
SHUTTER	V	Good	

Description	INSPECTED	CONDITION	CLEAN/LUBE
CONTACT FINGERS	4	Good	
VACUUM BOTTLE	4	Good	
CONTACT EROSION INDICATOR	Z	Good	
OPERATING MECHANISM	4	Good	
CONTACT SEQUENCE	Z	Good	
GROUND CONNECTION	4	Good	
AUXILIARY DEVICES	Z	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:

TESTED BY: TP





CUSTOMER City of Rich	mond Dept.	Public Utilities	6			P/	AGE	
ADDRESS						JC	B# RVA	22131-140
OWNER City of Rich	mond Dept.	Public Utilities	6					
REPRESENTATIVE						TELEPH	IONE	
		RATURE 84		57	% EQPT. LOCATION		IGLASDALE	
		RATURE 04		57		000		
SUBSTATION					POSITION		SWGR.	
Description	INSPECTED	CONDITION	CLEAN/LUBE	ΙΓ	Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS	V	Good		C	ONTACT FINGERS	Z	Good	
INSULATING MEMBERS		Good		V	ACUUM BOTTLE	4	Good	
MECHANICAL CONNECTIONS		Good		C	CONTACT EROSION INDICATOR	V	Good	
STRUCTURAL MEMBERS		Good		0	PERATING MECHANISM	<b>T</b>	Good	
CUBICLE		Good		C	ONTACT SEQUENCE	V	Good	
RACKING DEVICES		Good		G	ROUND CONNECTION	4	Good	
SHUTTER		Good		A	UXILIARY DEVICES	V	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:

TESTED BY: TP



### MEDIUM VOLTAGE AIR CIRCUIT BREAKER TEST



CUSTOMER	City of R	chmond Dept. Public U	tilities			PAGE	
ADDRESS						JOB #	RVA22131-140
OWNER	City of R	chmond Dept. Public U	tilities				
REPRESENTAT	TIVE					TELEPHONE	
DATE 6/3	8/2022	AMBIENT TEMPERATURE	88 °F HUMIDITY	48 %	EQPT. LOCATION	DOUGL	ASDALE
SUBSTATION					POSITION	MAIN INCOMING E	BREAKER

Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS	Z	Good	С
INSULATING MEMBERS	4	Good	С
MECHANICAL CONNECTIONS	Z	Good	C/L
STRUCTURAL MEMBERS	4	Good	
CUBICLE	Z	Good	С
RACKING DEVICES	4	Good	L
SHUTTER	V	Good	
CONTACT FINGERS	4	Good	

Description	INSPECTED	CONDITION	CLEAN/LUBE
MAIN CONTACTS	Z	Good	С
ARCING CONTACTS	4	Good	
ARC CHUTES	Z	Good	
PUFFER OPERATION	4	Good	
OPERATING MECHANISM	Z	Good	L
CONTACT SEQUENCE	4	Good	
GROUND CONNECTION	Z	Good	
AUXILIARY DEVICES	4	Good	

COMMENTS: DEFICIENCIES: PASSED ALL NETA MTS SPECIFICATIONS

TEST EQUIPMENT USED: 10 KV MEGGER RCH0067 /DLRO 6240 1837650BOV 10



### LIQUID FILLED TRANSFORMER TESTS

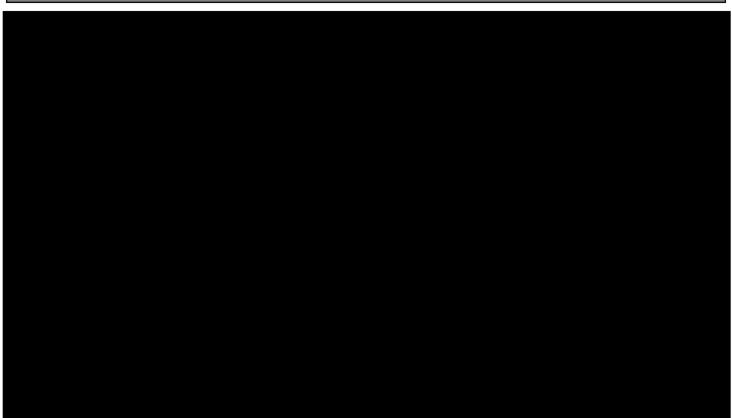


CUSTOMER City of Richmond Dept. Public Utilities PAGE	
ADDRESS JOB #	RVA22131-140
WNER City of Richmond Dept. Public Utilities	
EPRESENTATIVE	
DATE 6/3/2022 AMBIENT TEMPERATURE 90 °F_IUMIDITY 72 % EQPT. LOCATION SUB	
UBSTATION POSITION	MAIN
MMENTS XO BUSHING LEAKING OIL	
SUAL AND MECHANICAL INSPECTION:	
	PASS
pect physical and mechanical condition.	PASS PASS
pect physical and mechanical condition. pect anchorage, alignment, and grounding.	
pect physical and mechanical condition. pect anchorage, alignment, and grounding. rify the presence of PCB labeling.	PASS
pect physical and mechanical condition. pect anchorage, alignment, and grounding. rify the presence of PCB labeling. or to cleaning he unit, perform as-found tests, if required.	PASS PASS
pect physical and mechanical condition. pect anchorage, alignment, and grounding. rify the presence of PCB labeling. or to cleaning he unit, perform as-found tests, if required. an bushings and control cabinets.	PASS PASS PASS PASS
pect physical and mechanical condition. pect anchorage, alignment, and grounding. rify the presence of PCB labeling. or to cleaning he unit, perform as-found tests, if required. ran bushings and control cabinets. rify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela	PASS PASS PASS PASS
pect physical and mechanical condition. pect anchorage, alignment, and grounding. rify the presence of PCB labeling. or to cleaning he unit, perform as-found tests, if required. ean bushings and control cabinets. rify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela rify that cooling fans and/or pumps operate correctly.	PASS PASS PASS PASS IV. PASS
pect physical and mechanical condition. pect anchorage, alignment, and grounding. rify the presence of PCB labeling. or to cleaning he unit, perform as-found tests, if required. ean bushings and control cabinets. rify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela rify that cooling fans and/or pumps operate correctly. pect bolted electrical connections for high resistance.	PASS PASS PASS PASS PASS y. PASS PASS
spect physical and mechanical condition. spect anchorage, alignment, and grounding. rify the presence of PCB labeling. for to cleaning he unit, perform as-found tests, if required. ean bushings and control cabinets. rify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela rify that cooling fans and/or pumps operate correctly. spect bolted electrical connections for high resistance. rify correct liquid level in tanks and bushings.	PASS PASS PASS PASS PASS PASS PASS N/A
spect physical and mechanical condition. spect anchorage, alignment, and grounding. rify the presence of PCB labeling. or to cleaning he unit, perform as-found tests, if required. ean bushings and control cabinets. rify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela rify that cooling fans and/or pumps operate correctly. spect bolted electrical connections for high resistance. rify correct liquid level in tanks and bushings. rify that posi ive pressure is maintained on gas-blanketed transformers.	PASS PASS PASS PASS PASS PASS PASS N/A PASS
spect physical and mechanical condition. spect anchorage, alignment, and grounding. srify the presence of PCB labeling. ior to cleaning he unit, perform as-found tests, if required. ean bushings and control cabinets. srify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela srify that cooling fans and/or pumps operate correctly. spect bolted electrical connections for high resistance. srify correct liquid level in tanks and bushings. srify that posi ive pressure is maintained on gas-blanketed transformers. serform inspections and mechanical tests as recommended by the manufacturer.	PASS PASS PASS PASS PASS PASS PASS N/A PASS N/A
spect physical and mechanical condition. spect anchorage, alignment, and grounding. arify the presence of PCB labeling. ior to cleaning he unit, perform as-found tests, if required. ean bushings and control cabinets. arify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela arify that cooling fans and/or pumps operate correctly. spect bolted electrical connections for high resistance. arify correct liquid level in tanks and bushings. arify that posi ive pressure is maintained on gas-blanketed transformers. arform inspections and mechanical tests as recommended by the manufacturer. ast load tap-changer in accordance with Section 7.12.	PASS PASS PASS PASS PASS PASS PASS N/A PASS PASS PASS PASS
SUAL AND MECHANICAL INSPECTION: spect physical and mechanical condition. spect anchorage, alignment, and grounding. erify the presence of PCB labeling. rior to cleaning he unit, perform as-found tests, if required. lean bushings and control cabinets. erify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela erify that cooling fans and/or pumps operate correctly. spect bolted electrical connections for high resistance. erify correct liquid level in tanks and bushings. erify that posi ive pressure is maintained on gas-blanketed transformers. erform inspections and mechanical tests as recommended by the manufacturer. est load tap-changer in accordance with Section 7.12. erify the presence of transformer surge arresters. erform as-left tests	PASS PASS PASS PASS PASS PASS PASS N/A PASS PASS PASS PASS PASS
spect physical and mechanical condition. spect anchorage, alignment, and grounding. arify the presence of PCB labeling. ior to cleaning he unit, perform as-found tests, if required. ean bushings and control cabinets. arify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure rela arify that cooling fans and/or pumps operate correctly. spect bolted electrical connections for high resistance. arify correct liquid level in tanks and bushings. arify that posi ive pressure is maintained on gas-blanketed transformers. arform inspections and mechanical tests as recommended by the manufacturer. ast load tap-changer in accordance with Section 7.12.	PASS PASS PASS PASS PASS PASS PASS N/A PASS PASS PASS PASS

TESTED BY: J. Crenshaw







#### NOTE: SHORT EACH WINDING ON ITSELF

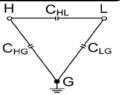
#### INSULATION RATING KEY

G = GOOD

- D = DETERIORATED
- I = INVESTIGATE
- B = BAD

- H = HIGH VOLTAGE WINDING
- L = LOW VOLTAGE WINDING
- G = GROUND
- N = NEUTRAL BUSHING

EQUIVALENT CIRCUIT



# ASSESSMENT OF TRANSFORMER: PASSED ALL NETA ATS SPECIFICATIONS

COMMENTS: High side of transformer tested only, Low side X0 bushing was leaking so we didnt mess with it because we didnt want to make it leak even more.
DEFICIENCIES:

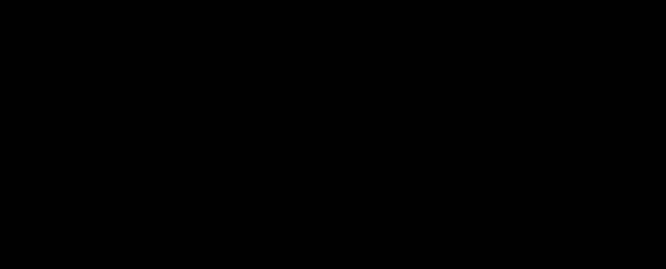




CUSTOMER City of Rich	mond Dept.	Public Utilities	6			P/	AGE	
ADDRESS						JC	B# RVA	22131-140
OWNER City of Rich	mond Dept.	Public Utilities	6					
REPRESENTATIVE						TELEPH	IONE	
DATE 5/24/2022 A	MBIENT TEMPE	RATURE 67	°F HUMIDITY	43 %	EQPT. LOCATION	DOL	JGLASDALE	
SUBSTATION					POSITION		SG -I	DR-
Description	INSPECTED	CONDITION	CLEAN/LUBE		Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS		Good		CON	TACT FINGERS	V	Good	
INSULATING MEMBERS		Good		VAC	JUM BOTTLE		Good	

INSULATING MEMBERS		Good	
MECHANICAL CONNECTIONS	Z	Good	
STRUCTURAL MEMBERS	4	Good	
CUBICLE	Z	Good	
RACKING DEVICES	4	Good	
SHUTTER	V	Good	

Description	INSPECTED	CONDITION	CLEAN/LUBE
CONTACT FINGERS	Z	Good	
VACUUM BOTTLE	7	Good	
CONTACT EROSION INDICATOR	Z	Good	
OPERATING MECHANISM	7	Good	
CONTACT SEQUENCE	Z	Good	
GROUND CONNECTION	7	Good	
AUXILIARY DEVICES	Z	Good	



ASSESSMENT OF BREAKER: PASSED ALL NETA MITS SPECIFICATIONS

COMMENTS: DEFICIENCIES:





CUSTOMER	City of Richmond Dept	. Public Utilities	6		P/	AGE	
ADDRESS					JC	B# RVA	22131-140
OWNER	City of Richmond Dept	. Public Utilities	6				
REPRESENTAT	IVE				TELEPH		
DATE 5/24	/2022 AMBIENT TEMP	PERATURE 71	°F HUMIDITY 54	% EQPT. LOCATION	DOL	JGLASDALE	
SUBSTATION				POSITION	GENE	RATOR -	
Descri		CONDITION	CLEAN/LUBE	Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEA	NLINESS 🔽	Good	C	CONTACT FINGERS	Z	Good	
INSULATING ME	EMBERS 🗸	Good	V	ACUUM BOTTLE		Good	

	Restantion of the second		
INSULATING MEMBERS	4	Good	
MECHANICAL CONNECTIONS	Z	Good	
STRUCTURAL MEMBERS	4	Good	
CUBICLE	Z	Good	
RACKING DEVICES	4	Good	
SHUTTER	V	Good	

Description	INSPECTED	CONDITION	CLEAN/LUBE
CONTACT FINGERS	4	Good	
VACUUM BOTTLE	7	Good	
CONTACT EROSION INDICATOR	4	Good	
OPERATING MECHANISM	7	Good	
CONTACT SEQUENCE	7	Good	
GROUND CONNECTION		Good	
AUXILIARY DEVICES	V	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:





CUSTOMER	City of Richmond Dept. Public Utilities		PAGE	
ADDRESS			JOB # RVA2213	1-140
OWNER	City of Richmond Dept. Public Utilities			
REPRESENTA	TIVE		TELEPHONE	
DATE 5/2	4/2022 AMBIENT TEMPERATURE 72 °F HUMIDITY 43 %	EQPT. LOCATION	DOUGLASDALE	
SUBSTATION		POSITION	SWGR F	DR-

Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS	Z	Good	
INSULATING MEMBERS	J	Good	
MECHANICAL CONNECTIONS	V	Good	
STRUCTURAL MEMBERS	J	Good	
CUBICLE	V	Good	
RACKING DEVICES	4	Good	
SHUTTER	Z	Good	

Description	INSPECTED	CONDITION	CLEAN/LUBE
CONTACT FINGERS	Z	Good	
VACUUM BOTTLE	7	Good	
CONTACT EROSION INDICATOR	Z	Good	
OPERATING MECHANISM	7	Good	
CONTACT SEQUENCE	Z	Good	
GROUND CONNECTION	7	Good	
AUXILIARY DEVICES	V	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:





CUSTOMER City of Richr	mond Dept.	Public Utilities	6					PAGE		
ADDRESS								JOB #	<b>RVA</b> 2	22131-140
OWNER City of Richr	mond Dept.	Public Utilities	6							
REPRESENTATIVE							TELE	HONE		
DATE 5/24/2022 AM	BIENT TEMPE	RATURE 65	°F HUMIDITY	43	%	EQPT. LOCATION	DC	UGLAS	DALE	
SUBSTATION						POSITION		SERV	ICE FE	EDER
				_	_					
Description	INSPECTED	CONDITION	CLEAN/LUBE			Description	INSPECTED	COND	ITION	CLEAN/LUBE
OVERALL CLEANLINESS	7	Good			CONT	ACT FINGERS	7	Go	od	
INSULATING MEMBERS		Good			VACU	UM BOTTLE		Go	od	
MECHANICAL CONNECTIONS	V	Good			CONT	ACT EROSION INDICATOR	V	Go	od	
STRUCTURAL MEMBERS		Good			OPER	ATING MECHANISM		Go	od	

CONTACT SEQUENCE

GROUND CONNECTION

AUXILIARY DEVICES

V

ম

V

Good

Good

Good

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

NOOLOOWENT OF DREAKER. PASSED ALL NETA MIS SPECIFICATI

V

V

V

Good

Good

Good

COMMENTS: DEFICIENCIES:

CUBICLE

SHUTTER

RACKING DEVICES



A Voltyx Company								
CUSTOMER City of Rich	nmond Dept.	Public Utilitie	S			P/	AGE	
ADDRESS						JC	B # RVA	22131-140
OWNER City of Rich	mond Dept.	Public Utilitie	S					
REPRESENTATIVE						TELEPH		
DATE 5/24/2022	MBIENT TEMPE	RATURE 72	°F HUMIDITY	43 %	EQPT. LOCATION	DOL	JGLASDALE	
SUBSTATION					POSITION	MAIN -		2
Description	INSPECTED	CONDITION	CLEAN/LUBE		Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS		Good		CON	ITACT FINGERS	V	Good	
INSULATING MEMBERS		Good		VAC	UUM BOTTLE	<b>N</b>	Good	
MECHANICAL CONNECTION	s 🔽	Good		CON	ITACT EROSION INDICATOR	7	Good	
STRUCTURAL MEMBERS		Good		OPE	RATING MECHANISM		Good	
CUBICLE	V	Good		CON	ITACT SEQUENCE	2	Good	
RACKING DEVICES		Good		GRC	UND CONNECTION	4	Good	
SHUTTER	N N	Good		AUX	ILIARY DEVICES	2	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:





CUSTOMER City of	f Richmond Dept.	Public Utilities	S			PA	GE	
ADDRESS						JO	B# RVA	22131-140
OWNER City of	f Richmond Dept.	Public Utilities	S					
REPRESENTATIVE						TELEPH	ONE	
DATE 5/24/2022	AMBIENT TEMPE	RATURE 68		43 %	EQPT. LOCATION	DOU	GLASDALE	
SUBSTATION					POSITION	SP/	RE	
Description	INSPECTED	CONDITION	CLEAN/LUBE		Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINES	ss 🔽	Good		CONT	ACT FINGERS	N	Good	
INSULATING MEMBERS	s 🔽	Good		VACU	IUM BOTTLE	<b>N</b>	Good	
MECHANICAL CONNEC	CTIONS 🗸	Good		CONT	ACT EROSION INDICATOR	V	Good	

 INSULATING MEMBERS
 Image: Construction of the second descendence o

Description	INSPECTED	CONDITION	CLEAN/LUBE
CONTACT FINGERS	Z	Good	
VACUUM BOTTLE	7	Good	
CONTACT EROSION INDICATOR	Z	Good	
OPERATING MECHANISM	7	Good	
CONTACT SEQUENCE	Z	Good	
GROUND CONNECTION	7	Good	
AUXILIARY DEVICES	Z	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

COMMENTS: DEFICIENCIES:





CUSTOMER City of Richmond Dept. Public Utilities	PAGE
ADDRESS	JOB # RVA22131-140
OWNER City of Richmond Dept. Public Utilities	
REPRESENTATIVET	
DATE 5/24/2022 AMBIENT TEMPERATURE 73 °F HUMIDITY 43 % EQPT. LOCATION	DOUGLASDALE
SUBSTATION POSITION	SPARE -

Description	INSPECTED	CONDITION	CLEAN/LUBE
OVERALL CLEANLINESS	Z	Good	
INSULATING MEMBERS	J	Good	
MECHANICAL CONNECTIONS	V	Good	
STRUCTURAL MEMBERS	J	Good	
CUBICLE	V	Good	
RACKING DEVICES	J	Good	
SHUTTER	V	Good	

Description	INSPECTED	CONDITION	CLEAN/LUBE
CONTACT FINGERS	Z	Good	
VACUUM BOTTLE	4	Good	
CONTACT EROSION INDICATOR	ব	Good	
OPERATING MECHANISM	4	Good	
CONTACT SEQUENCE	ব	Good	
GROUND CONNECTION	4	Good	
AUXILIARY DEVICES	Z	Good	

ASSESSMENT OF BREAKER: PASSED ALL NETA MTS SPECIFICATIONS

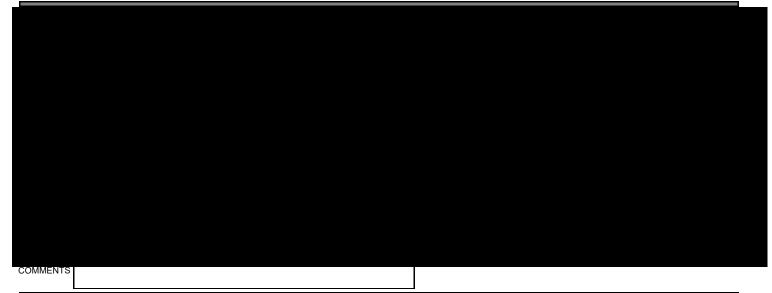
COMMENTS: DEFICIENCIES:



### LIQUID FILLED TRANSFORMER TESTS



CUSTOMER	City of R	lichmond Dept. Public Ut	ilities			PAGE	
ADDRESS						JOB #	RVA22131-140
OWNER	City of F	tichmond Dept. Public Ut	ilities				
REPRESENT	ATIVE					TELEPHONE	
DATE 6	/7/2022	AMBIENT TEMPERATURE	70	45 %	EQPT. LOCATION		
SUBSTATION	N	TRANSFORM	ER	 	POSITION _		



VISUAL AND MECHANICAL INSPECTION:	
Inspect physical and mechanical condition.	PASS
Inspect anchorage, alignment, and grounding.	PASS
Verify the presence of PCB labeling.	N/A
Prior to cleaning he unit, perform as-found tests, if required.	N/A
Clean bushings and control cabinets.	PASS
Verify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure relay.	N/A
Verify that cooling fans and/or pumps operate correctly.	PASS
Inspect bolted electrical connections for high resistance.	N/A
Verify correct liquid level in tanks and bushings.	PASS
Verify that posi ive pressure is maintained on gas-blanketed transformers.	PASS
Perform inspections and mechanical tests as recommended by the manufacturer.	PASS
Test load tap-changer in accordance with Section 7.12.	N/A
Verify the presence of transformer surge arresters.	PASS
Perform as-left tests.	N/A
	1





COMMENTS: DEFICIENCIES:



#### LIQUID FILLED TRANSFORMER TESTS



CUSTOMER City of Richmond Dept. Public Utilities PAGE	
ADDRESS JOB # R	VA22131-140
OWNER City of Richmond Dept. Public Utilities	
REPRESENTATIVE TELEPHONE	
DATE 11/2/2022 AMBIENT TEMPERATURE 70 °F HUMIDITY 50 % EQPT. LOCATION PLANT ELEC F	
SUBSTATION TRANSFORMER POSITION	
VISUAL AND MECHANICAL INSPECTION:	
Inspect physical and mechanical condition.	PASS
Inspect anchorage, alignment, and grounding.	PASS
Verify the presence of PCB labeling.	N/A
Prior to cleaning he unit, perform as-found tests, if required.	N/A N/A
Clean bushings and control cabinets.	PASS
Verify operation of alarm, control, and trip circuits from temperature and level indicators, pressure-relief device, gas accumulator, and fault-pressure relay.	N/A
Verify that cooling fans and/or pumps operate correctly.	SEE COMMENTS
Inspect bolted electrical connections for high resistance.	N/A
Verify correct liquid level in tanks and bushings.	PASS
Verify that posi ive pressure is maintained on gas-blanketed transformers.	PASS

Verify the presence of transformer surge arresters Perform as-left tests.

Verify de-energized tap-changer position is left as specified.

Test load tap-changer in accordance with Section 7.12.

Perform inspections and mechanical tests as recommended by the manufacturer.

TEST EQUIPMENT USED: RCH0079, RCH0090

TESTED BY: HUNTER HAYES, BEN CONDON

PASS

N/A

PASS

N/A

PASS





#### NOTE: SHORT EACH WINDING ON ITSELF

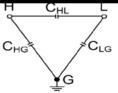
#### INSULATION RATING KEY

G = GOOD

- D = DETERIORATED
- Т = INVESTIGATE
- B = BAD

- H = HIGH VOLTAGE WINDING
- L = LOW VOLTAGE WINDING
- G = GROUND Ν
  - = NEUTRAL BUSHING

EQUIVALENT CIRCUIT



ASSESSMENT OF TRANSFORMER: PASS

COMMENTS: FUSES FOR FAN WERE BLOWN. XFMR RATED AT LOWEST VALUE UNTIL FANS ARE REPAIRED. DEFICIENCIES:

## Work Order Complete Report

Search by WO #

Date: 2/5/2025 16:23:50

Work Order Number	Status	Asset Number	Slot Nu	umber Fault Cod	e Work Type	Action Code	Work Area	
C266361	CLO	0006743			PM		WP	
Oriç	ginator BRIZE	NDINE, MATTHEW E	ChargeCost Center ELECTRICAL 052			OriginationDate	06/10/2021	14:38
Pho	one No 804-64	6-1792	CreditCost Center			Due Date	07/10/2021	14:38
OriginalF	Priority		Labor Account WPP - 1101			Closed Date:	10/27/2021	10:01
F	Priority 4		Material Account WPP - 2258			Exception Date	00/00/0000	
Supervi	isor ID BRIZE		ContractorAccount			Schedule Date	06/10/2021	
-	lanner BRIZE		Support Requirement			StatusChg Date	10/27/2021	10:01
Pro	ject ID:							
Task IDC	Counter							
R	PM ID toute ID		Safety N	Entry Date 06/10/2	2021	Lai	bor Cost	\$0.00
Grou	upCode		Maint Work Group: ELECTRICAL WTP	CriticalRatio .00000			Mtl Cost	\$0.00
	•		WorkClass MAIN	Funding Source		Contr	act Cost	\$3,130.00
WorkReqı Ap	oproved Y		WorkLocation	Finance Close N		01	therCost	\$0.00

Work Requested I am creating this to have the company Concentric come in and perform a major PM on this unit.

CorrectiveAction 8-24-21 (MEB)- The UPS's were checked and PM'd.

Page 1 of 1

## Work Order Complete Report

Search by WO #

Date: 2/5/2025 13:46:21

Work Order Number	Status	Asset Number	Slot	Number	Fault Code	Work Type	Action Code	Work Area	
C272509	CLO	0016623				COREC		WP	
Orig	ginator BIES,	MARK A	ChargeCost Center 052				OriginationDate	08/18/2023	09:41
Pho	one No 804-64	6-1810	CreditCost Center				Due Date	08/23/2023	09:41
Original	Priority		Labor Account				Closed Date:	09/12/2023	08:49
F	Priority 2		Material Account				Exception Date	00/00/0000	
Superv	visor ID BIESN	۱Δ	ContractorAccount				Schedule Date	00/00/0000	
•	Planner BIESN		Support Requirement				StatusChg Date	09/12/2023	08:49
Pro	oject ID:								
Task ID	Counter								
	PM ID				<b>D</b>	~~		han Caat	¢0.00
F	Route ID		Safety N	-	Date 08/18/20	23	Lä	abor Cost	\$0.00
	upCode		Maint Work Group: I&C WATER PLANT WorkClass MAIN		Ratio .00000		Com	Mtl Cost	\$9,543.00 \$0.00
Gro				Funding So	urce		Cont	ract Cost	

Work Requested Replace UPS for Plant Main

CorrectiveAction 18Aug23/MAB: Ordering UPS 12Sep23/MAB: UPS replaced.

Page 1 of 1

## Asset History Report

Date: 2/5/2025 16:14:56

Asset Number			Asset Type	Asset Location	Co: Cei	st nter		Asset Mo Cost	onth-To-Date Total Cost	Year-To-Date Total Cost	Life-To-Date Total Cost
0016624 UPS,	- PLANT	PLC	E	PLANT BUILDING	052	2		\$0.00	\$0.00	\$0.00	\$0.00
Work Order Number	Closed Date:	Work Requested		PM Group	Work Type	Fault Code	Action Code	Labor Cost	Mtl Cost	Contract Cost	Total Cost



Page 1 of 1



## Carter Machinery EPG PM1

PM			
Inspection Number	19525413	Customer No	2974846161
Seria Number		Customer Name	CITY OF RICHMOND- DPU WATER TREATMENT-VALERIE K MOORE
Make		Customer Phone	8046461792
Mode		Customer Emai	matthew.brizendine@ric hmondgov.com
Equipment Fami y	ELECTRIC POWER GENERATION - DIESEL	Work Order	RI82080
Asset ID	Doug as 1	Comp eted On	10/16/2024 2:21:03 PM
SMU		Inspector	Ty er Harding
Location	3920 Doug asda e Rd	PDF Generated On	10/16/2024
Coordinates	0, 0, 0	Package KW	
Engine Mode		Engine Seria Number	
Gen Barre Mode / Seria			
Technician			
General Info & Con General info/Co			NORMAL
General info/Co	nments		NORMAL
	nments omments		NORMAL FULL
General info/Co	nments omments n System rior to service)		
General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (after	nments omments n System rior to service)		FULL
General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (aft	nments omments in System rior to service) er service)		FULL FULL SELECT THEN ADD
General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (after 1.3 Oil Capacity Comments:	nments pomments in System rior to service) er service) y (Comment Capacity)		FULL FULL SELECT THEN ADD
General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (after 1.3 Oil Capacity Comments:	nments omments in System rior to service) er service) (Comment Capacity) Ga ons		FULL FULL SELECT THEN ADD COMMENT SELECT THEN ADD
General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (after 1.3 Oil Capacity Comments:	nments omments in System rior to service) er service) (Comment Capacity) Ga ons perating temperature		FULL FULL SELECT THEN ADD SELECT THEN ADD

Comments: Hours

	1.6 Oil Changed (comment oil grade)	NOT REQUIRED
•	1.7 Oil Filter(s) Changed (comment QTY and part#) Co ent	NOT REQUIRED
•	1.8 Condition of Crankcase Breather / Filter (comment filter#)	OK
•	1.9 Crankcase Piping Condition / Routing	OK
•	1 10 Engine Noise and Vibration	OK
•	1.11 Oil Sample Taken (attach photo of sample/label)	COMPLETED



ormO	rder Report	Ser a Number : Asset ID: Doug as 1	Page 2 c
	Comments:		
•	2.3 Radiator Cap / Seal		SELECT THEN ADD COMMENT
	Comments:		
	2.2 Coolant temperature	(prior to running)	SELECT THEN ADD COMMENT
•	2.1 Radiator and Tanks		OK
Co	ooling System		
	Commonice. Engine to the		
	Comments: Engine is we	t stacking	
	1.12 Oil Leaks		NO

2.17 Water Pump	OK
Comments: Recommended during PM2	
2.16 Fan Drive (Grease bearing)	OK
2.15 Fan	OK
2.14 Fan Belt & Tensioner Adjustment	OK
Comments:	
2.13 Belts (comment part# and qty)	ОК
2.12 Hoses / Clamps	OK
2.11 Coolant Sample Taken (Provide Photo Of Label)	NOT REQUIRED
Comments: Within spec	
2.10 Coolant Freeze Point	SELECT THEN ADD COMMENT
Comments: Within spec	
2.9 Conditioner PPM	SELECT THEN ADD COMMENT
2.8 Coolant Level	FULL
Comments:	COMMENT
2.7 Coolant Type (comment type)	SELECT THEN ADD COMMENT
Comments: New 2/23	
2.6 Coolant Age / Condition (comment coolant age/condition)	ОК
2.5 Coolant System Leaks	NO

#### 2.18 Coolant Recovery Tank

3.7 Fuel Lines	Ok
3.6 Fuel Priming Pump	Ok
3.5 Fuel Pump	Ok
Comments:	
3.4 Day Tank Fuel Level	SELECT TO ADD COMMENT
Comments: 75%	
3.3 Main Fuel Tank Level (comment tank level in percentage)	SELECT TO ADD COMMENT
Comments: Ga ons	
3.2 Main Fuel Tank Capacity (comment tank capacity)	KNOWN
3.1 Main Fuel Tank / Cap	Oh
uel System	
2.23 Louver System	Oh
2.22 Isolation Valve	Oh
Comments:	
2.21 Block Heater Part Number	SELECT THEN ADD COMMENT
Comments: Hoses due for rep acement	
2.20 Engine Block Heaters / Hoses	MONITOR - OPEN ACTION
Comments:	

	rder Report Ser a Number : Asset ID : Doug as 1	Pag
•	4.8 Exhaust Silencer	ОК
•	4.7 Turbocharger(s)	ОК
•	4.6 Exhaust Manifold / Piping	ОК
•	4.5 Restriction Gauge	ОК
•	4.4 Air Intake Lines / Seals / Gaskets	ОК
	Comments: Fi ters new 2017, recommend rep acement	
	4.3 Air Cleaner Element(s) Replaced	NOT REQUIRED
	4.2 Pre Cleaner Element	N/A
	Comments: Fi ters due for rep acement	
	4.1 Air Cleaner Element / Housing	MONITOR - OPEN ACTION
Ai	r Induction & Exhaust System	
	3.13 Fuel Sample	NOT REQUIRED
•	3.12 Fuel Leaks	NO
•	3.11 Governor Operation / Control	ОК
	Comments:	
	3.10 Change Secondary Fuel Filter(s) - comment part # and qty	NOT REQUIRED
	Comments:	
	3.9 Change Primary Fuel Filter(s) - comment part # and qty	NOT REQUIRED
	Comments:	
	3.8 Fuel PSI (Comment PSI)	SELECT THEN ADD COMMENT

Page 5 of 9

#### 4.9 Rain Cap(s)

5.1 Enclosure (Commont mfg)	_
5.1 Enclosure (Comment mfg)	0
Comments:	
5.2 Mounting Bolts / Vibration Isolators	0
5.3 Sound Attenuation material (visual)	0
5.4 Control Panel (comment Control Panel Model Number)	0
Comments:	
5.5 Is QR Code installed? If not, install QR code per SWI Guide ID 2266	N

5.6 Auto / Remote - Start / Stop Functional	OK
5.7 Control Wiring	OK
5.8 Generator Voltmeter Single Phase (comment voltage)	N/A
5.9 Generator Voltmeter Three Phase (comment voltage) Comments:	OK
5.10 Generator Ammeter / AMPS Average (comment Amperage) Comments: No oad transferred	OK

Form Order Report

5.11 Frequency Meter (Comment Hz) Comments:	Ok
Comments.	
5.12 Voltage Adjust Potentiometer or Switch	N/A
5.13 Frequency / Speed Adjustment	Ok
5.14 Generator Rear Bearing Lubrication Date (comment date)	KNOWN
Comments: Done 2/23	
5.15 Generator Exciter / Rectifier	Ok
5.16 Generator Strip Heater Operation	MONITOR - OPEN ACTION
Comments: Not working	
5.17 Generator Wiring	Ok
5.18 Automatic Voltage Regulator	Ok
5.19 Generator Circuit Breaker Lugs & Cables	Ok
Comments:	
5.20 Circuit Breaker Test Date (Comment Date)	UNKNOWN
ectrical System	
6.1 Battery Terminals / Cables / Posts (Inspect For Damage)	Oh
6.2 Number of Batteries	SELECT THEN ADD COMMENT
Comments:	
6.3 Battery Part #	SELECT THEN ADD COMMENT
Comments: 1	

Form Order Report

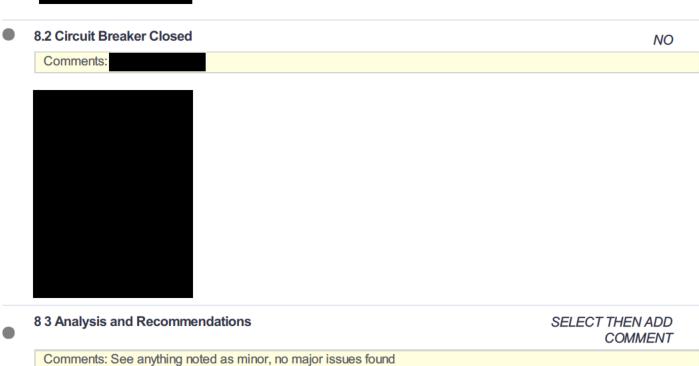
	6.4 Battery Age		SELECT THEN ADD COMMENT
	Comments: New 2/23		
•	6.5 Battery Voltage W/ Charger		ОК
	Comments:		
•	6.6 Battery Voltage w/o Charge	r (comment voltage)	OK
•	6.7 Confirm charger operations	(comment output voltage)	OK
•	6.8 Cranking voltage drop test		OK
	Comments:		
•	6.9 Starting Motor Performance	3	OK
•	6.10 Engine Alternator and belt	(comment voltage and belt part#)	OK
	Comments:		
•	6.11 Tachometer RPM (comme	nt RPM)	ОК
	Comments: RPM		
•	6.12 DC Ammeter (Comment Ar	nperage)	OK
•	6.13 Engine Wiring		ОК
•	6.14 Pre Alarms Operational		ОК
•	6.15 Shutdown Alarm Operation	nal	ОК
•	6.16 Safety Shut Off / E-Stop Op	perational	OK
В	atteries (If Applicable)		
	7.1 Battery Specific Gravity (Tap batteries)	p to Add Details) (Use '+' to add additional	SELECT THEN ADD COMMENT
	E ectro yte Leve : 0		
Form	order Report	Ser a Number : Asset ID: Doug as 1	Page 8 of

Load Test Resuts: 0				
Spec f c Grav ty 1:0				
SpecfcGvty 0				
Spec f c Grav ty 3:0				
Spec f c Grav ty 4:0				
Spec f c Grav ty 5:0				
Spec f c Grav ty 6:0				

Analysis and Recommendations

8.1 Control Switch in Auto





YES



## Carter Machinery EPG PM1

PM			
Inspection Number	19526693	Customer No	2974846161
Seria Number		Customer Name	CITY OF RICHMOND- DPU WATER TREATMENT-VALER K MOORE
Make		Customer Phone	8046461792
Mode		Customer Emai	matthew.brizendine@r hmondgov.com
Equipment Fami y	ELECTRIC POWER GENERATION - DIESEL	Work Order	RI82070
Asset ID	Doug as 2	Comp eted On	10/16/2024 2:21:15 PI
SMU		Inspector	Ty er Harding
Location	3920 Doug asda e Rd	PDF Generated On	10/16/2024
Coordinates	0, 0, 0	Package KW	
Engine Mode		Engine Seria Number	
Gen Barre Mode / Seria			
Technician			
General Info & Cor General info/Co			NORMAL
General Info & Cor General info/Co	nments		NORMAL
General Info & Cor	nments omments		NORMAL FULL
General Info & Cor General info/Co Engine Lubrication	nments omments n System rior to service)		
General Info & Cor General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (aft	nments omments n System rior to service)		FULL
General Info & Cor General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (aft	nments omments n System rior to service) ver service)		FULL FULL SELECT THEN ADD
General Info & Cor General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (aft 1.3 Oil Capacity Comments: 11	nments omments n System rior to service) ver service)		FULL FULL SELECT THEN ADD
General Info & Cor General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (aft 1.3 Oil Capacity Comments: 11	nments omments in System rior to service) eer service) y (Comment Capacity) 0 Ga ons		FULL FULL SELECT THEN ADD COMMENT
General Info & Cor General info/Co Engine Lubrication 1.1 Oil Level (pr 1.2 Oil level (aft 1.3 Oil Capacity Comments: 11	nments omments in System rior to service) er service) (Comment Capacity) 0 Ga ons perating temperature		FULL FULL SELECT THEN ADD COMMENT

Comments: Hours

1.6 Oil Changed (comment oil grade)	NOT REQUIRED
Comments:	
4.7 Oil Eiller(a) Changed (comment OTV and north)	
1.7 Oil Filter(s) Changed (comment QTY and part#)	NOT REQUIRED
Comments:	
1.8 Condition of Crankcase Breather / Filter (comment filter#)	OK
1.9 Crankcase Piping Condition / Routing	OK
1.10 Engine Noise and Vibration	OK
-	O.C.

COMPLETED

• 1 11 Oil Sample Taken (attach photo of sample/label)



rmO	order Report	Ser a Number :	Asset ID: Doug as 2	Page 2
	Comments:			
	2.3 Radiator Cap / Seal			SELECT THEN ADD COMMENT
	Co ent			
	2.2 Coolant temperature (prie	or to running)		SELECT THEN ADD COMMENT
•	2 1 Radiator and Tanks			OK
Сс	ooling System			
	Comments: Engine is wetstad	cking		
	1 12 Oil Leaks			NO

2.4 Coolant System Pressure Test	YES
2.5 Coolant System Leaks	NC
2.6 Coolant Age / Condition (comment coolant age/condition)	OK
Comments: New 2/23	
2.7 Coolant Type (comment type)	SELECT THEN ADD COMMENT
Comments:	
2.8 Coolant Level	FULL
2.9 Conditioner PPM	SELECT THEN ADD COMMENT
Comments: Within spec	
2.10 Coolant Freeze Point	SELECT THEN ADD COMMENT
Comments: Within spec	
2.11 Coolant Sample Taken (Provide Photo Of Label)	NOT REQUIRED
2.12 Hoses / Clamps	Ok
2.13 Belts (comment part# and qty)	OK
Comments:	
2.14 Fan Belt & Tensioner Adjustment	Ok
2.15 Fan	Ok
2.16 Fan Drive (Grease bearing)	Ok

	rder Report Ser a Number : Asset ID : Doug as 2	Page
	3.8 Fuel PSI (Comment PSI)	SELECT THEN ADD COMMENT
	3.7 Fuel Lines	OK
	3.6 Fuel Priming Pump	ОК
	3.5 Fuel Pump	OK
	Comments:	
	3.4 Day Tank Fuel Level	SELECT TO ADD COMMENT
	Comments: 75%	
	3.3 Main Fuel Tank Level (comment tank level in percentage)	SELECT TO ADD COMMENT
	Comments: Ga ons	
	3.2 Main Fuel Tank Capacity (comment tank capacity)	KNOWN
	3.1 Main Fuel Tank / Cap	OK
Fu	el System	
	2.23 Louver System	OK
	2.22 Isolation Valve	OK
	Comments:	
	2.21 Block Heater Part Number	SELECT THEN ADD COMMENT
	2.20 Engine Block Heaters / Hoses	ОК
	Comments:	
	2.19 Operating Temperature	SELECT THEN ADD COMMENT

Comments: Within spec

	<ul> <li>4 6 Exhaust Manifold / Piping</li> <li>4.7 Turbocharger(s)</li> <li>4.8 Exhaust Silencer</li> <li>4.9 Rain Cap(s)</li> </ul>		ОК ОК ОК N/А
	4.7 Turbocharger(s)		ОК
•			OK
	4 6 Exhaust Manifold / Piping		
	4.5 Restriction Gauge		OK
	4.4 Air Intake Lines / Seals / Gask	rets	OK
	4.3 Air Cleaner Element(s) Replace	ced	NOT REQUIRED
	4.2 Pre Cleaner Element	-	OK
	Comments: Due to rep ace due to	age, new 2017	
	4 1 Air Cleaner Element / Housing	-	MONITOR - OPEN ACTION
Air	Induction & Exhaust System		
	3.13 Fuel Sample		NOT REQUIRED
	3.12 Fuel Leaks		NO
	3.11 Governor Operation / Contro	bl	OK
	Comments:		NOTINE QUILED
	3.10 Change Secondary Fuel Filt	er(s) - comment part # and qty	NOT REQUIRED
	3.9 Change Primary Fuel Filter(s) Comments:		NOT REQUIRED

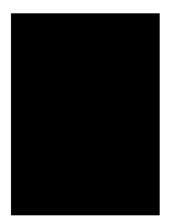
5.1 Enclosure (Comment mfg)	Oł
Comments:	
5.2 Mounting Bolts / Vibration Isolators	Of
5.3 Sound Attenuation material (visual)	Oł
5.4 Control Panel (comment Control Panel Model Number)	Oł
Comments:	
5.5 Is QR Code installed? If not, install QR code per SWI Guide ID 2266	N
	Oł
5.6 Auto / Remote - Start / Stop Functional	
5.6 Auto / Remote - Start / Stop Functional 5.7 Control Wiring	Oł
	OF N/A
5.7 Control Wiring	
5.7 Control Wiring 5.8 Generator Voltmeter Single Phase (comment voltage)	N/A
5.7 Control Wiring         5.8 Generator Voltmeter Single Phase (comment voltage)         5.9 Generator Voltmeter Three Phase (comment voltage)	N/A

Comments:

ASset ID: Doug as 2	Pag
6.5 Battery Voltage W/ Charger Comments:	ОК
Comments: New 2/23	
6.4 Battery Age	SELECT THEN ADD COMMENT
Comments:	
6.3 Battery Part #	SELECT THEN ADD COMMENT
Comments:	COMMENT
6.2 Number of Batteries	SELECT THEN ADD COMMENT
6.1 Battery Terminals / Cables / Posts (Inspect For Damage)	ОК
Electrical System	
5.20 Circuit Breaker Test Date (Comment Date)	UNKNOWN
5.19 Generator Circuit Breaker Lugs & Cables	OK
Comments:	
5.18 Automatic Voltage Regulator	ОК
5.17 Generator Wiring	ОК
5.16 Generator Strip Heater Operation	ОК
5.15 Generator Exciter / Rectifier	ОК
Comments: Done 2/23	
5.14 Generator Rear Bearing Lubrication Date (comment date)	KNOWN
5.13 Frequency / Speed Adjustment	OK
5.12 Voltage Adjust Potentiometer or Switch	N/A

6.6 Battery Voltage w/o Charger (comment voltage)	OK
6.7 Confirm charger operations (comment output voltage)	OK
6.8 Cranking voltage drop test	OK
Comments:	
6.9 Starting Motor Performance	OK
6.10 Engine Alternator and belt (comment voltage and belt part#)	OK
Comments:	
6.11 Tachometer RPM (comment RPM)	OK
Comments:	
6.12 DC Ammeter (Comment Amperage)	OK
6.13 Engine Wiring	OK
6.14 Pre Alarms Operational	OK
6.15 Shutdown Alarm Operational	OK
6.16 Safety Shut Off / E-Stop Operational	OK
atteries (If Applicable)	
7.1 Battery Specific Gravity (Tap to Add Details) (Use '+' to add additional batteries)	SELECT THEN ADD COMMENT
E ectro yte Leve : 0	
Load Test Resuts : 0	
Spec f c Grav ty 1:0	
Spec f c Grav ty 2:0	
Spec f c Grav ty 3 : 0	
Spec f c Grav ty 4 : 0	
Spec f c Grav ty 5 : 0 Spec f c Grav ty 6 : 0	

#### 8 1 Control Switch in Auto







#### 8 3 Analysis and Recommendations

Comments: See anything noted as minor, no major issues found

NO

SELECT THEN ADD COMMENT

Carter	1330 Lynchburg Tur PHC	PANY, INC Fluids Analysis Laboratory npike Salem, VA 24153-5457 USA DNE: 540-682-2621 com Email: FluidAnalysis@cartermachinery. com	
ENGINE	EQUIP NUM: DOUGLASDALE GEN	SERIAL NUMBER:	
D100-54295-0387 SHOP JOB NUM : RI82080 SAMPLE SHIP TIME (days) : 5 CITY OF RICHMOND-DPU WATER TREATMENT RECEIVED DATE: 21-Oct-24	NO Action Required	ITINUE SAMPLING AT THE NORMAL INTERVAL.	Interp By: Robert W Hobson Interpreted On: 21-Oct-24

SAMPLE INFORMATION				
	1	1	1	1
Sampled Date	16-Oct-24	17-Jun-24	06-Dec-23	01-May-23
Sample Id	D100-54295-0387	D100-54172-0485	D100-53342-0144	D100-53124-0533
Lab Date	21-Oct-24	20-Jun-24	08-Dec-23	04-May-23
Meter [Hr]	196 2	196.0	193	188
Meter On Fluid	3.0	3.0	7	2
Fluid Brand				
Fluid Weight	15W-40	15W-40	15W-40	15W-40
Fluid Type				
Fluid Change	N	N	Y	N
Filter Change	N	N	U	U

PRE	vious	SAMP	LE

NO PROBLEMS PRESENTLY ASSOCIATED CONTINUE WITH THIS SAMPLE. SAMPLING AT THE NORMAL INTERVAL.

CONDITION / CONTAMINATION							
		16-Oct-24	17-Jun-24	06-Dec-23	01-May-23		
VISCO	SITY (CENTISTOKES)	ASTM D445					
V100	Viscosity at 100 C	12.80	12.90	13.20	13.40		

INFRARED (UFM) ASTM E2412							
ST	Soot	3	0	2	0		
охі	Oxidation	17	18	13	13		
SUL	Sulfur Products	21	21	17	17		
NIT	Nitration	0	0	4	4		
_							

WATER					
w	Water	N	N	Ν	N

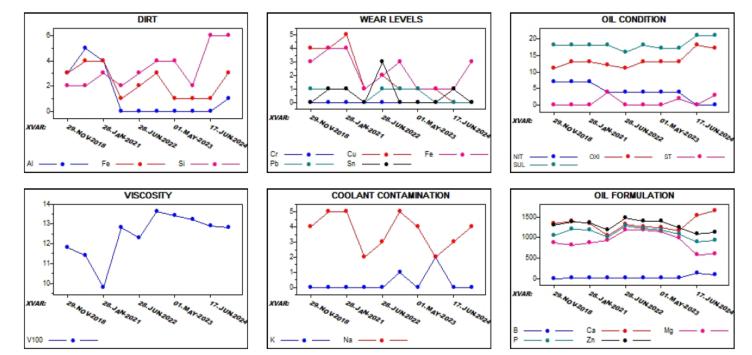
	LITT!	IEE		<b>_</b> 7		
A	NII	IFR	E	ΞZ	E.	

A	Antifreeze	N	N	N	N

FUEL					
F	Fuel	N	N	N	Ν

		CLEAN	LINESS		
		16-Oct-24	17-Jun-24	06-Dec-23	01-May-23
FER	ROUS DEBRIS				
PQI	PQ Index				2

		WEAR LE	VELS / ADDI	TIVES		
		16-Oct-24	17-Jun-24	06-Dec-23	01-May-23	
ELEN	IENTAL ANALYSIS (PPM	I) ASTM D5185 [OIL	] / ASTM D6130	[COOLANT]		
Cu	Copper	0	0	1	1	
Fe	Iron	3	1	1	1	
Cr	Chromium	0	0	0	0	
AI	Aluminum	1	0	0	0	
РЬ	Lead	0	0	0	1	
Sn	Tin	0	1	0	0	
Si	Silicon	6	6	2	4	
Na	Sodium	4	3	2	4	
< .	Potassium	0	0	2	0	
No	Molybdenum	43	41	60	66	
Ni	Nickel	0	0	0	0	
٩g	Silver	0	0	0	0	
Ti -	Titanium	0	0	0	0	
/	Vanadium	1	1	1	1	
Ca	Calcium	1643	1525	1158	1247	
•	Phosphorus	938	896	1091	1186	
Zn	Zinc	1121	1076	1239	1388	
Mg	Magnesium	599	570	994	1135	
в	Boron	94	131	5	6	





Our sample report has been updated! For more information on the new report, go to - https://www.youtube.com/watch?v=4h8bREJVUrs

SERIAL NUMBER: EQUIP NUM: DOUGLASDALE GEN

ENGINE



Carter	1330 Lynchburg Turnpil PHONE	NY, INC Fluids Analysis Laboratory ke Salem, VA 24153-5457 USA E: 540-682-2621 n Email: FluidAnalysis@cartermachinery. com	
ENGINE	EQUIP NUM: DOUGLASDALE GEN	SERIAL NUMBER:	
D100-54295-0675 SHOP JOB NUM : RI82070 SAMPLE SHIP TIME (days) : 5 CITY OF RICHMOND-DPU WATER TREATMENT RECEIVED DATE: 21-Oct-24	No Action Required	UE SAMPLING AT THE NORMAL INTERVAL.	Interp By: Robert W Hobson Interpreted On: 21-Oct-24

SAMPLE INFORMATION						
	1	1	1	1		
Sampled Date	16-Oct-24	17-Jun-24	07-Dec-23	01-May-23		
Sample Id	D100-54295-0675	D100-54172-0481	D100-53345-0405	D100-53124-0522		
Lab Date	21-Oct-24	20-Jun-24	11-Dec-23	04-May-23		
Meter [Hr]	184 5	184.1	181.2	178.9		
Meter On Fluid	2.0	2.9	5 0	2 3		
Fluid Brand						
Fluid Weight	15W-40	15W-40	15W-40	15W-40		
Fluid Type						
Fluid Change	N	N	Y	N		
Filter Change	Ν	N	Y	U		

#### PREVIOUS SAMPLE

NO PROBLEMS PRESENTLY ASSOCIATED WITH THIS SAMPLE. CONTINUE SAMPLING AT THE NORMAL INTERVAL.

CONDITION / CONTAMINATION								
		16-Oct-24	17-Jun-24	07-Dec-23	01-May-23			
VISCOSITY (CENTISTOKES) ASTM D445								
V100	Viscosity at 100 C	13.10	13.5	13.90	14.30			

INFRARED (UFM) ASTM E2412							
ST	Soot	3	0	2	0		
OXI	Oxidation	17	18	13	14		
SUL	Sulfur Products	21	21	18	19		
NIT	Nitration	0	0	4	5		

ALL NU NU NU NU	
W Water N N N N	

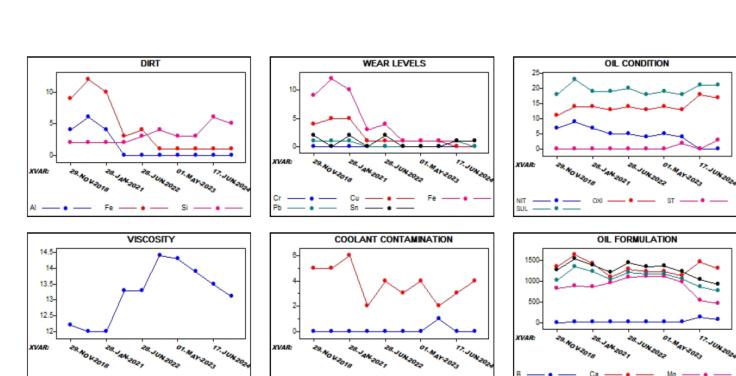
# ANTIFREEZE

Α	Antifreeze	N	N	N	N

UEL					
:	Fuel	N	N	N	Ν

	CLEAN	INESS		
	16-Oct-24	17-Jun-24	07-Dec-23	01-May-23
FERROUS DEBRIS				
PQI PQ Index				2

			VELS / ADDI			
		16-Oct-24	17-Jun-24	07-Dec-23	01-May-23	W
	IENTAL ANALYSIS (PPN				01-Widy-25	w
Cu	Copper	0	0	1	1	
Fe	Iron	1	1	1	1	
Cr	Chromium	0	0	0	0	AN
AI	Aluminum	0	0	0	0	Α
Pb	Lead	0	1	0	0	
Sn	Tin	1	1	0	0	
Si	Silicon	5	6	3	3	FL
Na	Sodium	4	3	2	4	F
к	Potassium	0	0	1	0	
Мо	Molybdenum	34	41	61	68	
Ni	Nickel	0	0	0	0	
Ag	Silver	0	0	0	0	FE
Ti	Titanium	0	0	0	0	PC
v	Vanadium	1	1	1	1	
Ca	Calcium	1315	1462	1134	1238	
Р	Phosphorus	763	872	1069	1178	
Zn	Zinc	924	1034	1242	1368	
Mg	Magnesium	465	539	985	1122	
в	Boron	77	125	7	8	



V100 -

• • -



Ca -

Zn

в

P

Mg

**Report Comment** 

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Na

Our sample report has been updated! For more information on the new report, go to - https://www.youtube.com/watch?v=4h8bREJVUrs