Site Circuit Designation AC Unit 3 FB

Job Information

Customer Name	Valero Energy
Job Site Name	OKT Oil Refinery Anadarko
Owner	Valero Energy
Job Name	Dhskd
Address	12335 State Hwy 987, Anadarko, OK 98942
Project Lead	Eddy Yang
Tested By	Eddy Yang
Date	April 22, 2022

Equipment Information

Serial Number	A65DS4F6
Equipment Location	Building 2, Electrical Room 3
Manufacturer	Siemens
Model	MG 800A Frame LCD Trip Unit 586
Туре	Low Voltage Molded Case Breaker
Max Voltage	600 AC
System Voltage	480 AC
Frame Rating	1200 A
Mount Style	Bolted In
Control Voltage	115 AC
Trip Coil Voltage	48 DC
Date Manufactured	April 23, 2022

Trip Unit Information

Manufacturer	Eaton
Model	Entelliguard
Serial Number	578DHJF
Rating Plug (In)	1000
Curve #	TU5612
Phase CT Ratio	100:5

Settings As Found And As Left

	Pickup	Delay@6xPickup
Long Time	0.8xIn	4 sec
Short Time	1.2xln	2sec
Instantaneous	0.8xIn	N/A
Ground Fault	0.25	0.8 sec

Visual And Mechanical Inspections

Pass	Nameplate data matches drawings/specs
Pass	Inspect physical and mechnical condition
Pass	Inspect anchorage and alignment
Pass	Unit is clean
Pass	Circuit breaker operates smoothly
Pass	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Pass	Inspect operating mechanism, contacts, and arc chutes in unsealed units
Pass	Perform adjustments for final protective device settings in accordance with the coordination study

Insulation And Contact Resistance

Phase-to-Phase	@1000V	A-B	B-C	C-A
Insulation Resistance		542 Mega Ω	645 Mega Ω	456 Mega Ω
Line-to-Load	@1000 V	A-A'	B-B'	C-C'
Insulation Resistance		485 Mega Ω	499 Mega Ω	978 Mega Ω
Phase-to-Ground	@1000V	A-G	B-G	C-G
Insulation Resistance		1.5 Giga Ω	1.42 Giga Ω	1.8 Giga Ω
Contact Resistance	@10 amps	10.2 milli Ω	12.5 milli Ω	14.98 milli Ω

Low Voltage Molded Case Breaker Test Report (Page 2 of 2)

Admin Company

 $\frac{\text{Site Circuit Designation}}{AC\ Unit\ 3\ FB}$

Primary Current Injection

					As Found	1		As Left		Toler	ance
Tested Function	Setting	Test Amps	xPickup	А	В	С	А	В	С	min	max
Long Time Pickup (amps)	0.8			802	784	814	802	784	814	760	840
Long Time Delay(sec)	0.2	4800	6	5.23	5.36	5.198	5.23	5.36	5.198	5.056	5.61
Short Time Pickup(amps)	0.6			604	590	605	604	590	605	615	585
Short Time Delay(sec)	0.6	1200	2	0.126	0.124	0.131	0.126	0.124	0.131	1.2	1.38
Instantaneous	1.2	6000	4.17	0.08	0.08	0.07	0.08	0.08	0.07	0.07	0.91
Ground Fault Pickup	0.25			254	248	246	254	248	246	225	275
Ground Fault Delay	500		2	0.125	0.126	0.126	0.125	0.126	0.126	0.115	0.14

Secondary Current Injection

Test	А	В	С
Minimum Pick Up	1000amps	1000amps	1000amps
Long Time	6020 amps in 5.2 seconds	6040 amps in 5.4 seconds	6030 amps in 5.3 seconds
Short Time	8025 amps in 0.15 seconds	8020 amps in 0.16 seconds	7950 amps in 0.14 seconds
Instantaneous	1250 amps	1350 amps	1235 amps

Medium Voltage Vacuum Breaker Test Report Created May-05-2022 11:52

Site Circuit Designation

Generator MB 1

Equipment Information

Jo	b Information	C		C 1 1/1	I	
Customer	Valero Energy	Sei Numl		System Voltage		
Name		Equipme		Control Voltage Trip Coil Voltage		
Job Site	,	Locat		Operations Counter		
Name		Manufactu	rer Eaton	As-Found		
Owner		Mo	del VCP-W	Operations Counter		
Job Name		007	Medium Volta			
Address	12335 State Hwy 9 Anadarko, OK 9894		vpe Vacuum Brea			
Project		Max Volta	nge	Fuse Type		
Lead		Continuo		Fuse Size		
Tested By		Amp Rat	ing	Date Manufactured		
Date						
		\ /* A				
:I			l Mechanical	Inspections		
	Nameplate data match					
	nspect physical and mo					
		nment, and grounding	scial tools and gauge	es specified by the manufacturer are a	available for	
	ervicing and operating		ciai toois and gauge	es specified by the manufacturer are a	avaliable for	
Fail (Jnit is clean					
				sm in accordance with manufacturer's	published data	
		nces such as contact gap		•		
Pass E	Electrical connections	inspected for high resis	tance by Ohmmete	r, Torque Wrench, or Thermographic	Survey	
Fail \	erify cell fit and elem	ent alignment				
Pass \	Pass Verify racking mechanism operation					
Fail \	Fail Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces					
Pass F	Perform contact-timin	g test				
Fail F	Perform trip/close coil	current signature analy	⁄sis			
Pass F	Perform mechanism m	otion analysis				
Fail /	All space heaters are o	perating correctly				
		Insulation	And Contact	Resistance		
DI	. 51		4 5	5.0		
	nase-to-Phase	@V	A-B	B-C	C-A	
Insui	ation Resistance		GigaΩ	5 Giga Ω	Giga Ω	
	ine-to-Load	@ V	A-A'	B-B'	C-C'	
Insul	ation Resistance	<u> </u>	GigaΩ	Giga Ω	Giga Ω	
Pha	ase-to-Ground	@ V	A-G	B-G	C-G	
Insula	ation Resistance	@v	Giga Ω	Giga Ω	Giga Ω	
Con	tact Resistance	@ amps	micro Ω	micro Ω	micro Ω	
		· -	ligh Potential	Test		
			Tested atV			
	Dlagge to Dlagge	A-B		В-С	C-A	
	Phase-to-Phase		Amps	3 milliAmps	milliAmps	
	Line-to-Load	A-A'	Λ να να ο	B-B'	C-C'	
		milli	Amps	milliAmps	milliAmps	
		A-G		B-G	C-G	
	Phase-to-Ground		Amps	milliAmps	milliAmps	

Oil-filled Transformer Test Report (Page 1 of 2) Created May-05-2022 11:52

 $\frac{\text{Site Circuit Designation}}{\text{Utility XFMR}}$

Equipment Information

Inn	Int∩rr	nation
JUU	1111011	пасют

Customer Name	Valero Energy
Job Site Name	OKT Oil Refinery Anadarko
Owner	Valero Energy
Job Name	Dhskd
Address	12335 State Hwy 987, Anadarko, OK 98942
Project Lead	Eddy Yang
Tested By	
Date	

Serial Number	
Equipment Location	
Manufacturer	ACME Electric
Model	QB 830
Туре	Oil-filled Transformer
Power Rating	
Primary Config	None
Secondary Config	None

Primary Voltage	None V
Secondary Voltage	None V
Control Voltage	VAC
Weight	
Temperature Rise	°C
Impedance	%
Class	
Ambient	°F
Temperature	
Number of Taps	7
Tap Position	
Insulation Type	
Fluid Type	
Fluid Capacity	
Liquid Level	
Pressure	
Date Manufactured	

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Pass	Inspect physical and mechnical condition
Fail	Inspect impact recorder prior to unloading
Pass	Test dew point of tank gases
Fail	Inspect anchorage, alignment, and grounding
Pass	Verify the presence of PCB content labeling
Fail	Verify removal of any shipping bracing after placement
Pass	Verify the bushings are clean
Fail	Verify that alarm, control, and trip settings on temperature and level indicators are as specified
Pass	Verify operation of alarm, control, and trip circuits from temperature and level indicators, pressure relief device, gas accumulator, and fault pressure relay
Fail	Verify that cooling fans and pumps operate and have correct overcurrent protection
Pass	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench (on accessible connections), or Thermographic Survey
Fail	Verify correct liquid level in tanks and bushings
Pass	Valves are in correct operating position
Fail	Verify that positive pressure is maintained on gas-blanketed transformers
Pass	Perform inspections and mechanical tests as recommended by the manufacturer
Fail	Verify the presence of surge arresters
Pass	Verify de-energized tap-changer position is left as specified

H2-H3:X0-X3

Error

H3-H1:X0-X1

Error

Oil-filled Transformer Test Report (*Page 2 of 2*)

		Insu	lation Re	sistance				
Primary to Se GΩ a		_	Primary to G GΩ at	round V		Secondar	ry to Grou GΩ at	
		Wir	nding Res	istance				
X0-X1 mΩ	X0-X2 mΩ		:0-X3 mΩ	H1-ŀ	H2 _Ω	H2-H3 Ω		H3-H1 Ω
				urns Ratio				Tolerance:+/%
Тар		1	2	3	4	5	6	7
Tap Volt	tage							
Expect	red							
H1-H2:X	0-X2							
Erro	r	%	%	%	%	%	%	%

%

%

%

%

%

%

%

%

%

%

%

%

%

%

Low Voltage Power Circuit Breaker Test Report(Page 2 of 2)

Site Circuit Designation

Main - PCB 1

Job Information

Customer Name	Valero Energy
Job Site Name	OKT Oil Refinery Anadarko
Owner	Valero Energy
Job Name	Dhskd
Address	12335 State Hwy 987, Anadarko, OK 98942
Project Lead	Eddy Yang
Tested By	
Date	

Equipment Information

Serial Number	
Equipment Location	
Manufacturer	Eaton
Model	Magnum
Туре	Low Voltage Power Circuit Breaker
Max Voltage	AC
System Voltage	AC
Frame Rating	
Mount Style	
Control Voltage	
Trip Coil Voltage	
Date Manufactured	

Trip Unit Information

Manufacturer	
Model	
Serial Number	
Rating Plug (In)	-
Curve #	None
Phase CT Ratio	None:None
Operations Counter As-Found	
Operations Counter As-Left	

Settings As Found And As Left

	Pickup	Delay@6xPickup
Long Time	xln	sec
Short Time	xln	sec
Instantaneous	xln	N/A
Ground Fault		sec

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Pass	Inspect physical and mechnical condition
Fail	Inspect anchorage and alignment
Pass	Unit is clean
Fail	Circuit breaker operates smoothly
Pass	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Fail	Inspect operating mechanism, contacts, and arc chutes in unsealed units
Pass	Perform adjustments for final protective device settings in accordance with the coordination study

Insulation And Contact Resistance

Phase-to-Phase	@V	A-B	B-C	C-A
Insulation Resistance		51 Tera Ω	GigaΩ	Giga Ω
Line-to-Load	@5000 V	A-A'	B-B'	C-C'
Insulation Resistance		22 Tera Ω	GigaΩ	16 Mega Ω
Phase-to-Ground	@V	A-G	B-G	C-G
Insulation Resistance		61 Giga Ω	98 Kilo Ω	51 Giga Ω
Contact Resistance	@10 amps	micro Ω	20 milli Ω	micro Ω

Low Voltage Power Circuit Breaker Test Report (Page 2 of 2)

 $\frac{\text{Site Circuit Designation}}{\text{Main - PCB 1}}$

Primary Current Injection

				A	As Foun	d		As Left		Toler	rance
Tested Function	Setting	Test Amps	xPickup	А	В	С	А	В	С	min	max
Long Time Pickup (amps)											
Long Time Delay(sec)											
Short Time Pickup(amps)											
Short Time Delay(sec)											
Instantaneous											
Ground Fault Pickup											
Ground Fault Delay											

Secondary Current Injection

	occonaa	y Carrent injection	
Test	А	В	С
Minimum Pick Up	amps	amps	amps
Long Time	amps in seconds	amps in seconds	amps inseconds
Short Time	amps in seconds	amps in seconds	amps in seconds
Instantaneous	amps	amps	amps

Low Voltage Switch Test Report

Created May-05-2022 11:52

Eaton

Current

Limiter

Fuse Size 200Amps

Fuse

Manufacturer

Fuse Type

Site Circuit Designation

Sector 1 - Section 1 -Switch

Equipment Information

Job Information					
Customer Name	Valero Energy				
Job Site Name	OKT Oil Refinery Anadarko				
Owner	Valero Energy				
Job Name	Dhskd				
Address	12335 State Hwy 987, Anadarko, OK 98942				
Project Lead	Eddy Yang				
Tested By					
Date	None				

Serial Number	
Equipment Location	
Manufacturer	Eaton
Model	Safety Switch
Type	Low Voltage Switch
Max Voltage	AC
System Voltage	AC
Amp Rating	
Control Voltage	
Trip Coil Voltage	
Date Manufactured	

Visual <i>A</i>	And Me	chanical	Inspections
-----------------	--------	----------	-------------

Pass	Nameplate data matches drawings/specs
Pass	Inspect physical and mechnical condition
Pass	Inspect anchorage, alignment, grounding, and required clearances
Pass	Unit is clean
Pass	Verify correct blade alignment, blade penetration, travel stops, and mechanical operation.
Pass	Fuse sizes and types are in accordance with drawings, short-circuit studies, and coordination study
Pass	Verify that each fuse has adequate mechanical support and contact integrity.
Pass	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Pass	Operation and sequencing of interlock systems are correct
Pass	Phase barrier installation is correct
Pass	Verify correct operation of indicating and control devices
Pass	Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces

Fuse Resistance

	Phase A	Phase B	Phase C
Power Fuse	206.4 milliΩ	42.2 milliΩ	36.2 Ω

Insulation And Contact Resistance

Phase-to-Phase	@V	A-B	B-C	C-A
Insulation Resistance		Giga Ω	Giga Ω	GigaΩ
Line-to-Load	@V	A-A'	B-B'	C-C'
Insulation Resistance		Giga Ω	324 Giga Ω	Giga Ω
Phase-to-Ground	@V	A-G	B-G	C-G
Insulation Resistance		Giga Ω	GigaΩ	GigaΩ
Contact Resistance	@ amps	micro Ω	23 milli Ω	micro Ω

Site Circuit Designation

Division 3 - Section 2 - Switch

Equipment Information

	Job Information	Serial		Control Voltage	
Custome	Valero Energy	Number		Operations	
Nam	le l	Equipment		Counter	
Job Sit Nam	TOR TOUR RETIDELY ADADACK			As-Found	
Owne		Manufacturer	Square D	Operations	
Job Nam		Model	HVL Switch	Counter As-Left	
	12225 Stato HMA / 027	Туре	Enclosed Medium	'' <u> </u>	
Addres	Anadarko, OK 98942	Max Voltage	Voltage Air Switc	Manufacturer	ABB
Projec	Eddy Yang	System		Fuse Type	CL
Lea	ld	Voltage	AC	Fuse Size	500 Amps
Tested B	·	Amp Rating		Date	
Dat	re		1	Manufactured	
		Visual And N	dechanical In	spections	
Pass	Nameplate data matches drav			5p	
Fail	Inspect physical and mechnic	al condition			
Pass	Inspect anchorage, alignment	, grounding, and req	uired clearances		
Fail	Unit is clean				
Pass	Verify correct blade alignmen	nt, blade penetration	, travel stops, arc ir	nterrupter operation, and me	chanical operation.
Fail	Fuse sizes and types are in ac	cordance with drawi	ngs, short-circuit st	tudies, and coordination stud	У
Pass	Verify that expulsion-limiting	devices are in place	on all fuses having	expulsion-type elements.	
Fail	Verify that each fuseholder h				
Pass	Electrical connections inspec	-		orque Wrench, or Thermogi	raphic Survey
Fail	Operation and sequencing of		e correct		
Pass	Phase barrier installation is co				
Fail	Verify correct operation of in				
Pass	Verify appropriate lubrication		-carrying parts and	on moving and sliding surfac	es
Fail	All space heaters are operating	ng correctly			
		Fus	se Resistance	!	
		Phase A		Phase B	Phase C
	Power Fuse	20 Ω		30.2 milliΩ	Ω
	I	Insulation A	nd Contact R	esistance	
		insalation /			
	Phase-to-Phase	0 V	A-B	B-C	C-A
Insu	ulation Resistance	-	GigaΩ	Giga Ω	GigaΩ
	Line-to-Load)V	A-A'	B-B'	C-C'
Insu	ulation Resistance		Giga Ω	Giga Ω	Giga Ω
Pl	hase-to-Ground		A-G	B-G	C-G
Insu	ulation Resistance	V	Giga Ω	Giga Ω	Giga Ω
Сс	ontact Resistance @_	amps	micro Ω	micro Ω	micro Ω
		Hig	h Potential T	est	
		Т	ested at Volt	S	
	Dhaca to Dhaca	A-B		В-С	C-A
	Phase-to-Phase	milliAm	ps _	milliAmps	milliAmps
	Line-to-Load	A-A'	nc	B-B'	C-C'
		milliAm	μs _	milliAmps	milliAmps
		A-G		B-G	C-G
	Phase-to-Ground	milliAm	ps	milliAmps	milliAmps

Medium Voltage Air Breaker Test Report (Page 1 of 2)

Created May-05-2022 11:52

Site Circuit Designation

Main Breaker 6

Equipment Information

			=qaipinent iiii	or matrom	
Jo	b Information	Serial Number		System Voltage	
Customer Name	Valero Energy	Equipment		Control Voltage	
Job Site	OKT Oil Refinery	Location		Trip Coil Voltage	AC
Name	Anadarko	Manufacturer	Westinghouse	Operations Counter	
Owner	Valero Energy	Model	50DH-50	As-Found	
Job Name	Dhskd	Туре	Medium Voltage Air	Operations Counter	
	12335 State Hwy 987,	. /	Breaker	As-Left	
Address	Address Anadarko, OK 98942			Date Manufactured	
Project	ETT V	Frame Size			
Lead	Eddy Yang	Interrupting			
Tested By		Capacity			
Date					

Visual And Mechanical Inspections

_	La contra de la contra del la contra del la contra del la contra del la contra de la contra de la contra del la contra d
Pass	Nameplate data matches drawings/specs
Fail	Inspect physical and mechnical condition
Pass	Inspect anchorage, alignment, and grounding
Fail	Verify that all maintenance devices are available for servicing and operating the breaker
Pass	Unit is clean
Fail	Verify the arc chutes are intact
Pass	Inspect moving and stationary contacts for condition and alignment
Fail	If recommended by manufacturer, slow close/open breaker and check for binding, friction, contact alignment, and penetration Verify that contact sequence is in accordance with manufacturer's published data. In the absence of manufacturer's data, use IEEE C37.04
Pass	Perform all mechanical operation tests on the operating mechanism in accordance with manufacturer's published data
Fail	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Pass	Verify cell fit and element alignment
Fail	Verify racking mechanism operation
Pass	Inspect puffer operation
Fail	Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces
Pass	Perform contact-timing test
Fail	Perform mechanism motion analysis
Pass	Perform trip/close coil current signature analysis
Fail	All space heaters are operating correctly

Medium Voltage Air Breaker Test Report (Page 2 of 2) Created May-05-2022 11:52

Site Circuit Designation
Main Breaker 6

Insulation And Contact Resistance

Phase-to-Phase	@V	A-B	B-C	C-A
Insulation Resistance		GigaΩ	Giga Ω	GigaΩ
Line-to-Load	@V	A-A'	B-B'	C-C'
Insulation Resistance		Giga Ω	GigaΩ	GigaΩ
Phase-to-Ground	@V	A-G	B-G	C-G
Insulation Resistance		GigaΩ	GigaΩ	GigaΩ
Contact Resistance	@ amps	micro Ω	micro Ω	micro $Ω$
High Potential Test Tested at Volts				
Phase-to-Phase	A-B		B-C	C-A
	milliAmps		milliAmps	milliAmps
Line-to-Load	A-A'		B-B'	C-C'
	milliAmps		milliAmps	milliAmps
Phase-to-Ground		-G illiAmps	B-G milliAmps	C-G milliAmps

SF6 Circuit Breaker Test Report (Page 1 of 2) Created May-05-2022 11:52

Site Circuit Designation

Utility Breaker 1

Equipment Information

Job Information			
Customer Name	Valero Energy		
Job Site Name	OKT Oil Refinery Anadarko		
Owner	Valero Energy		
Job Name	Dhskd		
Address	12335 State Hwy 987, Anadarko, OK 98942		
Project Lead	Eddy Yang		
Tested By	Eddy Yang		
Date	April 28, 2022		

Serial Number	1ds65f	
Equipment Location	16a5df1	Or
Manufacturer	Schneider Electric (Other than Square D)	Op
Model	SF F400	
Type	SF6 Circuit Breaker	
Max Voltage	5000 AC	
Frame Size	2000 Amps	
Interrupting Capacity	200 kA @ 480 V	

System Voltage	4160 VDC
Control Voltage	125 AC
Trip Coil Voltage	48 DC
Operations Counter As-Found	50
Operations Counter As-Left	52
Date Manufactured	

Visual And Mechanical Inspections

Pass	Nameplate data matches drawings/specs
Pass	Inspect physical and mechnical condition
Pass	Inspect anchorage, alignment, and grounding
Pass	Verify that all maintenance devices such as special tools and guages specified by manufacturer are available for servicing and operating breaker
Pass	Unit is clean
Pass	When provisions are made for sampling, remove a sample of SF ₆ gas and test in accordance with current standards. Do not break, seal, or distort "sealed-for-life" interrupters.
Pass	Inspect operating mechanism and/or hydraulic or pneumatic system and SF_6 gas insulated system in accordance with manufacturer's published data
Pass	Test for SF ₆ gas leaks in accordance with manufacturer's published data
Pass	Verify operation of alarms and pressure-limit switches for pneumatic, hydraulic, and SF ₆ gas pressure as recommended by the manufacturer
Pass	If recommended by manufacturer, slow close/open breaker and check for binding, friction, contact alignment, and penetration. Verify that contact sequence is in accordance with manufacturer's published data. In the absence of manufacturer's data, use IEEE C37.04
Pass	Perform all mechanical operation tests on the operating mechanism in accordance with manufacturer's published data
Pass	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Pass	Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces
Pass	Perform contact-timing test
Pass	Perform trip/close coil current signature analysis
Pass	Perform mechanism motion analysis
Fail	All space heaters are operating correctly

SF6 Circuit Breaker Test Report (Page 2 of 2) Created May-05-2022 11:52

Site Circuit Designation
Utility Breaker 1

Insulation And Contact Resistance

Phase-to-Phase	@5000V	A-B	B-C	C-A
Insulation Resistance		120 Giga Ω	132 Giga Ω	152 Giga Ω
Line-to-Load	@5000 V	A-A'	B-B'	C-C'
Insulation Resistance		165 Giga Ω	123 Giga Ω	143 Giga Ω
Phase-to-Ground	@5000V	A-G	B-G	C-G
Insulation Resistance		153 Giga Ω	152 Giga Ω	153 Giga Ω
Contact Resistance	@10 amps	132 micro Ω	165 micro Ω	135 micro Ω

High Potential Test

Tested at 15000 Volts

Phase-to-Phase	A-B	B-C	C-A
	165 milliAmps	135 milliAmps	189 milliAmps
Line-to-Load	A-A'	B-B'	C-C'
	175 milliAmps	164 milliAmps	135 milliAmps
Phase-to-Ground	A-G	B-G	C-G
	156 milliAmps	146 milliAmps	164 milliAmps

Power Meter Test Report Created May-05-2022 11:52

Site Circuit Designation

Meter 1

Job Information

Customer Name	Valero Energy
Job Site Name	OKT Oil Refinery Anadarko
Owner	Valero Energy
Job Name	Dhskd
Address	12335 State Hwy 987, Anadarko, OK 98942
Project Lead	Eddy Yang
Tested By	Eddy Yang
Date	April 29, 2022

Equipment Information

Serial Number	AS6D5F3
Equipment Location	ER3
Manufacturer	Eaton
Model	IQ Series
Type	Power Meter
Control Voltage	125 DC
Date Manufactured	April 16, 2022

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Pass	Inspect physical and mechnical condition
Fail	Unit is clean
Pass	Verify tightness of electrical connections
Fail	Verify operation of display and indicating devices
Pass	Unit is grounded in accordance with manufacturer's instructions
Fail	Verify unit is connected in accordance with manufacturer's instructions and project drawings
Pass	Set all required parameters including instrument transformer ratios, system type, frequency, power demand methods/intervals, and communications requirements.

Electrical Pass/Fail Inspections

	Confirm correct operation and setting of each auxiliary input/output feature in use, including mechanical relay, digital, and
	analog.
	After initial system energization, confirm measurements and indications are consistent with loads present in accordance with
	required standards

Voltage Transformer (VT) Test Report (Page 1 of 2) Created May-05-2022 11:52

Site Circuit Designation Main SWGR - VT

Equipment Information

		Equipment information			
Job Information		Serial		Primary Voltage	None V
Customer Name	Valero Energy	Number		Secondary Voltage	None V
Job Site Name	OKT Oil Refinery Anadarko	Equipment Location		Control Voltage	VAC
Owner	Valero Energy	Manufacturer manufacturer-		Weight	
Job Name	Dhskd		generic	Temperature Rise	°C
	12335 State Hwy 987, Anadarko, OK 98942	Madal	Switchgear Voltage Transformer (VT) - Medium Voltage	Impedance	%
Address		Model		Class	
Project Lead	Eddy Yang	Туре	Voltage Transformer (VT)	Ambient Temperature	°F
Tested By		Power Rating	(• 1)	Number of Taps	
Date		Primary Config	None	Tap Position	3
				Insulation Type	Air
		Secondary Config	None	Date Manufactured	

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Pass	Inspect physical and mechnical condition
Fail	Verify correct connection of transformer with system requirements
Pass	Verify adequate clearances exist between primary and secondary circuit wiring
Fail	Unit is clean
Pass	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Fail	Verify that all required grounding and connections provide contact
Pass	Primary and secondary fuse sizes are correct
Fail	Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces

Fuse Resistance

	Phase A	Phase B	Phase C	
Primary Fuse	20 milliΩ	30 Ω	40 Ω	
Secondary Fuse	5.4 milliOhms Ω	5.6 milliOhms Ω	54.1 Ohms Ω	

Voltage Transformer (VT) Test Report (Page 2 of 2)

%

Admin Company

	Insulation Resistance	
Primary to Secondary GΩ atV	Primary to Ground GΩ atV	Secondary to Ground GΩ atV
	Transformer Turns Ratio	Tolerance:+/%
	Тар	1
	Tap Voltage	
	Expected	
	H1-H2:X0-X2	
	Error	%
	H2-H3:X0-X3	
	Error	%
	H3-H1:X0-X1	

Error

Control Power Transformer (CPT) Test Report Created May-05-2022 11:52

Site Circuit Designation Main SWGR - CPT

Equipment Information

Job Information				
Customer Name	Valero Energy			
Job Site Name	OKT Oil Refinery Anadarko			
Owner	Valero Energy			
Job Name	Dhskd			
Address	12335 State Hwy 987, Anadarko, OK 98942			
Project Lead	Eddy Yang			
Tested By				
Date				

Serial Number	
Equipment Location	
Manufacturer	manufacturer- generic
Model	CPT generic model
Туре	Control Power Transformer (CPT)
Power Rating	
Primary Config	None
Secondary Config	None

	I
Primary Voltage	3952 V
Secondary Voltage	120 V
Control Voltage	VAC
Weight	324 lbs
Temperature Rise	°C
Impedance	%
Class	
Ambient Temperature	°F
Number of Taps	5
Tap Position	4
Insulation Type	Air
Date Manufactured	

Visual And Mechanical Inspections

Fail	Inspect for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition
Pass	Primary and secondary fuses/circuit breaker ratings match drawings
Fail	Drawout disconnecting contacts, grounding contacts, and interlocks functioning correctly.

Insulation Resistance

	IIISU	iation resist	ance		
Primary to Secondary GΩ atV	_	Primary to Ground GΩ at		Secondary to G $\subseteq G\Omega$ at \subseteq	
	Trans	former Turns	Ratio	Tole	erance:+0.5/-0.5%
Тар	1	2	3	4	5
Tap Voltage	3952	4056	4160	4264	4368
Expected	32.933	33.8	34.666	35.533	36.4
H1-H2:X0-X2	33.096				
Error	0.4949%	%	%	%	%
H2-H3:X0-X3	33.061				
Error	0.3887%	%	%	%	%
H3-H1:X0-X1	32.8				
Error	-0.4039%	%	%	%	%

$Medium\,Voltage\,Motor\,Contactor$ Test Report Created May-05-2022 11:52

Site Circuit Designation

Motor 1

Equipment Information

Jo	b Information	Carriel	 I	Contain Valta	ı
Customer	Valero Energy	Serial Number		System Voltage	
Name	J.,	Equipment		Control Voltage	
Job Site	OKT Oil Refinery	Location		Trip Coil Voltage Fuse Manufacturer	
Name	Anadarko	Manufacturer	Eaton		
Owner	Valero Energy	Model	Ampgard Contac	Fuse Type	
Job Name	Dhskd		Medium Voltage	1 U3C 312C	
Address	12335 State Hwy 98 Anadarko, OK 9894	2	Motor Contactor		
Project	Eddy Yang	Max Voltage			
Lead	Ludy Falig	Frame Size			
Tested By		Interrupting Capacity			
Date		Сараспу			
	lameplate data matche	s drawings/specs	1echanical In	spections	
	nspect physical and me				
	nspect anchorage, aligi	nment, and grounding			
	Jnit is clean	1 16 1:1 :1		- \\\\ -	C
			,	orque Wrench, or Thermographi	c Survey
		ing of electrical and mech		tems are correct	
		allation and operation is co			
		e been exercised and indic			
Fall I	neck contactors mech ublished data	anicai operation and conta	ict gap, wipe, alignr	ment, and pressure in accordance	with manufacturer's
Pass C	Overload protection ra	ing is correct for its applic	ation. Adjustable/p	programmable devices are set to c	oordination study
		Fus Phase A	se Resistance	Phase B	Phase C
	Power Fuse	Ω		5.1 milliΩ	Ω
		Insulation A	nd Contact R	esistance	
DI-	t- Dl		A D	D.C	C A
	ase-to-Phase ation Resistance	@V	A-B GigaΩ	B-C 15 Giga Ω	C-A GigaΩ
Li	ine-to-Load		A-A'	B-B'	C-C'
Insula	ation Resistance	@V	Giga Ω	Giga Ω	Giga Ω
	se-to-Ground ation Resistance	@2500V	A-G Giga Ω	B-G GigaΩ	C-G 51 Kilo Ω
	tact Resistance	amps	micro Ω	micro Ω	micro Ω
		Hia	h Potential T	act	
			ested at 50000 Vol		
	Phase-to-Phase	A-B milliAm	ns	B-C milliAmps	C-A milliAmps
				<u> </u>	•
	Line-to-Load	A-A'		B-B'	C-C'
	Line to Load	milliAm	ps _	milliAmps	milliAmps
	Phase-to-Ground	A-G milliAm	ps	B-G 15 milliAmps	C-G milliAmps

Medium Voltage Cable **Test Report**

Created May-05-2022 11:52

Site Circuit Designation

Date

Utility to Main 2 Cable

Job Information			
tomer Name	Valero Energy		
b Site	OKT Oil Refinery		
Name	Anadarko		
)wner	Valero Energy		

Customer Name	Valero Energy
Job Site Name	OKT Oil Refinery Anadarko
Owner	Valero Energy
Job Name	Dhskd
Address	12335 State Hwy 987, Anadarko, OK 98942
Project Lead	Eddy Yang
Tested By	

Serial Number	None
Source Point	
End Point	
Manufacturer	Southwire
Model	Generic Cable Model
Туре	Medium Voltage Cable
System Voltage	kV
Voltage Rating	kV
Conductor Size	300 MCM
Conductor Material	None

Insulation Material	None
Insulation Thickness	mils
Insulation Rating	100 %
Cable Length	feet
Source Termination Type	
End Termination Type	
Ambient Temperature	°F
Humidity	%
Date Manufactured	

Max Test Voltage | N/A

Visual and Mechanical Inspections

Fail	Cable data matches drawings/specs
Fail	No physical damage to exposed sections
Fail	Electrical connections verification via ductor, torque wrench, or thermographic survey
Fail	Compression-applied connectors match cables and have proper indentation
Fail	Shield grounding, cable supports, and terminations inspected
Fail	All cable bend radius meet or exceed ICEA and manufacturers minimum
Fail	Fireproofing is acceptable in common cable areas
Fail	If terminated through window-type current transformers, neutral and ground conductors are correctly placed and shields terminated correctly for operation of protective devices
Fail	Identification and arrangments are correct
Fail	Cable jacket and insulation are in acceptable condition

Shield Continuity Test

Equipment Information

Phase A	1.6	Phase B	2.2	Phase C	1.2
Ohms		Ohms	5	Ohms	

High Potential Insulation Test

Test Set Type | DC

Time (Minutes)	Volts (K∨)	Phase A (microAmps)	Phase B (microAmps)	Phase C (microAmps)
0.5	15	15	53.2	15.4

Dry Type Medium Voltage Transformer Test Report (Page 1 of 2)

Created May-05-2022 11:52

Site Circuit Designation Utility XFMR 1

Equipment Information

•	Equipment information				
Jo	b Information	Serial		Primary Voltage	None V
Customer Name	Valero Energy	Number			None V
Job Site Name	OKT Oil Refinery Anadarko	Equipment Location	Control voltage		VAC
Owner	Valero Energy	Manufacturer			°C
Job Name	Dhskd	Model	Transformer Pro 3000	Impedance	%
Address	12335 State Hwy 987, Anadarko, OK 98942	Type	Dry Type Medium Voltage Transformer	Class Ambient	°F
Project Lead	Eddy Yang	Power Rating	Tortage Transferme	Temperature Number of Taps	
Tested By	By Primary Config		None	Tap Position	7
Date	April 8, 2022	Secondary		Insulation Type	Air
		Config	None	Date Manufactured	Feb. 16, 2022

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Fail	Inspect physical and mechnical condition
Fail	Inspect anchorage, alignment, and grounding
Fail	Verify that resilient mounts are free and that any shipping brackets have been removed
Fail	Unit is clean
Fail	Verify that control and alarm settings on temperature indicators are as specified
Fail	Verify that cooling fans and fan motors have correct overcurrent protection
Fail	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Fail	Perform inspections and mechanical tests as recommended by the manufacturer
Fail	Verify as-left tap connections are as specified
Fail	Verify the presence of surge arresters

Dry Type Medium Voltage Transformer Test Report (Page 2 of 2)

		Insulation Res	sistance		
Primary to Se GΩ a	econdary atV	Primary to Ground GΩ atV		Secondary to Ground $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$ $\underline{\hspace{1cm}}$	
		Winding Resi	stance		
X0-X1 mΩ	X0-X2 mΩ	X0-X3 mΩ	H1-H2 Ω	H2-H3 Ω	H3-H1 Ω
		Transformer Tu	rns Ratio		Tolerance:+/%
		Тар			1
	Tap Voltage				
	Expected				
	H:	1-H2:X0-X2			
		Error			%
	H2	2-H3:X0-X3			
		Error			%
	Н	3-H1:X0-X1			
		Error			%

Medium Voltage Motor Control Center Test Report (Page 1 of 2) Created May-05-2022 11:52

Site Circuit Designation

MV MCC

Equipment Information

Job Information				
Customer Name	Valero Energy			
Job Site Name	OKT Oil Refinery Anadarko			
Owner	Valero Energy			
Job Name	Dhskd			
Address	12335 State Hwy 987, Anadarko, OK 98942			
Project Lead	Eddy Yang			
Tested By				
Date				

Serial Number	
Equipment Location	
Manufacturer	Eaton
Model	Ampgard Motor Control Center (MCC)
Туре	Medium Voltage Motor Control Center
Equipment Voltage	AC
System Voltage	AC

Bus Current Rating	Amps
Control Voltage	AC
Date Manufactured	
Humidity	%
Ambient Temperature	o

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Fail	Inspect physical, electrical, and mechnical condition of cords and connectors
Fail	Inspect anchorage, alignment, grounding, and required area clearances
Fail	Unit is clean and all shipping bracing, loose parts, and documentation have been removed from inside cubicles
Fail	Fuse and circuit breaker sizes and types match drawings and coordination study. Also circuit breaker addresses for microprocessor-communication packages are correct
Fail	Current and voltage transformer ratios match drawings
Fail	Wiring connections are tight and wiring is secure enough to prevent damage during routine operation of moving parts
Fail	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Fail	Operation and sequencing of electrical and mechanical interlock systems are correct. Locked-open devices and locked-open devices working correctly. Key exchange for interlock scheme is manually verified
Fail	Moving current-carrying parts and moving and sliding surfaces have appropriate lubrication
Fail	Insulators show no evidence of physical damage or contaminated surfaces
Fail	Barrier and shutter installation and operation is correct
Fail	Active components have been exercised.
Fail	Mechanical indicating devices operating correctly
Fail	Filters are in place and vents are clear
Fail	Instrument transformers visually and mechincallly inspected to NETA standard 7.10
Fail	Surge arresters visually and mechincallly inspected to NETA standard 7.19

Electrical Pass/Fail Inspections

Fall	All space heaters and their controllers are operating correctly
Fail	Phasing has been verified on all sources and outputs

Medium Voltage Motor Control Center Test Report (Page 2 of 2) Created May-05-2022 11:52

 $\frac{\text{Site Circuit Designation}}{\text{MV MCC}}$

Bus Insulation Resistance

Phase-to-Phase	A-B	B-C	C-A
@Volts	Ω	4 GigaΩ	6.4 KiloΩ
Phase-to-Ground	A-G	B-G	C-G
@ Volts	Ω	1 TeraΩ	5 GigaΩ

Bus Contact Resistance

Starting	Ending	Phase	Phase	Phase
Section	Section	A	B	C
Cell A			5 mΩ	

High Potential @ 15000 Volts phase to ground with other phases grounded

priase to grot	phase to ground with other phases grounded			
A-G	B-G	C-G		
milliAmps	15.1 milliAmps	milliAmps		

Low Voltage Motor Control Center Test Report (Page 1 of 2) Created May-05-2022 11:52

Site Circuit Designation

LV MCC

Equipment Information

Job Information				
Customer Name	Valero Energy			
Job Site Name	OKT Oil Refinery Anadarko			
Owner	Valero Energy			
Job Name	Dhskd			
Address	12335 State Hwy 987, Anadarko, OK 98942			
Project Lead	Eddy Yang			
Tested By	Eddy Yang			
Date	April 13, 2022			

Serial Number	1asd65f
Equipment Location	ER8
Manufacturer	Eaton
Model	Freedom Motor Control Center (MCC)
Туре	Low Voltage Motor Control Center
Equipment Voltage	5000 AC
System Voltage	4160 DC

Bus Current Rating	∧ mnc
Dus Cui i ent Rating	Amps
Control Voltage	AC
Date Manufactured	April 14, 2016
Humidity	32 %
Ambient Temperature	60°C

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Fail	Inspect physical, electrical, and mechnical condition of cords and connectors
Fail	Inspect anchorage, alignment, grounding, and required area clearances
Fail	Unit is clean and all shipping bracing, loose parts, and documentation have been removed from inside cubicles
Fail	Fuse and circuit breaker sizes and types match drawings and coordination study. Also circuit breaker addresses for microprocessor-communication packages are correct
Fail	Current and voltage transformer ratios match drawings
Fail	Wiring connections are tight and wiring is secure enough to prevent damage during routine operation of moving parts
Fail	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Fail	Operation and sequencing of electrical and mechanical interlock systems are correct. Locked-open devices and locked-open devices working correctly. Key exchange for interlock scheme is manually verified
Fail	Moving current-carrying parts and moving and sliding surfaces have appropriate lubrication
Fail	Insulators show no evidence of physical damage or contaminated surfaces
Fail	Barrier and shutter installation and operation is correct
Fail	Active components have been exercised.
Fail	Mechanical indicating devices operating correctly
Fail	Filters are in place and vents are clear
Fail	Instrument transformers visually and mechincallly inspected to NETA standard 7.10
Fail	Surge arresters visually and mechincallly inspected to NETA standard 7.19

Electrical Pass/Fail Inspections

Fail	All space heaters and their controllers are operating correctly
Fail	Phasing has been verified on all sources and outputs

Low Voltage Motor Control Center Test Report (Page 2 of 2) Created May-05-2022 11:52

 $\frac{\text{Site Circuit Designation}}{\text{LV MCC}}$

Bus Insulation Resistance				Bus Contact Resistance				
Phase-to- Phase @	A-B Ω	B-C Ω	C-A	Starting Section	Ending Section	Phase A	Phase B	Phase C
Volts				N/A	N/A	No	No	No
Phase-to- Ground @ Volts	A-G Ω	B-G Ω	C-G	2		Results	Results	Results

Low Voltage Switchgear Test Report (Page 1 of 2) Created May-05-2022 11:52

Site Circuit Designation

Main Switchgear

Equipment Information

Job Information				
Customer Name	Valero Energy			
Job Site	OKT Oil Refinery			
Name	Anadarko			
Owner	Valero Energy			
Job Name	Dhskd			
Address	12335 State Hwy 987, Anadarko, OK 98942			
Project Lead	Eddy Yang			
Tested By	Eddy Yang			
Date	April 25, 2022			

Serial Number	IOPXC324V9
Equipment Location	Building 2 Electrical Room 6
Manufacturer	Eaton
Model	Magnum Switchgear Assembly
Туре	Low Voltage Switchgear
Equipment Voltage	5000 DC
System Voltage	4160 AC

Bus Current Rating	126 Amps
Control Voltage	126 DC
Date Manufactured	April 13, 2011
Humidity	61%
Ambient Temperature	60°C

Visual And Mechanical Inspections

Pass	Nameplate data matches drawings/specs
Pass	Inspect physical, electrical, and mechnical condition of cords and connectors
Pass	Inspect anchorage, alignment, grounding, and required area clearances
Pass	Unit is clean and all shipping bracing, loose parts, and documentation have been removed from inside cubicles
Pass	Fuse and circuit breaker sizes and types match drawings and coordination study. Also circuit breaker addresses for microprocessor-communication packages are correct
Pass	Current and voltage transformer ratios match drawings
Pass	Wiring connections are tight and wiring is secure enough to prevent damage during routine operation of moving parts
Pass	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Pass	Operation and sequencing of electrical and mechanical interlock systems are correct. Locked-open devices and locked-open devices working correctly. Key exchange for interlock scheme is manually verified
Pass	Moving current-carrying parts and moving and sliding surfaces have appropriate lubrication
Pass	Insulators show no evidence of physical damage or contaminated surfaces
Pass	Barrier and shutter installation and operation is correct
Pass	Active components have been exercised.
Pass	Mechanical indicating devices operating correctly
Pass	Filters are in place and vents are clear
Pass	Instrument transformers visually and mechincallly inspected to NETA standard 7.10
Pass	Surge arresters visually and mechincallly inspected to NETA standard 7.19
	Electrical Pass/Fail Inspections
Pass	All space heaters and their controllers are operating correctly

Pass	All space heaters and their controllers are operating correctly
Pass	Phasing has been verified on all sources and outputs

Low Voltage Switchgear Test Report (Page 2 of 2) Created May-05-2022 11:52

Site Circuit Designation
Main Switchgear

Bus Insulation Resistance

-	Phase-to-Phase @1000 Volts	A-B 125 MegaΩ	B-C 136 MegaΩ	C-A 146 MegaΩ
	Phase-to- Ground @1000 Volts	A-G 1.5 GigaΩ	B-G 1.42 GigaΩ	C-G 1.64 GigaΩ

Bus Contact Resistance

Starting Section	Ending Section	Phase A	Phase B	Phase C
Main 1	FB 1	1.54 mΩ	1.68 mΩ	1.46 mΩ
Main 1	FB 2	$3.9~\text{m}\Omega$	$3.7~\text{m}\Omega$	4.5 mΩ
Main 1	FB3	53.4 μΩ	60 mΩ	72 mΩ
Main 1	FB 4	4.2 mΩ	6.5 mΩ	4.5 mΩ
Main 1	FB 5	1.2 Ω	998 μΩ	1.4 mΩ

Medium Voltage Switchgear Test Report (Page 1 of 2)

Created May-05-2022 11:52

Site Circuit Designation

Utility MV SWGR 1

Job Information

Customer Name	Valero Energy
Job Site	OKT Oil Refinery
Name	Anadarko
Owner	Valero Energy
Job Name	Dhskd
Address	12335 State Hwy 987, Anadarko, OK 98942
Project Lead	Eddy Yang
Tested By	
Date	April 29, 2022

Equipment Information

Serial		Bus Current Rating	Amps
Number		Control Voltage	AC
Equipment		Date Manufactured	
Location		Humidity	%
Manufacturer	Square D	Ambient Temperature	°F
Model	Masterclad MV Metal-Clad Switchgear	,	
Туре	Medium Voltage Switchgear		
Equipment Voltage	AC		
System Voltage	AC		

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Fail	Inspect physical, electrical, and mechnical condition of cords and connectors
Fail	Inspect anchorage, alignment, grounding, and required area clearances
Fail	Unit is clean and all shipping bracing, loose parts, and documentation have been removed from inside cubicles
Fail	Fuse and circuit breaker sizes and types match drawings and coordination study. Also circuit breaker addresses for microprocessor-communication packages are correct
Fail	Current and voltage transformer ratios match drawings
Fail	Wiring connections are tight and wiring is secure enough to prevent damage during routine operation of moving parts
Fail	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Fail	Operation and sequencing of electrical and mechanical interlock systems are correct. Locked-open devices and locked-open devices working correctly. Key exchange for interlock scheme is manually verified
Fail	Moving current-carrying parts and moving and sliding surfaces have appropriate lubrication
Fail	Insulators show no evidence of physical damage or contaminated surfaces
Fail	Barrier and shutter installation and operation is correct
Fail	Active components have been exercised.
Fail	Mechanical indicating devices operating correctly
Fail	Filters are in place and vents are clear
Fail	Instrument transformers visually and mechincallly inspected to NETA standard 7.10
Fail	Surge arresters visually and mechincallly inspected to NETA standard 7.19

Electrical Pass/Fail Inspections

Fail	All space heaters and their controllers are operating correctly
Fail	Phasing has been verified on all sources and outputs

Medium Voltage Switchgear Test Report (Page 2 of 2) Created May-05-2022 11:52

Site Circuit Designation
Utility MV SWGR 1

Bus Insulation Resistance							Bus Conta	ct Resist	ance		
Phase-to- Phase @	A-B	Ω	В-С	Ω	C-A	Ω	Starting Section	Ending Section	Phase A	Phase B	Phase C
Volts							N/A	N/A	No	No	No
Phase-to- Ground @ Volts	A-G	_Ω	B-G 	_Ω	C-G	_Ω			Results	Results	Results

High Potential phase to ground with other phases grounded A-G B-G C-G milliAmps milliAmps

Low Voltage Switchboard Test Report (Page 1 of 2) Created May-05-2022 11:52

Site Circuit Designation

AC SWBD 1

Equipment Information

Job Information								
Customer Name	Valero Energy							
Job Site	OKT Oil Refinery							
Name	Anadarko							
Owner	Valero Energy							
Job Name	Dhskd							
Address	12335 State Hwy 987, Anadarko, OK 98942							
Project Lead	Eddy Yang							
Tested By								
Date								

Serial Number	
Equipment Location	
Manufacturer	Eaton
Model	Pow-R-Line Xpert
Туре	Low Voltage Switchboard
Equipment Voltage	AC
System Voltage	AC

Bus Current Rating	Amps
Control Voltage	AC
Date Manufactured	
Humidity	%
Ambient Temperature	o

Visual And Mechanical Inspections

Fail	Nameplate data matches drawings/specs
Fail	Inspect physical, electrical, and mechnical condition of cords and connectors
Fail	Inspect anchorage, alignment, grounding, and required area clearances
Fail	Unit is clean and all shipping bracing, loose parts, and documentation have been removed from inside cubicles
Fail	Fuse and circuit breaker sizes and types match drawings and coordination study. Also circuit breaker addresses for microprocessor-communication packages are correct
Fail	Current and voltage transformer ratios match drawings
Fail	Wiring connections are tight and wiring is secure enough to prevent damage during routine operation of moving parts
Fail	Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey
Fail	Operation and sequencing of electrical and mechanical interlock systems are correct. Locked-open devices and locked-open devices working correctly. Key exchange for interlock scheme is manually verified
Fail	Moving current-carrying parts and moving and sliding surfaces have appropriate lubrication
Fail	Insulators show no evidence of physical damage or contaminated surfaces
Fail	Barrier and shutter installation and operation is correct
Fail	Active components have been exercised.
Fail	Mechanical indicating devices operating correctly
Fail	Filters are in place and vents are clear
Fail	Instrument transformers visually and mechincallly inspected to NETA standard 7.10
Fail	Surge arresters visually and mechincallly inspected to NETA standard 7.19

Electrical Pass/Fail Inspections

Fail	All space heaters and their controllers are operating correctly
Fail	Phasing has been verified on all sources and outputs

Low Voltage Switchboard Test Report (Page 2 of 2) Created May-05-2022 11:52

 $\frac{\text{Site Circuit Designation}}{\text{AC SWBD 1}}$

Bus Insulation Resistance						Bus Conta	ct Resist	ance			
Phase-to- Phase @	A-B	Ω	В-С	Ω	C-A	Ω _	Starting Section	Ending Section	Phase A	Phase B	Phase C
Volts							N/A	N/A	No	No	No
Phase-to- Ground @ Volts	A-G	_Ω	B-G 	_Ω	C-G	_Ω			Results	Results	Results

Medium Voltage Vacuum Breaker Test Report Created May-05-2022 11:52

Site Circuit Designation

Lights Transformer

Equipment Information

Jo	b Information	C l	I	C	_
Customer	Valero Energy	Serial Number		System Voltag Control Voltag	
Name	- '	Equipment		Control Voltag Trip Coil Voltag	
Job Site	OKT Oil Refinery	Location		Operations Counte	
Name	Anadarko	Manufacturer	Eaton	As-Foun	
Owner	Valero Energy	Model	VCP-W	Operations Counte	
Job Name	Dhskd		Medium Voltage	Operations counte	
Address	12335 State Hwy 9 Anadarko, OK 9894	-2	Vacuum Breaker	Date Manufacture	
Project Lead	Eddy Yang	Max Voltage Continuous			
Tested By		Amp Rating			
Date					
Date					
		Visual And M	1echanical Ins	pections	
Fail N	lameplate data match	es drawings/specs			
Fail In	nspect physical and me	echnical condition			
Fail In	nspect anchorage, alig	nment, and grounding			
	erify that all maintena ervicing and operating		l tools and gauges sp	pecified by the manufacturer are	available for
	nit is clean	5 cm o or ounce.			
		operation tests on the ope	rating mechanism in	n accordance with manufacturer's	published data
		ces such as contact gap as r	-		<u></u>
				orque Wrench, or Thermographic	Survey
	erify cell fit and elem	· -	3, 3, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	que 11. ener, e. 11.e. 11.e.	
	erify racking mechan				
	·		carrying parts and o	n moving and sliding surfaces	
	erform contact-timins		carryrig parts and o	irmoving and sharing surfaces	
		current signature analysis			
	erform mechanism m				
	ll space heaters are o	·			
I all A	ii space neaters are o	peraurig correctly			
		Insulation A	nd Contact Re	esistance	
Pha	ase-to-Phase		A-B	В-С	C-A
Insula	tion Resistance	@V	Giga Ω	Giga Ω	Giga Ω
	ne-to-Load		A-A'	B-B'	C-C'
	tion Resistance	@V	Giga Ω	Giga Ω	Giga Ω
	se-to-Ground tion Resistance	@V	A-G Giga Ω	B-G Giga Ω	C-G Giga Ω
	act Resistance	- amps	micro Ω	Giga s2 micro Ω	Giga Ω
Con	act Resistance	@ amps			1111C1 O \$2
			h Potential Te ested at Volts	est	
	Phase-to-Phase	A-B		B-C	C-A
	THUSE TO FILESE	milliAm	os	milliAmps	milliAmps
		A-A'		B-B'	C-C'
	Line-to-Load	milliAm	os	milliAmps	milliAmps
	Phase-to-Ground	A-G	0.5	B-G	C-G
		milliAm	JS	milliAmps	milliAmps