# Admin Company



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 |
| Type | 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 | 1.2xIn | 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 Insulation Resistance | @1000V | A-B 542 Mega Ω | B-C 645 Mega Ω | C-A 456 Mega Ω |
| Line-to-Load Insulation Resistance | @1000 V | A-A' 485 Mega Ω | B-B' 499 Mega Ω | C-C' 978 Mega Ω |
| Phase-to-Ground Insulation Resistance | @1000V | A-G 1.5 Giga Ω | B-G 1.42 Giga Ω | C-G 1.8 Giga Ω |
| Contact Resistance | @10 amps | 10.2 milli Ω | 12.5 milli Ω | 14.98 milli Ω |

# Admin Company



Site Circuit Designation
AC Unit 3 FB

## Primary Current Injection

| Tested Function | Setting | Test Amps | xPickup | As Found | | | As Left | | | Tolerance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | A | B | C | 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 | A | B | C |
|---|---|---|---|
| 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 |

# Admin Company

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

Site Circuit Designation
Generator MB 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 | VCP-W |
| Type | Medium Voltage Vacuum Breaker |
| Max Voltage | |
| Continuous Amp Rating | |

| | |
|---|---|
| System Voltage | |
| Control Voltage | |
| Trip Coil Voltage | AC |
| Operations Counter As-Found | |
| Operations Counter As-Left | |
| Fuse Manufacturer | |
| Fuse Type | |
| Fuse Size | |
| Date Manufactured | |

## Visual And Mechanical Inspections

| | |
|---|---|
| Fail | Nameplate data matches drawings/specs |
| Pass | Inspect physical and mechnical condition |
| Fail | Inspect anchorage, alignment, and grounding |
| Pass | Verify that all maintenance devices such as special tools and gauges specified by the manufacturer are available for servicing and operating the breaker |
| Fail | Unit is clean |
| Pass | Perform all mechanical operation tests on the operating mechanism in accordance with manufacturer's published data |
| Fail | Measure critical distances such as contact gap as recommended by manufacturer |
| Pass | Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey |
| Fail | Verify cell fit and element alignment |
| Pass | Verify racking mechanism operation |
| Fail | Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces |
| Pass | Perform contact-timing test |
| Fail | Perform trip/close coil current signature analysis |
| Pass | Perform mechanism motion analysis |
| Fail | All space heaters are operating correctly |

## Insulation And Contact Resistance

| | | | | |
|---|---|---|---|---|
| Phase-to-Phase Insulation Resistance | @_____V | A-B _____ Giga Ω | B-C 5 Giga Ω | C-A _____ Giga Ω |
| Line-to-Load Insulation Resistance | @_____ V | A-A' _____ Giga Ω | B-B' _____ Giga Ω | C-C' _____ Giga Ω |
| Phase-to-Ground Insulation Resistance | @_____V | A-G _____ Giga Ω | B-G _____ Giga Ω | C-G _____ Giga Ω |
| Contact Resistance | @_____ amps | _____ micro Ω | _____ micro Ω | _____ micro Ω |

## High Potential Test

Tested at _____ Volts

| | | | |
|---|---|---|---|
| Phase-to-Phase | A-B _____ milliAmps | B-C 3 milliAmps | C-A _____ milliAmps |
| Line-to-Load | A-A' _____ milliAmps | B-B' _____ milliAmps | C-C' _____ milliAmps |
| Phase-to-Ground | A-G _____ milliAmps | B-G _____ milliAmps | C-G _____ milliAmps |

# Admin Company



Site Circuit Designation
Utility XFMR

## 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 | ACME Electric |
| Model | QB 830 |
| Type | 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 Temperature | °F |
| 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 |

## Insulation Resistance

| Primary to Secondary | Primary to Ground | Secondary to Ground |
|---|---|---|
| _____ GΩ at _____V | _____ GΩ at _____V | _____ GΩ at _____V |

## Winding Resistance

| X0-X1 | X0-X2 | X0-X3 | H1-H2 | H2-H3 | H3-H1 |
|---|---|---|---|---|---|
| _____ mΩ | _____ mΩ | _____ mΩ | _____ Ω | _____ Ω | _____ Ω |

## Transformer Turns Ratio

Tolerance:+/%

| Tap | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Tap Voltage | | | | | | | |
| Expected | | -- | | | | | |
| H1-H2:X0-X2 | | | | | | | |
| Error | % | % | % | % | % | % | % |
| H2-H3:X0-X3 | | | | | | | |
| Error | % | % | % | % | % | % | % |
| H3-H1:X0-X1 | | | | | | | |
| Error | % | % | % | % | % | % | % |

# Admin Company



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 |
| Type | 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 | xIn | sec |
| Short Time | xIn | sec |
| Instantaneous | xIn | 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 Insulation Resistance | @_____V | A-B<br>51 Tera Ω | B-C<br>_____ Giga Ω | C-A<br>_____ Giga Ω |
| Line-to-Load Insulation Resistance | @5000 V | A-A'<br>22 Tera Ω | B-B'<br>_____ Giga Ω | C-C'<br>16 Mega Ω |
| Phase-to-Ground Insulation Resistance | @_____V | A-G<br>61 Giga Ω | B-G<br>98 Kilo Ω | C-G<br>51 Giga Ω |
| Contact Resistance | @10 amps | _____ micro Ω | 20 milli Ω | _____ micro Ω |

Site Circuit Designation
Main - PCB 1

## Primary Current Injection

| Tested Function | Setting | Test Amps | xPickup | As Found | | | As Left | | | Tolerance | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | A | B | C | 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

| Test | A | B | C |
|---|---|---|---|
| Minimum Pick Up | _____ amps | _____ amps | _____ amps |
| Long Time | _____ amps in _____ seconds | _____ amps in _____ seconds | _____ amps in _____ seconds |
| Short Time | _____ amps in _____ seconds | _____ amps in _____ seconds | _____ amps in _____ seconds |
| Instantaneous | _____ amps | _____ amps | _____ amps |

# Admin Company

Low Voltage Switch
Test Report
*Created May-05-2022 11:52*

Site Circuit Designation
Sector 1 - Section 1 - Switch

## 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 |

## Equipment Information

| | |
|---|---|
| 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 | |

| | |
|---|---|
| Fuse Manufacturer | Eaton |
| Fuse Type | Current Limiter |
| Fuse Size | 200Amps |

## Visual And Mechanical 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 Insulation Resistance | @_____V | A-B _____ Giga Ω | B-C _____ Giga Ω | C-A _____ Giga Ω |
| Line-to-Load Insulation Resistance | @_____V | A-A' _____ Giga Ω | B-B' 324 Giga Ω | C-C' _____ Giga Ω |
| Phase-to-Ground Insulation Resistance | @_____V | A-G _____ Giga Ω | B-G _____ Giga Ω | C-G _____ Giga Ω |
| Contact Resistance | @_____ amps | _____ micro Ω | 23 milli Ω | _____ micro Ω |

# Admin Company

Enclosed Medium Voltage Air Switch Test Report

Site Circuit Designation

Division 3 - Section 2 - Switch

## 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 | Square D |
| Model | HVL Switch |
| Type | Enclosed Medium Voltage Air Switch |
| Max Voltage | |
| System Voltage | AC |
| Amp Rating | |

| | |
|---|---|
| Control Voltage | |
| Operations Counter As-Found | |
| Operations Counter As-Left | |
| Fuse Manufacturer | ABB |
| Fuse Type | CL |
| Fuse Size | 500 Amps |
| Date Manufactured | |

## Visual And Mechanical Inspections

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

## Fuse Resistance

| | Phase A | Phase B | Phase C |
|---|---|---|---|
| Power Fuse | 20 Ω | 30.2 milliΩ | _____ Ω |

## Insulation And Contact Resistance

| | | | | |
|---|---|---|---|---|
| Phase-to-Phase Insulation Resistance | @_____V | A-B _____ Giga Ω | B-C _____ Giga Ω | C-A _____ Giga Ω |
| Line-to-Load Insulation Resistance | @_____V | A-A' _____ Giga Ω | B-B' _____ Giga Ω | C-C' _____ Giga Ω |
| Phase-to-Ground Insulation Resistance | @_____V | A-G _____ Giga Ω | B-G _____ Giga Ω | C-G _____ Giga Ω |
| Contact Resistance | @_____ amps | _____ micro Ω | _____ micro Ω | _____ micro Ω |

## High Potential Test

Tested at _____ Volts

| | | | |
|---|---|---|---|
| Phase-to-Phase | A-B _____ milliAmps | B-C _____ milliAmps | C-A _____ milliAmps |
| Line-to-Load | A-A' _____ milliAmps | B-B' _____ milliAmps | C-C' _____ milliAmps |
| Phase-to-Ground | A-G _____ milliAmps | B-G _____ milliAmps | C-G _____ milliAmps |

# Admin Company



Site Circuit Designation
Main Breaker 6

## 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 | Westinghouse |
| Model | 50DH-50 |
| Type | Medium Voltage Air Breaker |
| Max Voltage | |
| Frame Size | |
| Interrupting Capacity | |

| | |
|---|---|
| System Voltage | |
| Control Voltage | |
| Trip Coil Voltage | AC |
| Operations Counter As-Found | |
| Operations Counter As-Left | |
| Date Manufactured | |

## Visual And Mechanical Inspections

| | |
|---|---|
| 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 |

Site Circuit Designation
Main Breaker 6

## Insulation And Contact Resistance

| | | | | |
|---|---|---|---|---|
| Phase-to-Phase Insulation Resistance | @_____V | A-B _____ Giga Ω | B-C _____ Giga Ω | C-A _____ Giga Ω |
| Line-to-Load Insulation Resistance | @_____V | A-A' _____ Giga Ω | B-B' _____ Giga Ω | C-C' _____ Giga Ω |
| Phase-to-Ground Insulation Resistance | @_____V | A-G _____ Giga Ω | B-G _____ Giga Ω | C-G _____ Giga Ω |
| Contact Resistance | @_____ amps | _____ micro Ω | _____ micro Ω | _____ micro Ω |

## High Potential Test

Tested at _____ Volts

| | | | |
|---|---|---|---|
| Phase-to-Phase | A-B _____ milliAmps | B-C _____ milliAmps | C-A _____ milliAmps |
| Line-to-Load | A-A' _____ milliAmps | B-B' _____ milliAmps | C-C' _____ milliAmps |
| Phase-to-Ground | A-G _____ milliAmps | B-G _____ milliAmps | C-G _____ milliAmps |

# Admin Company



Site Circuit Designation
## Utility Breaker 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 28, 2022 |

### Equipment Information

| | |
|---|---|
| Serial Number | 1ds65f |
| Equipment Location | 16a5df1 |
| Manufacturer | Schneider Electric (Other than Square D) |
| 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 |

Site Circuit Designation
Utility Breaker 1

## Insulation And Contact Resistance

| | | | | |
|---|---|---|---|---|
| Phase-to-Phase Insulation Resistance | @5000V | A-B 120 Giga Ω | B-C 132 Giga Ω | C-A 152 Giga Ω |
| Line-to-Load Insulation Resistance | @5000 V | A-A' 165 Giga Ω | B-B' 123 Giga Ω | C-C' 143 Giga Ω |
| Phase-to-Ground Insulation Resistance | @5000V | A-G 153 Giga Ω | B-G 152 Giga Ω | C-G 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 165 milliAmps | B-C 135 milliAmps | C-A 189 milliAmps |
| Line-to-Load | A-A' 175 milliAmps | B-B' 164 milliAmps | C-C' 135 milliAmps |
| Phase-to-Ground | A-G 156 milliAmps | B-G 146 milliAmps | C-G 164 milliAmps |

# Admin Company

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 | ER 3 |
| 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

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

# Admin Company



Site Circuit Designation
Main SWGR - VT

## 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 | April 14, 2022 |

## Equipment Information

| | |
|---|---|
| Serial Number | |
| Equipment Location | |
| Manufacturer | manufacturer-generic |
| Model | Switchgear Voltage Transformer (VT) - Medium Voltage |
| Type | Voltage Transformer (VT) |
| 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 Temperature | °F |
| Number of Taps | |
| Tap Position | 3 |
| Insulation Type | Air |
| 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 |

## Insulation Resistance

| Primary to Secondary | Primary to Ground | Secondary to Ground |
|---|---|---|
| _____ GΩ at _____V | _____ GΩ at _____V | _____ GΩ at _____V |

## Transformer Turns Ratio

Tolerance:+/%

| | | |
|---|---|---|
| Tap | | 1 |
| Tap Voltage | | |
| Expected | | |
| H1-H2:X0-X2 | | |
| Error | | % |
| H2-H3:X0-X3 | | |
| Error | | % |
| H3-H1:X0-X1 | | |
| Error | | % |

# Admin Company

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

Site Circuit Designation
Main SWGR - CPT

## 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 | manufacturer-generic |
| Model | CPT generic model |
| Type | Control Power Transformer (CPT) |
| Power Rating | |
| Primary Config | None |
| Secondary Config | None |

| | |
|---|---|
| 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

| Primary to Secondary | Primary to Ground | Secondary to Ground |
|---|---|---|
| _____ GΩ at _____V | _____ GΩ at _____V | _____ GΩ at _____V |

## Transformer Turns Ratio

Tolerance:+0.5/-0.5%

| Tap | 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% | % | % | % | % |

# Admin Company

Medium Voltage Motor Contactor
Test Report
*Created May-05-2022 11:52*

Site Circuit Designation
Motor 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 | Ampgard Contactor |
| Type | Medium Voltage Motor Contactor |
| Max Voltage | |
| Frame Size | |
| Interrupting Capacity | |

| | |
|---|---|
| System Voltage | |
| Control Voltage | |
| Trip Coil Voltage | AC |
| Fuse Manufacturer | |
| Fuse Type | |
| Fuse Size | |
| Date Manufactured | |

## Visual And Mechanical Inspections

| | |
|---|---|
| Fail | Nameplate data matches drawings/specs |
| Pass | Inspect physical and mechnical condition |
| Fail | Inspect anchorage, alignment, and grounding |
| Pass | Unit is clean |
| Fail | 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 |
| Fail | Barrier and shutter installation and operation is correct |
| Pass | Active components have been exercised and indicating devices operating correctly |
| Fail | Check contactors mechanical operation and contact gap, wipe, alignment, and pressure in accordance with manufacturer's published data |
| Pass | Overload protection rating is correct for its application. Adjustable/programmable devices are set to coordination study |
| Fail | Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces |

## Fuse Resistance

| | Phase A | Phase B | Phase C |
|---|---|---|---|
| Power Fuse | _____ Ω | 5.1 milliΩ | _____ Ω |

## Insulation And Contact Resistance

| | | | | |
|---|---|---|---|---|
| Phase-to-Phase Insulation Resistance | @_____V | A-B _____ Giga Ω | B-C 15 Giga Ω | C-A _____ Giga Ω |
| Line-to-Load Insulation Resistance | @_____V | A-A' _____ Giga Ω | B-B' _____ Giga Ω | C-C' _____ Giga Ω |
| Phase-to-Ground Insulation Resistance | @2500V | A-G _____ Giga Ω | B-G _____ Giga Ω | C-G 51 Kilo Ω |
| Contact Resistance | @_____ amps | _____ micro Ω | _____ micro Ω | _____ micro Ω |

## High Potential Test

Tested at 50000 Volts

| | | | |
|---|---|---|---|
| Phase-to-Phase | A-B _____ milliAmps | B-C _____ milliAmps | C-A _____ milliAmps |
| Line-to-Load | A-A' _____ milliAmps | B-B' _____ milliAmps | C-C' _____ milliAmps |
| Phase-to-Ground | A-G _____ milliAmps | B-G 15 milliAmps | C-G _____ milliAmps |

# Admin Company

Medium Voltage Cable
Test Report
*Created May-05-2022 11:52*

Site Circuit Designation
## Utility to Main 2 Cable

### 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 | None |
| Source Point | |
| End Point | |
| Manufacturer | Southwire |
| Model | Generic Cable Model |
| Type | 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 | |

### 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

**Phase A** | 1.6 Ohms **Phase B** | 2.2 Ohms **Phase C** | 1.2 Ohms

### High Potential Insulation Test

**Test Set Type** | DC **Max Test Voltage** | N/A

| **Time** (Minutes) | **Volts** (KV) | **Phase A** (microAmps) | **Phase B** (microAmps) | **Phase C** (microAmps) |
|---|---|---|---|---|
| 0.5 | 15 | 15 | 53.2 | 15.4 |
| | | | | |
| | | | | |
| | | | | |

# Admin Company



Site Circuit Designation
Utility XFMR 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 | April 8, 2022 |

## Equipment Information

| | |
|---|---|
| Serial Number | |
| Equipment Location | |
| Manufacturer | ACME Electric |
| Model | Transformer Pro 3000 |
| Type | Dry Type Medium Voltage 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 Temperature | °F |
| Number of Taps | |
| Tap Position | 7 |
| Insulation Type | Air |
| 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 |

## Insulation Resistance

| Primary to Secondary | Primary to Ground | Secondary to Ground |
|---|---|---|
| _____ GΩ at _____V | _____ GΩ at _____V | _____ GΩ at _____V |

## Winding Resistance

| X0-X1 | X0-X2 | X0-X3 | H1-H2 | H2-H3 | H3-H1 |
|---|---|---|---|---|---|
| _____ mΩ | _____ mΩ | _____ mΩ | _____ Ω | _____ Ω | _____ Ω |

## Transformer Turns Ratio

Tolerance:+/%

| | | |
|---|---|---|
| Tap | | 1 |
| Tap Voltage | | |
| Expected | | |
| H1-H2:X0-X2 | | |
| Error | | % |
| H2-H3:X0-X3 | | |
| Error | | % |
| H3-H1:X0-X1 | | |
| Error | | % |

# Admin Company



Site Circuit Designation
MV MCC

## 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 | Ampgard Motor Control Center (MCC) |
| Type | Medium Voltage Motor Control Center |
| Equipment Voltage | AC |
| System Voltage | AC |

| | |
|---|---|
| Bus Current Rating | Amps |
| Control Voltage | AC |
| Date Manufactured | |
| Humidity | _____ % |
| Ambient Temperature | _____ °___ |

## 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 |

Site Circuit Designation
MV MCC

## Bus Insulation Resistance

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

## Bus Contact Resistance

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

## High Potential @ 15000 Volts

phase to ground with other phases grounded

| A-G | B-G | C-G |
|---|---|---|
| _____ milliAmps | 15.1 milliAmps | _____ milliAmps |

# Admin Company



Site Circuit Designation
LV MCC

## 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 |

## Equipment Information

| | |
|---|---|
| Serial Number | 1asd65f |
| Equipment Location | ER 8 |
| Manufacturer | Eaton |
| Model | Freedom Motor Control Center (MCC) |
| Type | Low Voltage Motor Control Center |
| Equipment Voltage | 5000 AC |
| System Voltage | 4160 DC |

| | |
|---|---|
| Bus Current 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 |

Site Circuit Designation
LV MCC

## Bus Insulation Resistance

| | | | |
|---|---|---|---|
| Phase-to-Phase @_____ Volts | A-B _____ ___Ω | B-C _____ ___Ω | C-A _____ ___Ω |
| Phase-to-Ground @_____ Volts | A-G _____ ___Ω | B-G _____ ___Ω | C-G _____ ___Ω |

## Bus Contact Resistance

| Starting Section | Ending Section | Phase A | Phase B | Phase C |
|---|---|---|---|---|
| N/A | N/A | No Results | No Results | No Results |

# Admin Company



Site Circuit Designation
## Main Switchgear

### 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 25, 2022 |

### Equipment Information

| | |
|---|---|
| Serial Number | IOPXC324V9 |
| Equipment Location | Building 2 Electrical Room 6 |
| Manufacturer | Eaton |
| Model | Magnum Switchgear Assembly |
| Type | 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 | Phasing has been verified on all sources and outputs |

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 mΩ | 3.7 mΩ | 4.5 mΩ |
| Main 1 | FB 3 | 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 |

# Admin Company



Site Circuit Designation
## Utility MV SWGR 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 | April 29, 2022 |

### Equipment Information

| | |
|---|---|
| Serial Number | |
| Equipment Location | |
| Manufacturer | Square D |
| Model | Masterclad MV Metal-Clad Switchgear |
| Type | Medium Voltage Switchgear |
| Equipment Voltage | AC |
| System Voltage | AC |

| | |
|---|---|
| Bus Current Rating | Amps |
| Control Voltage | AC |
| Date Manufactured | |
| Humidity | _____ % |
| Ambient Temperature | _____ °F |

### 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 |

Site Circuit Designation
Utility MV SWGR 1

## Bus Insulation Resistance

| | | | |
|---|---|---|---|
| Phase-to-Phase @_____ Volts | A-B _____ ___Ω | B-C _____ ___Ω | C-A _____ ___Ω |
| Phase-to-Ground @_____ Volts | A-G _____ ___Ω | B-G _____ ___Ω | C-G _____ ___Ω |

## Bus Contact Resistance

| Starting Section | Ending Section | Phase A | Phase B | Phase C |
|---|---|---|---|---|
| N/A | N/A | No Results | No Results | No Results |

## High Potential

phase to ground with other phases grounded

| A-G | B-G | C-G |
|---|---|---|
| _____ milliAmps | _____ milliAmps | _____ milliAmps |

# Admin Company



Site Circuit Designation
AC SWBD 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 | Pow-R-Line Xpert |
| Type | Low Voltage Switchboard |
| Equipment Voltage | AC |
| System Voltage | AC |

| | |
|---|---|
| Bus Current Rating | Amps |
| Control Voltage | AC |
| Date Manufactured | |
| Humidity | _____ % |
| Ambient Temperature | _____ °___ |

## 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 |

Site Circuit Designation
AC SWBD 1

## Bus Insulation Resistance

| | | | |
|---|---|---|---|
| Phase-to-Phase @_____ Volts | A-B _____ ___Ω | B-C _____ ___Ω | C-A _____ ___Ω |
| Phase-to-Ground @_____ Volts | A-G _____ ___Ω | B-G _____ ___Ω | C-G _____ ___Ω |

## Bus Contact Resistance

| Starting Section | Ending Section | Phase A | Phase B | Phase C |
|---|---|---|---|---|
| N/A | N/A | No Results | No Results | No Results |

# Admin Company

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

Site Circuit Designation
## Lights Transformer

### 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 | VCP-W |
| Type | Medium Voltage Vacuum Breaker |
| Max Voltage | |
| Continuous Amp Rating | |

| | |
|---|---|
| System Voltage | |
| Control Voltage | |
| Trip Coil Voltage | AC |
| Operations Counter As-Found | |
| Operations Counter As-Left | |
| Date Manufactured | |

### 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 all maintenance devices such as special tools and gauges specified by the manufacturer are available for servicing and operating the breaker |
| Fail | Unit is clean |
| Fail | Perform all mechanical operation tests on the operating mechanism in accordance with manufacturer's published data |
| Fail | Measure critical distances such as contact gap as recommended by manufacturer |
| Fail | Electrical connections inspected for high resistance by Ohmmeter, Torque Wrench, or Thermographic Survey |
| Fail | Verify cell fit and element alignment |
| Fail | Verify racking mechanism operation |
| Fail | Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces |
| Fail | Perform contact-timing test |
| Fail | Perform trip/close coil current signature analysis |
| Fail | Perform mechanism motion analysis |
| Fail | All space heaters are operating correctly |

### Insulation And Contact Resistance

| | | | | |
|---|---|---|---|---|
| Phase-to-Phase Insulation Resistance | @_____V | A-B _____ Giga Ω | B-C _____ Giga Ω | C-A _____ Giga Ω |
| Line-to-Load Insulation Resistance | @_____ V | A-A' _____ Giga Ω | B-B' _____ Giga Ω | C-C' _____ Giga Ω |
| Phase-to-Ground Insulation Resistance | @_____V | A-G _____ Giga Ω | B-G _____ Giga Ω | C-G _____ Giga Ω |
| Contact Resistance | @_____ amps | _____ micro Ω | _____ micro Ω | _____ micro Ω |

### High Potential Test

Tested at _____ Volts

| | | | |
|---|---|---|---|
| Phase-to-Phase | A-B _____ milliAmps | B-C _____ milliAmps | C-A _____ milliAmps |
| Line-to-Load | A-A' _____ milliAmps | B-B' _____ milliAmps | C-C' _____ milliAmps |
| Phase-to-Ground | A-G _____ milliAmps | B-G _____ milliAmps | C-G _____ milliAmps |