

VIII. ELECTRICAL

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1. ELECTRICAL DISTRIBUTION, BLOCK 66

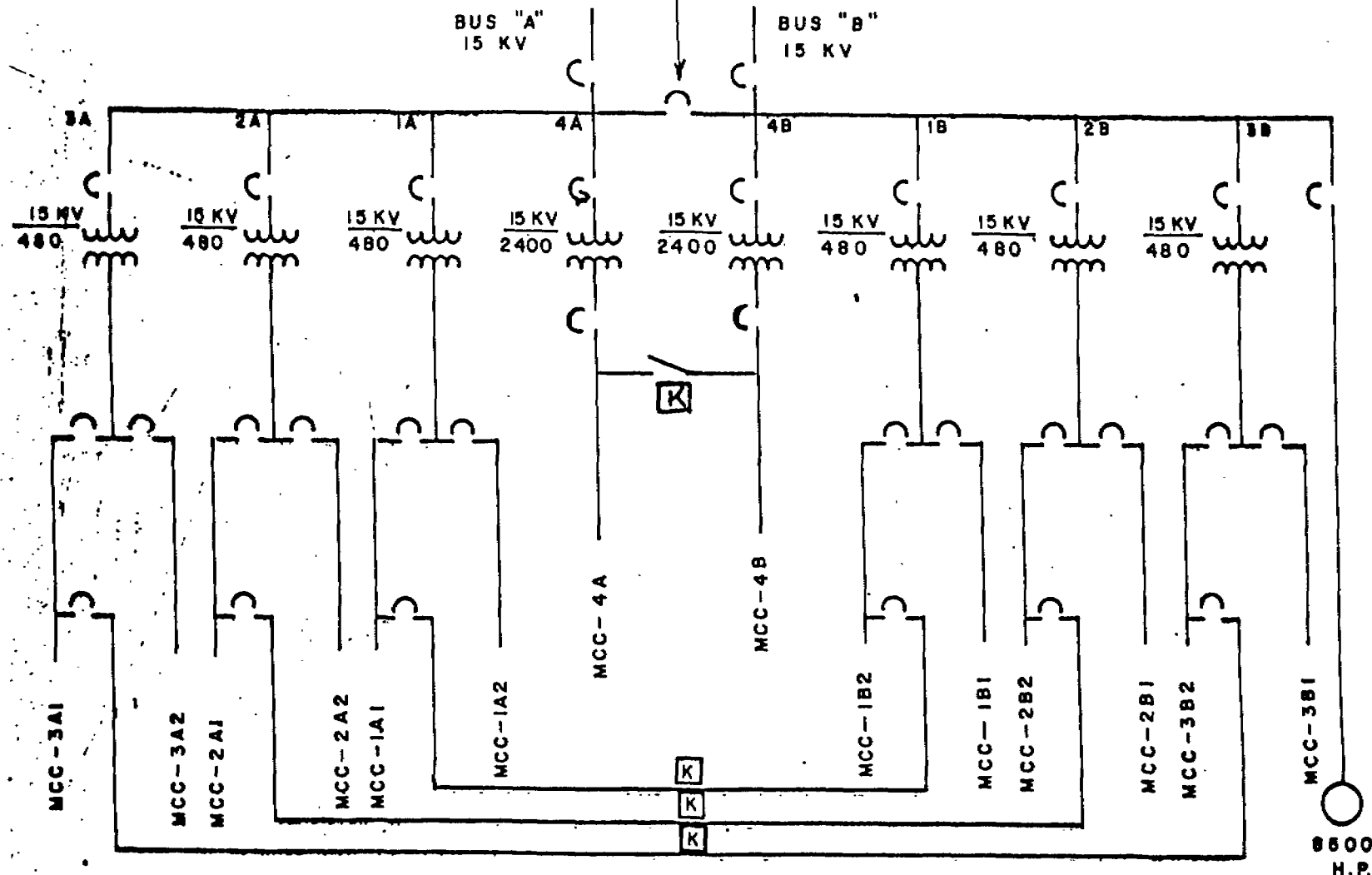
There are two 15 KV (15,000 V) electrical feeders to the Vinyl II Plant in Block 66--Feeder A and B. An automatic transfer switch is provided between the 15 KV feeders in the event that a fault develops. Normally, electrical energy is taken from both feeders with the controls to the "tie breaker" on automatic or stand-by to handle an emergency failure in either one of the main feeders.

The two 15 KV power feeders enter the center of the main switch gear room located in the west end of Building 1601 where each feeder is routed through a main bus to the switch gear which picks up the 15 KV feeders into the plant. There is one 8500 HP motor and four pairs of transformers located at three main substations in the Block 66 operating area that require 15 KV power. The incoming 15 KV Feeder "A" is connected to Bus "A" which feeds individual feeders 1-A, 2-A, 3-A and 4-A which power corresponding transformers 1-A, 2-A, 3-A and 4-A, respectively. Transformers 1-A, 2-A and 3-A reduce 15 KV power to 480 volts to meet the power requirements of most of our process equipment motors; transformer 4-A handles our 2400 volt power requirements. Similarly, the "B" bus handles the 1-B, 2-B, 3-B and 4-B mates to the "A" bus system plus 15 KV power to MK-320.

A "Kirk Key" interlock system is installed in each of the three 480 volt MCC's to help avoid any unnecessary plant shutdowns resulting from the loss of one (or more) transformers and to prevent backfeeding faulted circuits. The power from each of the 480 volt transformers is divided into two busses, with certain critical equipment motors being tied into a primary bus. The primary busses from each transformer pair (1-A/1-B, 2-A/2-B, etc.) are tied together with a system of interlocks which will allow power to be fed to the primary bus of a disabled transformer. A set of only three master keys is used in four master locks to prevent grounding out a good power loop into the one that has faulted.

Refer to the simplified electrical distribution one-line diagram on the following page for the basic layout of Block 66 electrical distribution.

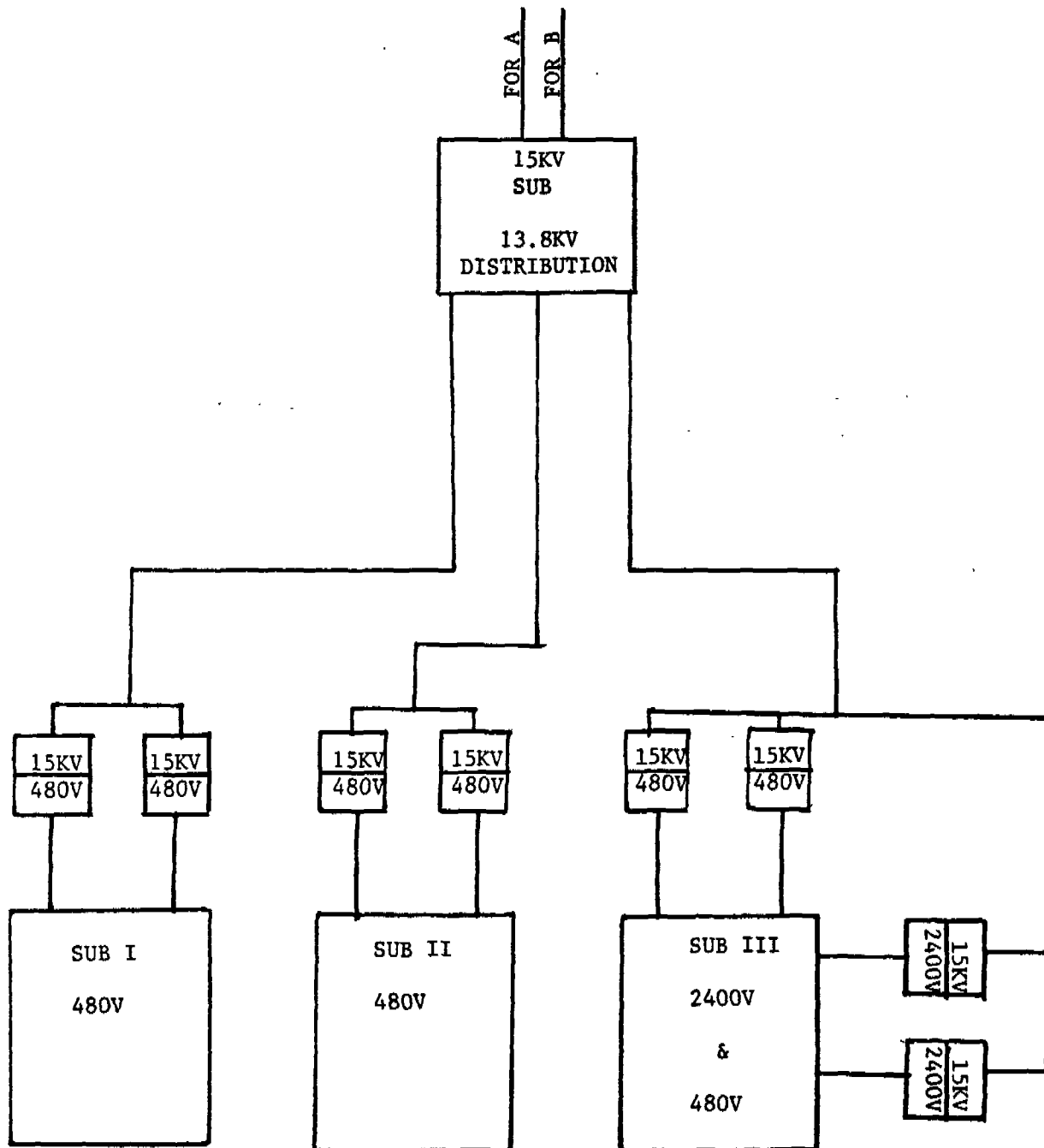
BUS "A"-"B" TIE BREAKER



K KIRK KEY INTERLOCK

ELECTRICAL DISTRIBUTION - ONE LINE

13.8KV SUBSTATION DISTRIBUTION BLOCK 66 (SIMPLIFIED)



2. OPENING AND CLOSING BREAKERS

ELECTRICALLY QUALIFIED PERSONNEL ONLY!

A. 480 Volt Breaker

1. Check for proper equipment identification.
2. Make sure field switch is in "OFF" position.
3. Turn switch gear handle to the "OFF" position.
4. Open the door on the switch gear and check fuses to ground and to each other for voltage using proper voltage tester. (Check voltage tester before using.)
5. Using fuse puller, pull fuses.
6. Close the door and apply necessary red tags.

B. 2400 Volt Breaker

1. Check for proper equipment identification.
2. Make sure field switch in in the "OFF" position.
3. Turn switch gear handle to the "OFF" position by depressing the handle and moving the handle to "OFF".
4. Turn the "SAFE STOP" switch to the "OFF" position.
5. Call electrician to pull the fuses.
6. Apply necessary red tags.

NOTE: When opening and closing high voltage breakers, a flash suit and rubber gloves should be worn. Also, stand to the side of the door.

3. DC SYSTEM

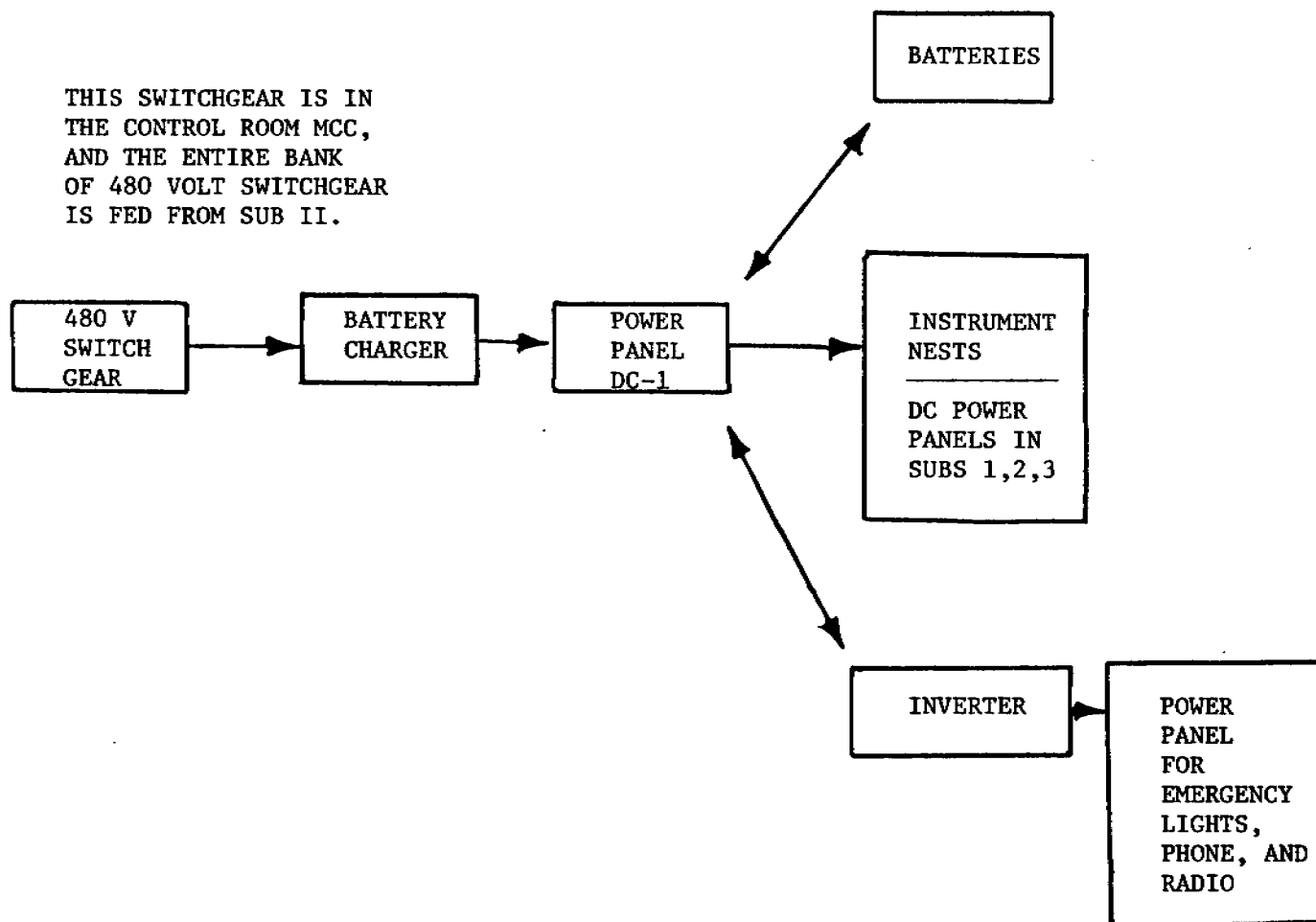
Power leaves a 480 volt switch gear and goes to the battery charger which puts out 125 volts of DC power. The battery charger then feeds "Power Panel DC-1" and goes to the batteries to recharge them. The battery charger actually supplies DC power to the power panel along with charging the batteries.

"Power Panel DC-1" is your main distributor of DC power. It feeds the following:

1. DC power panels in Subs I, II, and III.
2. Power panel IDCA control power (instrument power panel) in the control room.
3. The inverter.
4. 15 KV switch gear control power.
5. 5 KV switch gear control power and test stand.
6. K-320 switch gear control power.

The "inverter" takes DC power and turns it to AC in times of an emergency. The purpose for this is so you can have emergency lights, phone, and radio in times of a total power failure.

THIS SWITCHGEAR IS IN
THE CONTROL ROOM MCC,
AND THE ENTIRE BANK
OF 480 VOLT SWITCHGEAR
IS FED FROM SUB II.



DC SYSTEM:
INCLUDING BATTERY CHARGER AND INVERTER (SIMPLIFIED)

4. BATTERY MAINTENANCE PROCEDURE

CAUTION! ALL STORAGE BATTERIES GIVE OFF EXPLOSIVE GASES WHEN CHARGING

NOTE: Do not permit open flame or sparks near battery!

Monogoggles must be worn when working on batteries because of acid hazard.

A. Monthly Inspection

1. Check Water Level

The water level must be between the level marks on glass or plastic cases; and the water level must always be above the plates on the batteries with no level marks. Use only clean, distilled or de-mineralized water when adding to cells. Never use acid.

2. Measure the Specific Gravity

Use a clean battery hydrometer. The normal reading should be 1.220 to 1.240 at 77°F. If the lowest cell is below 1.220, give the system an equalizing charge.

3. Measure Cell Voltage

A digital voltmeter is recommended, and each cell should be about 2.18 volts. If the lowest battery cell is below 2.13 volts, give the system an equalizing charge.

4. Inspect and Clean Terminals When Necessary

Clean terminals and top of batteries with bicarbonate of soda solution. Let dry and apply no-oxide joint compound to all connections.

5. Check Battery System for Ground

If the system has no ground detector lamps or voltmeter, make voltage measurements from positive to ground and negative to ground. This should read approximately 50 to 70 volts DC for a 120 volt system free of grounds. If a ground is indicated, get help from Electrical Maintenance.

6. Clean Battery Charger and Inverter Cabinets

Clean cabinets with a vacuum cleaner and insulated hose when needed.

(EQUALIZE CHARGE - A means of over charging the battery system for a short period of time in order to bring the battery back to normal limits. Equalizing charge should remain on the system for approximately 12 to 24 hours.)

5. GROUNDING SYSTEM

The following is a list of ground alarms showing the alarm, what they mean, probably cause, and what to do to correct them.

<u>ALARM</u>	<u>PROBABLE CAUSE AND WHAT TO DO</u>
Transformer 1A - 4A: Auxiliary Subs 1 - 3	Transformer having problems. Could be sudden changes in: (1) temperature, (2) oil level, or (3) pressure.
Transformer MCC 1A - 4A Ground	Equipment Ground - Swap equipment if possible.
2.4 KV Buss A-B: Motor ground	Load track ground. MCC has indicator light.
15 KV feeder A-B: XFMR ground fault	Ground on main feeder. Call for help.
15 KV Buss A-B: Trip fault	If you lose A-Buss, B-Buss will pick up load. If you lose B-Buss, A-Buss will pick up everything but K-320. After things line out on a Buss, K-320 can be brought up on manual.
Feeder A-B: Breaker control power	Loss of DC power to breaker. Call for help.
K-320 Breaker: Control power	Loss of DC power. Will trip K-320 from realy on oil skid.
2.4 KV: Control power	Loss of DC power. Leaves you with no auto stand-by. Call for help.
2.4 KV A-Buss, B-Buss: 2.4 KV A-B breaker open	Buss tripped
DC high amps DC ground Battery bank low voltage Battery charger trip Inverter failure Inverter transferred	Self explained

6. LOSS OF "A" BUSS

A. Equipment Loss

1. K-125
2. R-201
3. F-410
4. K-270

B. Shift Supervisor

1. Sound emergency horn.
2. Dial 333.
3. Call superintendent.
4. Scan board.
5. Call Power and user plants.
6. Coordinate shutdown.
7. Monitor board.

C. Vinyl OS

1. Shutdown F-101 and F-103 (loss of blowers).
2. Monitor board. (If you lose quench header, add steam to keep column in spec.)

D. EDC OS

1. Shutdown R-201.
2. Close control valves C-260 and C-211 bottoms.
3. Cut back on chlorine to C-250 mixer.

E. SOT

1. Restart or switch P-310, P-311, and P-321.
2. Secure area.

F. Vinyl OT

1. Check P-100B
2. Start "B" buss quench pumps.

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3. Put D-140 overhead to T-120.
4. Make sure "B" pumps are running on T-210 (P-121), D-130 (P-130), and D-140 (P-140).
5. Start P-165B if not running.
6. Block water to cell MCT-340A.
7. Start all "B" buss equipment.

G. EDC OT

1. Block oxygen and C_2H_4 control stations manually.
2. Restart P-332 chilled water pump.
3. Restart P-213 and P-211 on C-211.
4. Restart P-250 on C-250.
5. Restart P-270 on D-270.
6. Start all "B" buss equipment.

7. LOSS OF "B" BUSS

A. Equipment Loss

1. K-320
2. K-400
3. Two (2) CTW pumps and fans (K-320 trip procedures also).

B. Vinyl OS

1. Shutdown fuel gas to furnaces.
2. Shutdown P-100's and check bypass.
3. Block D-320 EBV.
4. Close all propylene feed control valves.
5. Close HIC on E-320 A/B CTW.
6. Block chlorine to C-250.

C. EDC OS

1. Punch out oxy reactor.
2. Check nitrogen on E-217.

D. SOT

1. Put process water to K-350.
2. Block chlorine to E-440.
3. Close surface blowdown on F-420.
4. NOTE: Thermal oxidizer and F-420 shutdown.

E. Vinyl OT

1. Block in HCl.
2. Put D-140 to T-120.
3. Block heat to C-120, C-130, C-140, C-150, C-111, C-110, C-250, and C-255.
4. Start MRU-165.
5. Block chlorine to C-250.

F. EDC OT

1. Put C-260 overhead to T-230.
2. Block C-230 bottoms.
3. Dump C-201 to slab.
4. Block heat to C-230, C-240, C-260, C-270, and D-270.
5. Start purge on D-270.

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8. TOTAL POWER FAILURE

A. Shift Supervisor

1. Sound emergency horn.
2. Dial 333.
3. Call Power and user plants and superintendent.
4. Coordinate shutdown.

B. Vinyl OS

1. Block chlorine to C-250.
2. Block interstage C_3H_6 drums.
3. Dump condensate on C-130, C-140, C-250, C-260, C-255, and C-120.
4. Block HCl at block limits.
5. Stop all transfers.
6. Block furnace feed and all columns.
7. Monitor pressure build ups.

C. EDC OS

1. Block oxygen at regulator.
2. Check nitrogen on E-217.
3. Block C_2H_4 , oxygen, HCl, and recycle to R-201.
4. Block H_2O to S-231, open process water to C-201, and dump to slab.
5. Block in all columns.
6. Stop all transfers to block EDC from Vinyl I.
7. Monitor pressure build ups.

D. SOT

1. Block chlorine to E-440.
2. Block AHCl at block limits.

3. Block blowdowns on F-410 - F-420.
4. Cell effluent control valve will fail safe in the open position on loss of air.

E. Vinyl OT

1. Block vinyl to T-160.
2. Block feed and bottom on C-110, C-111, and C-120.
3. Block level controller and vapor out on all C_2H_4 vessels.
4. Assist Vinyl OS.

F. EDC OT

1. Block C_2H_4 at D-200 and block limits.
2. Dump column condensate D-270, C-270, C-230, and C-230 bottoms.
3. Assist EDC OS.

9. ELECTRICAL SAFE PRACTICES AND PROCEDURES

A. Introduction

Approximately 100 persons die each year as a result of electrical shock, and these electrocutions are usually accomplished with less power than it takes to press a shirt.

A combination of two factors makes up shocks--voltage and current. The amount of current that flows depends on the amplitude and source of voltage, the physical size of the individual who is shocked, the portion of the body through which the current flows, and the condition of the skin at the points of contact.

The amount of current which the human body can tolerate is very small and is measured in milliamperes. (A milliampere is 1/1000th of an ampere. A 100 watt light bulb on house voltage takes less than one ampere.) At current values between 8 - 15 ma, AC shocks are painful; but most people retain enough control of their muscles to withdraw from contact. Currents between 15 - 20 ma cause pain and loss of muscular control. The victim cannot withdraw from contact. Unless the current is interrupted, the victim becomes exhausted and lapses into unconsciousness. When the current reaches values between 20 - 50 ma, pain is very intense; and paralysis of the breathing muscles will cause suffocation.

When a 60 CPS alternating current of between 100 - 200 ma is applied to the body, the frequency superimposed over the heart's normal beat can disrupt its timing. Since the heart is being told to pump at a rate 72 times a minute by the nervous system and at the same time it receives external stimuli at the rate of 60/second, it becomes confused and begins to flutter aimlessly. This is ventricular fibrillation. Currents greater than 200 may stop the heart's movement completely rather than causing ventricular fibrillation. If exposure to the shock is not prolonged more than three or four minutes, the heart will sometimes resume its action.

Body resistance has a lot to do with the amount of current. Dry skin contact resistance is between 100,000 - 600,000 ohms, but this figure decreases rapidly as the contact area increases and the skin becomes more damp. A small amount of perspiration can lower the resistance to 50,000 ohms or less; while completely wetting the area and increasing the area can reduce the resistance to between 500 - 1000 ohms. Wet body contact might involve a total resistance of about 1000 ohms from the right to the left side of the body. After initial contact has been made, the contact resistance decreases. This decrease in contact resistance allows more current to flow and may turn a harmless shock into a fatal one.

The 480 volt system in a typical plant has approximately 30,000 amp fault current. Converted to power, this would be 14,500,000 watts. This is enough power to light 145,000 100-watt light bulbs.

B. General Rules

1. Persons working on electrical equipment should be informed on electrical safety and have a general knowledge of the equipment to be worked on (type tools required, voltage, etc.)
2. Always place yourself in a safe position while working to avoid falling, stumbling, slipping, or moving backwards against live parts.
3. Consider every circuit to be alive. Respect all power sources and power circuits as potentially dangerous. Always exercise caution.
4. Consider the result of each act. There is no reason for you to take chances that will endanger yourself or others.
5. When working on any electrical equipment, it is advisable to wear insulated type safety shoes.
6. Avoid rings, jewelry, or watches, as such articles may be caught in moving parts or come in contact with electrical circuits.
7. Exercise care in using hand tools to prevent their contact with live circuits.
8. Never work with defective tools (i.e., improperly insulated screwdrivers, wooden ladders which are not in good condition, etc.)
9. Consider all circuits to be dangerous--contact with low currents have caused workmen to fall from ladders and scaffolds.
10. Always use the Red Tag procedure when working on electrical circuits.
11. Replace any guards or other safety devices that might have been removed while working on equipment.
12. Never wash electrical equipment down, regardless of operating voltage. Any electrical equipment that needs cleaning should be cleaned during a shutdown as part of the P.M. Program.
13. If, for any reason, it is decided that an interlock is not needed, call the Electrical Area Specialist so he can make arrangements to modify the control circuit.
14. Always button electrical equipment up properly (i.e., explosion proof equipment should have proper number of bolts holding covers in place). Anything less than the original installation may void the equipment for the area in which it is used.

15. Some or most plants have volt meters that operators are using. Unless this instrument is properly used, someone can get hurt. For example, always know what type of voltage you are going to measure (AC or DC); and if the magnitude is not known, start on the highest scale and decrease until you are able to obtain a reading. NEVER attempt to measure a voltage with the meter on the ohms scale, as this could cause damage to the meter or yourself. The meter could blow up in your face. It is recommended that a buzzer be used for checking fuses, and an ideal voltage tester should be used for checking voltages. This equipment would eliminate the human error when in a hurry.
16. Cable trays should not be used as walkways since they are not very strong, have spaced rungs, and all have wire and cable which could become damaged and cause a serious injury.

C. Grounding

1. Make sure all electric equipment such as motors, generators, conduits, switchboxes, or transformers are adequately grounded. A visual inspection to make sure that the grounding is still attached to the equipment will be sufficient. Report any such equipment to your supervisor that is found to be inadequately grounded.

The practice of grounding such equipment is to prevent persons from receiving an electrical shock either due to the lack of proper insulation causing the frame of the equipment to be energized or due to the frame of the equipment becoming energized from another source of electrical current.

2. Protect yourself by placing an insulating medium between you and grounded apparatus to keep any part of your body from providing a path for electric current when working on conductors, cables, or apparatus which may be energized.
3. Take extra precautions when working on damp or wet surfaces.

D. Operation of Switches

1. Determine the operating condition of the circuit before opening or closing any switch. This precaution is to insure your protection in case the circuit is faulty or to protect another workman in case he is exposed.
2. Open or close the switch in a firm, positive manner using sufficient force to make or break full contact of the blades quickly. This will prevent unnecessary heating or arcing when blades make or break contact.
3. Open switches completely and close switches completely. Switches left in partly open positions may cause an arc or flash over with damaging results to the switch and possible serious burns to the operator.

E. Handling Fuses

If, for any reason, a fuse is suspected of being blown, the following rules should be followed. If, after replacing the fuses, they blow again, your Electrical Area Specialist should be called to locate the trouble.

1. Open switches fully before removing fuses. To remove a fuse from a circuit carrying current without first opening the switch is particularly hazardous.
2. Use an approved low-voltage fuse puller to remove fuses on a circuit of less than 500 volts where no switch is provided.
3. On circuits above 500 volts, an approved high-voltage fuse puller to remove fuses where no switches are provided should be used.
4. Remove fuses by breaking contact with the hot side of the circuit first. Use the reverse procedure when replacing fuses.
5. When a blown fuse is found, it is advisable to replace all fuses. This procedure will eliminate having a damaged fuse in the circuit and possibly getting a false trip.

F. 480 Volt Equipment

1. Always stop electrical motors with the start/stop push button station. It is preferred that the circuit breakers or fused disconnect not be used for stopping motors. If the motor is in a stalled or locked rotor condition, the circuit breaker or disconnect could blow up when being opened. However, if an emergency arises other than electrical, the motor may be stopped by this means; but the operator should stand to one side while operating the circuit breaker or disconnect switch.
2. If, for any reason, an operator has a compartment open on a motor control center, he should take precautions not to touch live circuits. A breaker may be open, but this does not mean that there is not voltage in the compartment. Sometimes there will be control voltages coming from outside sources through interlocks.
3. Never increase the size of the overloads in a starter. If there is reason to think that the overloads need to be changed, call the Electrical Area Specialist.
4. If the grounding lights indicate that a ground is in the system, the Electrical Area Specialist should be called as soon as possible to clear up the trouble.

G. 13.8 KV and 2400 Volt Switchgear

Never attempt to stop a 2400 volt motor by using the disconnect switch. Always use the start/stop pushbutton provided. If this fails, use

the emergency stop button, usually located on the main disconnect switch. If the emergency stop button will not stop the motor, call your Electrical Area Specialist.

H. Motors

1. When a motor will not start, call your Electrical Area Specialist.
2. If a motor is running and stops on its own, reset the overloads, if so equipped, and attempt to restart. If the motor starts and trips off again, DO NOT try starting again. Call your Electrical Area Specialist.
3. If an operator has reason to change out a motor, he should make sure that the one being installed is identical to the one being pulled out. He should check the nameplate for HP, frame size, RPM, voltage (on dual voltage motors, he should make sure that it is connected properly), and service factor (although not critical).
4. Restarting a motor too many times in succession only shortens the life of the motor starter and the life of the motor.
5. When bumping a motor, let the motor come up to full speed (15 - 20 seconds) before stopping. This allows the motor starter to interrupt something other than starting current (5 - 10 times rated current). For rotational purposes, bumping is only required initially or after some work has been performed on the motor; not for work on equipment being driven.

I. Protective Clothing

Protective clothing for certain electrical switching or electrical emergencies is located in the control room. The clothing is:

1. Nomex #117 jacket, 10 oz., with double nomex front (specify 42" or 48" jacket).
2. Nomex #115 face shield hood.
3. 15 KV rubber gloves with leather protectors.

NOTE: The rubber gloves should be tested at six-month intervals by the Meter & Relay Shop, Building 4103.

Protective clothing for flash protection is required to perform the following operation functions:

1. Removing and replacing 2500 volt breakers.
2. Removing and replacing 2500 volt starters.

3. Removing and replacing potential transformers in metal clad switchgear.
4. Other operations procedures that may result in an electrical flash.

Protective clothing for flash and shock protection is required to perform the following maintenance functions:

1. Phase testing 2500 volt circuits.
2. Installing motor starter units in energized motor control centers.
3. Other maintenance procedures that may result in an electrical flash and shock hazard.

If there is evidence of smoke or an electrical fire in a motor control center, the following action is recommended:

1. Determine the center the smoke or fire is coming from.
2. Determine if the motor control center can be shutdown without putting the plant in greater danger. If so, shutdown all motors on that MCC from the pushbutton in the field.
3. Open the supply breakers or switches that would de-energize that center.
4. If the motor control center cannot be de-energized, shut off all motors possible from the pushbuttons in the field.
5. A person with proper electrical training should put on protective clothing and proceed to the most obvious trouble area and open each compartment door without turning the compartment disconnect switch off.
6. When the compartment is located, determine the extent of the problem. If the problem is a coil, transformer, or part of the starter, close the door and de-energize the compartment by turning the switch handle to "OFF". Take the appropriate action.
7. Get some help if the problem is not easily identified.

J. Switchgear Lockout Procedure

When maintenance work is to be performed on electrically operated rotating equipment, the MCC disconnect is to be locked in the "OFF" position. The following procedure should be used:

1. Remove equipment from service, block in or blind as necessary to prepare for maintenance.
2. Prepare Red Tags and Master according to approved standards.

3. Open electrical disconnect in MCC by turning handle to "OFF" position. Open compartment and observe that disconnect is actually open as indicated by the handle position. Pull fuses.
4. Close the door, install the lockout device, and lock with an operations lock.
5. When craftsman signs the Red Tag Master, give him a padlock with key and have him attach his lock and craftsman tag to lockout device. The only duplicate key will be locked in the main office building.
6. Operate field switch to be sure power is off.
7. If more than one class of craftsman is to work on the same piece of equipment, a lock and key is to be issued to each man. He also installs his craftsman tag.
8. When craftsman completes his work, he is to remove his lock and craftsman tag. Lock and key is to be turned in when he releases the Red Tag Master.
9. When all craftsmen have removed their locks and cleared the master tag, operations may then inspect equipment and remove their lock. Equipment may then be put in operation.
10. Craftsmen are not to take keys home under any conditions. If the job is not complete enough for equipment to be operable, the keys should be left attached to the Red Tag Master. The craftsmen should verify the presence of their locks and obtain the key before resuming work on the equipment.
11. If more than one disconnect is to be taken out for the same job, operations should install their lock on each disconnect according to previous procedure. These keys are to be placed in the box provided and locked. The key is to be given to the craftsman that the original lock and key is issued. If more than one class of craftsman is to work on the same piece of equipment, each one is to be issued a lock and install it on the box.

K. Tagging Out 2300 Volt Switchgear

There are no tools needed for this operation, but you must have a clear mind and know exactly what you are doing. This is a very simple operation, but it can be hazardous if not done properly.

The first step is to check both the ampmeter and the equipment to be sure it is out of service. If the ampmeter shows zero amps, open the middle compartment door; and inside, just below the interlock switch, you will find instructions on how to open the isolate switch. No matter how many times you have performed this operation, the instruction panel should be read. This serves two purposes: (1) to make you stop and think about what you are doing, and (2) to leave no room for error because there can be no error in this operation.

After reading the instruction panel, throw the interlock switch to the "OPEN" position, close the compartment door and open the isolating switch. NEVER, NEVER force the isolating switch open. If the isolating switch is forced open, it will cause an arc in the switchgear that will blow the side panel and doors off and probably cause fire in the switchgear. The safest way to open the isolating switch is to grab the handle with the left hand, turn your face away from the switchgear, and throw the switch with one quick movement. This precaution is taken in case of an arc. After the isolating switch has been opened, attach a Red Tag to the isolating switch.

L. Power Failure Emergency Procedure

In the event of a major fire in the MCC where it is obvious that the power needs to be cut off, the first operator to get to the disconnect pole will kill the power to the appropriate transformer. Only in the event of a major fire will he take it upon himself to disconnect this power. In the event of an odor in the MCC, the shift supervisor will initiate the following emergency procedure:

1. Dispatch a man to the block limit disconnect switch.
2. Dispatch a flagman who will relay a message to the power switch operator.
3. Call in an electrical maintenance supervisor and an electrician, preferably the block electrician.
4. At the shift supervisor's discretion, he will call in additional operators if required.
5. Call the plant superintendent or production supervisor.
6. He will initiate a search himself along with available operators to try to find the source of the odor until assistance arrives.

M. Fire or Explosion in Transformer

The design and construction of a transformer is so designed that having a fire in this area is practically impossible. The transformers are also charged with Askeral, an oil substitute which will not burn.

Should a fault occur in a transformer, it would have to be of such magnitude that it would rupture the transformer case, thus spilling the Askeral on the floor. Probably, the wire insulation to the transformer would catch fire. This should be put out with dry chemicals only after all power is turned off.

The proper steps to handle an emergency of this type are as follows:

1. Get all personnel clear of the area.
2. Notify Plant Security.

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3. Identify transformer.
4. Check poles at block limit to see if fuses are blown. If still arcing, get Power Plant to trip feeders to the Block. If not arcing, throw ALL breakers to kill ALL power to the block.
5. BE SURE ALL POWER TO THE BLOCK IS OFF before attempting to put out any fires which develop from this.
6. Use dry chemicals on this type of fire.

N. Electric Motor Replacement Porcedure

1. Safe Work Permit - Red Tags
 - a. Turn off field switch.
 - b. MCC disconnect switch off - Red Tag.
 - c. Pull fuses for added protection--use fuse puller.
 - d. Turn on field switch to check correct motor starter turned off. Turn off switch; and if the circuit is dead, place wire through start/stop station--Red Tag switch.
2. Open motor junction box. Remove tape. Remove bolts that hold lugs together.
3. Disconnect conduit and ground wire.
4. Remove motor base bolts.
5. Remove coupling guard.
6. Hoise motor out.
7. Hoist new motor and place on foundation. Fix motor base bolt in position. Hand tighten.
8. Clean, inspect, and replace ground wire.
9. Tighten motor base bolts.
10. Connect conduit to junction box.
11. Clean and bolt lugs together.
12. Tape leads--Scotch 23 (rubber tape) followed by Scotch 33 (vinyl plastic tape). One lead with both kinds of tape and two leads with Scotch 23 only (temporary leads).
13. Place leads into junction box and replace bolts.

14. Notify shift supervisor--remove Red Tags and return fuses. Meg the motor to establish leads are making good connection.
15. Throw on starter switch.
16. Remove Red Tag on field switch. Start motor to check for rotation. Shut off motor. Replace Red Tags.
17. If the rotation is correct, finish putting on Scotch 33 tape. If the rotation is wrong, undo the two temporary tapes and switch leads. Retape leads.
18. Replace junction box cover. Align coupling. Replace coupling guard.
19. Remove Red Tags. Turn on starter switch.