1 Hot Cutover Site Readiness Checklist

Number	Site Audit – Data Collection	CHECK
1.	Conducted a complete and thorough review of every process loop in the controllers being considered for Hot Cutover.	
2.	Constructed a Loop Sheet for every process loop showing all input and output connections for each of the process loops, including output action, Final Control Element action, control configuration, control action, and tuning constants for the loop.	
3.	Inspected the controller terminal panels for undocumented wiring that may indicate the presence of control connections not related to the process under control by the components in the cabinet. Thoroughly document these, since they will have to be moved as well.	
4.	Inspected and recorded the connections to all Terminal Panels and Junction Panels for each of the controllers.	
5.	Conducted an inspection of every cabinet in the system per the Audit Checklist for TDC Basic Installations to assess the general condition of the hardware in place.	
6.	Checked the records kept on every controller to be included in the Cutover to assure that its Preventative Maintenance Schedule is up to date.	

Number	Site Audit – Data Analysis	
1.	Used the data collected in the first step of the preceding Data Collection section to create a Loop Diagram for each and every loop that will be affected by the Hot Cutover process.	
2.	Constructed a document showing the tags in each controller in the order in which they are to be cutover.	

Number	Database Construction	
1.	Created a TDC-2000 database of Alias Tags that can be used in a HG-Only Load to the Basic Controllers.	
2.	Created any TDC-2000 Operating Groups, Trends or Schematic Displays using Alias Tags that are required for use during the Hot Cutover. Test these against the Alias Database with the Process Operators.	
3.	Created an Experion Database comprising the Primary Tags in the system. This will be the first instance of the Primary Database.	
4.	Loaded the initial Primary Database to an Experion Test System and debug thoroughly to eliminate any unforeseen shortcomings.	
5.	Created any Experion Operating Groups, Trends or Schematic Displays that are required for use with the second instance of the Primary Experion Database and test with the Process Operators. This becomes the Experion Transition Database.	

Number	Planning	
1.	From the Site Audit documents generated in this process, created a list of the devices that must be repaired or replaced before Hot Cutover can begin, and communicate that list to Logistics for ordering.	
2.	From the Site Audit documents generated in this process, created a list of the devices that will be replaced during Hot Cutover, and communicate that list to Logistics for ordering.	
3.	From the Site Audit documents generated in this process, created a list of the devices that will be added during Hot Cutover, and communicate that list to Logistics for ordering.	
4.	Created a schedule of events to handle the one-loop-at-a-time cutover of the controllers that are a part of the Hot Cutover. Plan the work for one shift per day, and allow at least enough time at end of shift for the Operators to communicate changes to those relieving them.	

Number	Training and Orientation	
1.	Assured that all team members to be involved in the Hot Cutover procedure were involved in all preceding planning and data collection operations so that they were aware of all of the steps in the procedure	
2.	Those who were to be involved in hardware replacement were given the opportunity to practice the steps in the process to the point of competency and confidence in advance of the cutover.	
3.	Process Operators were able to work with both TDC-2000 and Experion systems renditions of the process databases in advance of the time they were expected to control from either one of them.	
4.	Lead Process Operators participated in the design and construction of the Experion database used for control during and after the cutover.	

Number	Logistics	
1.	Obtained all required hardware for the Hot Cutover and any additional Experion Systems that will be built to support the cutover, such as for testing the database and/or training the Hot Cutover Team.	
2.	When the hardware was received, assembled the Experion system as needed to create, test and debug the database and train the operating staff.	
3.	When the hardware arrived, used the generated planning documents to create kits of parts to support each step of the Hot Cutover process.	

Communications		
1.	Established at least two different clear communications channels that can be used for Hot Cutover Team intra-communications, and Hot Cutover Team communications with Operators and Field Support.	

Number	Teambuilding	
1.	Created a team of experienced, qualified TDC-2000 Process Operators who will control the process from the existing system as it is cut over to Experion.	
2.	Created a team of experienced Process Operators and train them on executing control from an Experion System.	
3.	Created at least two teams of Standby Manual Unit Operators, two persons per team. One on each team handles the Standby Manual Unit, the other handles communications with other team members and uses the collected documentation to guide his partner through the setup and operation of the Standby Manual Unit for each loop for which the Standby Manual Unit is needed. Train these teams on the operation of the Standby Manual Unit and allow them time to practice to achieve proficiency.	

Pre-cutover work	
Power Supply Replacement	Replaced all old TDC-2000 Basic Power Supplies with the new units before Hot Cutover Started.
Loop Relocation	Moved loops that are not relevant to the others in a controller to another location.
Equipment Repair	Made sure that all equipment to be involved in the cutover is fully functional and will not be a source of failure during the cutover, even if it will be removed during the cutover. Made sure that Preventative Maintenance is current on all devices involved in the cutover.
Equipment Replacement	Replaced any failed equipment if it was safe and practical to do so before the Cutover

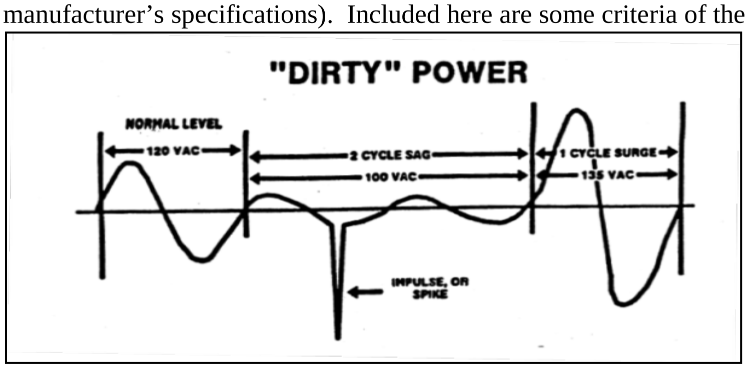
2 Audit Checklist for TDC Basic Installations

2.1 Cabinet

1. Inspect the integrity of all external cabinet sides to insure that AC Safety Ground is maintained on all metal surfaces. Use an ohmmeter to check for connectivity between chassis ground reference point (or bar) and all metal surfaces. For a properly connected system, you can expect to see a resistance of less than 1 ohm for all points (remember to subtract out the resistance of the meter wires).
2. Inspect the local master reference bar (the large copper bar at the top of the Basic cabinet). Check for corrosion and loose connections.
3. Inspect the vertical bus bar system (if present). Check all three bars for corrosion.

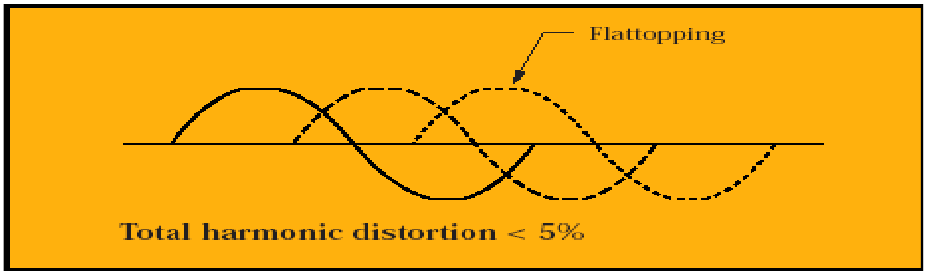
2.2 Power and Grounding

1. Inspect the AC power cord for the power supply. Check for splits or cracks in the insulation. Replace power cord if needed. Note – if the bulk supplies are wired directly to circuit breakers, then special permits may be required for replacing the cord.
2. If present, check the condition of MOV's installed. Check for cracks and/or burn spots in the devices. Replace if needed.
3. Measure the AC input voltage and record the value here. __________
4. If UPS power is used, check the quality of the AC waveform (i.e., insure the waveform is within manufacturer's specifications). Included here are some criteria of the AC waveform to check.



DISTORTION

Utility mains power normally has less than 5 % Harmonic distortion.
Transformer of proper rating will add about 1 % distortion.
Total Harmonic Distortion (THD) of 6 % is acceptable.
Maximum THD acceptable is 8 %.



5. Inspect the red and black DC power wires connected to each power supply. Check for signs of corrosion. Check for splits or cracks in the insulation. Check for loose connections on each end of the wires.
6. Inspect the red and black DC power wires connected between each cabinet (in a cabinet complex). Check for signs of corrosion. Check for splits or cracks in the insulation. Check that all wires are tightly connected to connector blocks.
7. Inspect the ground wire for AC Safety Ground exiting the cabinet. Check for signs of corrosion. Check for splits or cracks in the insulation. Check for loose connections at each end of the wire.
8. Is a 4 AWG (5.3 mm) or larger wire is used to connect AC Safety Ground in the cabinet to the AC Safety Ground collection plate? Is a 4 AWG (5.3 mm) or larger wire is used to connect AC Safety Ground to the AC Safety Ground rod?
9. How is the wire from AC Safety Ground in the cabinet routed to the AC Safety Ground collection plate?
10. Inspect the ground wire for MRG. Is a 4 AWG (5.3 mm) or larger wire used to connect the local reference bar with the MRG ground rod? Check for loose connections at each end of the wire.
11. How is the wire from the local reference bar to the MRG ground rod routed?
12. Is the wire from the local reference bar to the MRG ground rod exposed anywhere?
13. Using a volt meter that is capable of measuring in the millivolts range, measure the voltage difference between MRG and AC Safety Ground for each cabinet. A reading of less than 15 mv inside the cabinet indicates that MRG and AC Safety Ground are bonded together. A measurement between 15 mv and 250 mv is expected for a system that does not have MRG and AC Safety Ground bonded together.

2.3 Power Supplies and Battery Backup

1. Note the locations of power supplies. Check the current loading (amperes) on each supply.
2. Measure the DC output voltage and record the value here. __________
3. Is battery backup used?
4. If possible, check the current loading (amperes) for each battery backup supply.
5. Check the age and condition of the lead acid batteries.

2.4 Terminal Panels (TCB00, or TCB20, or TCB30)

1. Note the locations of the terminal panels with respect to the controllers connected to them. Are terminal panels located in the same cabinet as the existing CB/EC? If not, are terminal panels located in the same cabinet complex as the existing CB/EC?
2. With a volt meter, measure the difference between SC ground on the terminal panel, and SC ground near the existing CB/EC rack (associated with that terminal panel). A measured difference of approximately 30 mV can equate to an error in an analog input reading of 1%. If a difference is pf 30 mV or more is measured check all screws in the cabinet for tightness (do not forget to check the connections to the large copper bus ground bus bar at the top of the cabinet(s)).

3. Inspect the overall condition of the terminal panels.
4. Inspect the fuses on the terminal panels (if present). Do any fuses need to be replaced? Are the electrical contacts on the fuses corroded? Does the wire link inside the fuse (if visible) indicate distortion/overstress.
5. Inspect the three screws in the upper right hand corner that connect the terminal panel to the power rails. Check to make sure all connections are tight.

2.5 Terminal Panel cables

1. Are terminal panel cables being replaced with new cables? If yes, skip the next two steps.
2. Check the cables connected to J2, J3, and J4 of the terminal panel for corrosion and cracked insulation.
3. Check the length of the cables connected to J2 and J3 on the terminal panel. Is the cable long enough to connect from the terminal panel to the location of the new UHIO hardware?
4. Can the cables be "unbundled" (i.e. any tie wraps cut and cables separated) without risk to operation/control.

2.6 Field Wiring

1. Check the field wiring for proper insulation. Check for splits or cracks in the insulation. Check for corrosion in the wiring. Check for correct labeling.
2. If shielded cables are used, check for loose connections of each shield wire to ground (or ground bar).
3. Check for any field wiring that is connected to more than one set of terminal panel screws, for example, an input that is used by more than one CB/EC, or used as an input to an HLPIU. If present, this indicates that the loops in question constitute a "hardwired" Peer connection. These loops must be monitored carefully during cutover.