ELEVATOR EC CONTROLS
SIMPLE. SOLID. SUPPORTABLE.

A17.1-2013/B44-13 TESTING PROCEDURES
MODEL: PIXEL FOR HYDRAULIC ELEVATORS
Rev. 3.0, 10/02/2020

SPECIFICATION SHEET FOR ELEVATORS
PART D2 (TEST PROCEDURES)

Provide a written test procedure for the items listed below. Provide a written procedure for the tests of 8.10.2 and 8.10.3 that cannot be easily demonstrated in the field or for those tests which require specific test instructions to demonstrate compliance. The procedure should follow the same sequence of the tests in 8.10.

Items: 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309.

In addition, written test procedures are required for the following items from Part C2 and Part D1: 2010, 2011, 2012, 2202, 2210, 2213, 2219, 2220, 2224, 2227, 2228, 2232, 2233, 2236, 2237, 2238, 2240, 2242 where applicable.

Item 2301
2.27.2 Emergency or Standby Power System

Comment: This series of tests should be skipped for installations that do not utilize an emergency power generator that is capable of running one (or more) elevator(s).

To prepare for testing the logical operation of the control system (testing the system without actually invoking the emergency power generator), refer to the control system prints to locate the connection terminal to which the emergency power status contact is wired (the contact of the emergency power generator that is used to reflect whether power is being supplied by the commercial source or from the generator). This terminal is labeled "EPI". Determine the polarity of this contact (i.e., open or closed when on emergency power). Emergency power conditions will need to be simulated by either shunting the status contact or by disconnecting the field wire at the EPI terminal, depending upon this polarity.

Also, refer to the control system prints to locate the connection terminal to which an emergency power pre-transfer contact is wired (a contact of the emergency power system that indicates that a transfer back to commercial power is imminent). This terminal is labeled "EPPT". Determine the polarity of this contact (i.e., open or closed when a transfer back to commercial power is imminent). This pre-transfer condition will need to be imulated (in Test Procedure 2301.4) by either shunting the status contact or by disconnecting the field wire at the EPPT terminal, depending upon this polarity.

Test Procedure 2301.1 (sequential lowering):

1. Remove power from all controllers (including the group supervisor, if applicable).
2. Simulate the activation of the emergency power status contact from the emergency power generation system, as discussed in the Comment section above.
3. Simultaneously restore power to all controllers.
4. Verify that the "ELEVATOR EMERGENCY POWER" indicator at the designated level lobby is illuminated.
5. Verify that the cars return sequentially to the emergency power recall floor, as required by Section 2.27.2.4.4(a) through Section 2.27.2.4.4(d).
6. As each car performs its recall process, verify that the visual indicator associated with each car (if required by Section 2.27.2.4.3) illuminates once the car has completed its recall operation, as required by Section 2.27.2.4.3.
7. Stringent and complete testing will require that steps 1 through 6 above are repeated with one or more cars placed on Designated Attendant Operation (if applicable), Inspection Operation, and Firefighter's Emergency Operation.

Test Procedure 2301.2 (automatic car selection, multi-car system with selection switch):

1. Place the selection switch labeled "ELEVATOR EMERGENCY POWER" in the "AUTO" position.
2. Carry out Test Procedure 2301.1. Once the sequential recall process has completed for all cars, move on to Step 3 of this test procedure.
3. Once the cars have completed the sequential recall process, verify that a car (or cars, up to the rated capacity of the emergency power generator) is selected to run on generator power, per the requirements of section 2.27.2.4.5.
4. Verify that the proper visual indicator (adjacent to the manual selection switch(es), as referenced in Section 2.27.2.4.6) is illuminated when a car is selected to run.

Test Procedure 2301.3 (manual car selection, multi-car system with selection switch):

1. Place the selection switch labeled "ELEVATOR EMERGENCY POWER" in a position that is associated with one of the elevators.
2. Carry out Test Procedure 2301.1. Once the sequential recall process has completed for all cars, move on to Step 3 of this test procedure.
3. Once the cars have completed the sequential recall process, verify that the car that is selected to run via the manual selection switch(es) is selected to run on generator power, per the requirements of section 2.27.2.4.5.
4. Verify that the proper visual indicator (adjacent to the manual selection switch(es), as referenced in Section 2.27.2.4.6) is illuminated when a car is selected to run.
5. Move the position of the manual selection switch to select a different car to run. Verify that the car that was previously selected is allowed (if moving) to continue running until it stops (at which point it is deselected). Once the previously selected car has been deselected, verify that the newly selected car is allowed to operate.

6. Verify that the proper visual indicator (adjacent to the manual selection switch(es), as referenced in Section 2.27.2.4.6) is illuminated when the new car is selected to run, and verify that all other indicators of that type are turned off.
7. Repeat the manual selection process for all cars.

Test Procedure 2301.4 (transition from Emergency Power to commercial power):

1. This test should be performed once the system has been placed in emergency power operation (by following the steps in Test Procedure 2301.1 above).
2. Simulate the activation of the emergency power pre-transfer contact as discussed in the Comment section above (if one is available).
3. Verify that a running car will stop at the next available floor and open its doors.
4. Simulate transfer of power back to commercial power by first removing power from all controllers.
5. Simulate the return to commercial power by reversing the action taken in Step 2 of Test Procedure 2301.1.
6. Reverse the action taken in Step 2 of this test procedure.
7. Restore power to all controllers.
8. Verify that all cars return to normal operation.

Item 2302

2.27.3.1.6(m) Phase I Emergency Recall Operation

Comment: This test should be skipped for installations that do not utilize a load weighing device.

Test Procedure 2302:

1. Place a full load in the elevator. To simply simulate the detection of a heavy load by the load weighing device, place a jumper across the contact that is wired to the Heavy Load Input (HLI) and/or the contact that is wired to the Overload input (OLI) on the controller. [Note that these contacts may be wired to the P-TOC board, located on the cartop. Refer to the controller prints for the specific installation.]
2. Place the car on Fire Recall Operation by moving the Fire Recall Switch to the ON position.
3. Verify that the car responds to Fire Recall Operation as required by section 2.27.3.1.6.

Item 2303

2.27.3.3.1(l) Phase II Emergency In-Car Operation

Comment: This test should be skipped for installations that do not utilize a load weighing device.

Test Procedure 2303:

1. Place a full load in the elevator. To simply simulate the declaration of a heavy load by the load weighing device, place a jumper across the contact that is wired to the Heavy Load Input (HLI) and/or the contact that is wired to the Overload input (OLI) on the controller. [Note that these contacts may be wired to the P-TOC board, located on the cartop. Refer to the controller prints for the specific installation.]
2. Place the car on Fire Recall Operation by moving the Fire Recall Switch to the ON position.
3. Once the car has completed its recall to the Fire Recall floor, place the car on Fire Phase II operation by moving the in-car "Fire Operation" switch to the ON position.
4. Verify that the car operates as required by section 2.27.3.3.

Item 2304
2.27.3.3.6 Phase II Emergency In-Car Operation

Note: During this test one or more fuses will blow (F50). Refer to the controller prints and make sure that appropriate replacement fuses are readily available.

Test Procedure 2304:

1. Place the car on Fire Service Phase II operation.
2. Board the elevator and travel to the bottom landing (if necessary).
3. Open the elevator door and exit the elevator.
4. Open a (the) hall call pushbutton station at the bottom landing.
5. Using a wire jumper, simulate an accidental ground on the "landing side of the hoistway enclosure" by momentarily shorting the hall buttons voltage bus terminal V+ on the hall node boards to the hall button fixture enclosure.
6. Verify that the operation of the car remains in accordance with section 2.27.3.3.
7. Turn off power to the controller and replace fuses F50 and F50F as required.

Item 2305
2.27.3.4 Interruption of Power

Test Procedure 2305.1 (retention of Fire Phase 1 status through power loss):

1. This test is most efficiently performed with an assistant in the elevator who can register car calls and operate the Door Open Button.
2. Move car to a floor other than the designated Fire Recall floor by registering a car call.
3. Once the car arrives at the floor hold the door open using the Door Open Button.
4. Initiate Fire Phase 1 recall by moving the Fire Recall switch to the ON position (keep holding the door open using the Door Open Button).
5. Remove power from the controller.
6. With power OFF, turn the Fire Recall switch to the OFF position.

7. Restore power to the controller.
8. Allow the door to close (release the Door Open Button).
9. Verify that the system remains on Fire Phase 1 operation, and that the car operates as required under Fire Phase I operation.

Test Procedure 2305.2 (retention of Fire Phase 1 status through power loss):

1. Move car to a floor other than the designated Fire Recall floor by registering a car call.
2. Initiate Fire Phase 1 Recall by moving the Fire Recall switch to the ON position.
3. Allow the car to move away from the floor (it should move toward the Fire Recall floor).
4. Remove power from the controller (with the car in between floors).
5. With power OFF, turn the Fire Recall switch to the OFF position.
6. Restore power to the controller.
7. Verify that the car moves toward the Fire Recall floor.
8. Once it reaches a floor, verify that the car completes the recall to the Fire Recall floor as required under Fire Phase I operation.

Test Procedure 2305.3 (retention of Fire Phase 2 status through power loss):

1. This test is most efficiently performed with an assistant in the elevator who can register car calls and manipulate the Fire Phase 2 switch.
2. Place the elevator on Fire Phase 2 Operation and move it to an upper floor by registering a car call.
3. Leave the Fire Phase 2 switch in the ON position.
4. Leave the doors closed.
5. Remove power from the elevator controller.
6. Restore power to the elevator controller.
7. Verify that the car will not move (except for releveling operation as required).
8. Verify (by observing the car's position indicator) that the floor position is re-established immediately.
9. Verify that the car will then respond to car calls as appropriate under Fire Phase 2 operational requirements.

Test Procedure 2305.4 (retention of Fire Phase 2 status through power loss):

1. This test is most efficiently performed with an assistant in the elevator who can register car calls and operate the Door Open Button and Door Close Button.
2. Place the elevator on Fire Phase 2 Operation and move it to a floor other than the fire recall floor.
3. Leave the Fire Phase 2 switch in the ON position.
4. Open the elevator doors fully using constant pressure on the door open button.
5. Remove power from the elevator controller.
6. Restore power to the elevator controller.

7. Verify that the doors do not close automatically. The closing of the doors must remain "constant pressure operation" as required by Fire Phase 2 operation.
8. Verify (by observing the car's position indicator) that the floor position is re-established immediately.
9. Verify that the car will then respond to car calls as appropriate under Fire Phase 2 operational requirements.

Test Procedure 2305.5 (retention of Fire Phase 2 status through power loss):

1. This test is most efficiently performed with an assistant in the elevator who can register car calls and manipulate the Fire Phase 2 switch.
2. Place the elevator on Fire Phase 2 Operation and move it to a floor other than the fire recall floor.
3. Open the door fully using the Door Open Button and then place the Fire Phase 2 key switch in the HOLD position.
4. Remove power from the controller.
5. Restore power to the controller.
6. Verify that the car will not move (except for releveling operation as required).
7. Verify (by observing the car's position indicator) that the floor position is re-established immediately.
8. Verify that the doors will remain open as required by Fire Phase 2 HOLD operation.

Item 2306
3.19.4.7.6: Sealing of the Overspeed Valve
Follow the valve manufacturer instructions to verify operation and sealing procedures.

Item 2307
3.17.3.2.2(a): Deleted, and original 3.17.3.2.2 revised and re-designated **3.17.3.2.1 on Plunger Gripper - Inspection and Test Means.**
Follow the Plunger Gripper manufacturer instructions to verify Inspection and testing procedures.

Item 2308 and 2309
3.27.1, 2, 3 & 4 Phase I and Phase II under Special Conditions
Tests demonstrate the behavior of a car during Fire Service Phase 1 or Phase II in conjunction with the following special conditions:

a. Low Oil Protection, input terminal "LOI"
b. Auxiliary Power. Refer to Item 2240 Auxiliary Power Operation below for testing procedure instructions
c. Oil Tank Temperature, input terminal "HOT"

Instructions to trigger conditions a or c above:

a. Identify condition to be verified and locate input on prints.

b. Be ready to disconnect the wire feeding the input if normally open contact or Jump input if normally closed contact is used to active input

Special Condition and Fire Phase 1:

a. Place an elevator technician in the car to verify door open button opens the door.
b. Drive the car to the top landing.
c. Place the Machine Room Inspection switch to INSP position.
d. Turn main line disconnect off.
e. Activate either Main Fire or Alternate Fire Service, the one that will not recall the elevator to the bottom landing by removing and isolating the field wire for FRS or FRA from controller terminal strip.
f. Activate LOI or HOT input.
g. Turn main line disconnect on.
h. Place the Machine Room Inspection switch to NORMAL position.
i. Observe the car to move to the fire recall landing and open the doors and the Fire Warning Indicator turns off.
j. Observe the car closing the doors after 15 seconds of being open.
k. Instruct elevator technician to press the door open button and observe the doors to open.
l. Turn main line disconnect off
m. Rewire FRS or FRA wire to controller terminal strip.
n. Deactivate LOI or HOT input
o. Turn main line disconnect on.
p. Reset fire service phase 1 recall mode of operation by returning the car to the main landing and rotating the fire recall switch to reset then to off position.

Auxiliary Power and Fire Phase 2:

a. Place an elevator technician in the car to drive the car on fire service phase 2 mode of operation.
b. Drive the car to the top landing.
c. Place the Machine Room Inspection switch to INSP position.
d. Turn main line disconnect off.
e. Instruct elevator technician in the car to place the fire service phase 2 switch to the On position.
f. Activate LOI or HOT input
g. Place the Machine Room Inspection switch to NORMAL position.
h. Turn main line disconnect on.
i. Instruct elevator technician in the car to drive the doors to verify open and close behaviors to correspond to fire service phase 2 behaviors.
j. Instruct elevator technician in the car to drive car to a lower landing and observe fire phase 2 behaviors until car is driven to the bottom landing.
k. Turn main line disconnect off

l. Deactivate LOI or HOT input
m. Instruct elevator technician in the car to place the fire service phase 2 switch to Off position.
n. Turn main line disconnect on.
o. Reset fire service phase 1 recall mode of operation by returning the car to the main landing and rotating the fire recall switch to reset then to off position.

ADDITIONAL TEST PROCEDURES

Note: Test verification instructions below are extracted from Pixel Installation and Adjustment Hydraulic Manual, additional testing procedures are covered within the manual.

Item 2010
2.26.9.3 Protection Against Failures

Single Ground

Critical Component:	N/A
Redundant Component:	F4A Fuse
Monitored Component:	N/A

Test Verification of Single Ground:

a. Place the car on Machine Room Inspection.

NOTE: The Single Ground Test can be performed on either automatic or inspection operation.

NOTE: The system logic is driven by a source of 110 Volts AC, and has one side already connected to ground, the 3 buss. The other side, the 4A buss, is protected by a fuse feeding the logic power. Any accidental grounding will result in a blown fuse F4A, which will remove controller power to the safety string and logic circuits.

b. Short terminal SAFH to ground. Verify that fuse F4A blows, and the Pixel screen displays **Safety String Open Fault**.
c. Turn main power to controller off.
d. Replace fuse F4A.
e. Turn main power to controller on.
f. Confirm that the Pixel screen displays **No Faults**.
g. Remove the car from Machine Room Inspection.

Test Verification Landa™ Redundant Position System

Critical Component:	**Landa**™ Main and Auxiliary Position Sensor Heads
Redundant Component:	**Landa**™ Main and Auxiliary Position Sensor Heads
Monitored Component:	Car Speed, and Position

NOTE: The following tests verify that Pixel can safely position the cab using either of the two independent sensor heads that comprise the Landa™ positioning system.

The Pixel control uses a dual head positioning system – Landa™– incorporating a positional encoded tape that runs the entire length of the hoistway. This system enables each either sensor head to provide absolute position information independent of the other. Refer to page 6 of the prints for Landa™ interface circuits.

The Main Positioning head communicates its absolute position to the main processor via dedicated RS485 serial port while the Auxiliary Positioning head communicates its absolute position to the main processor via CAN.

The Landa™ positioning system verifies absolute cab position to 0.032” (0.8mm) accuracy throughout the entire length of the hoistway.

The Pixel computer network, MPU, will “learn” and then build a positional image of the entire hoistway including:

- Door Zone or Trucking Zone, one per landing
- Top and Bottom Access Limits
- Mid hoistway position
- Physical open position for the top and bottom normal limit switches
- A speed profile deceleration ramp for the top and bottom landings

NOTE: The landing zones are limited to a maximum of six inches plus or minus learned position and are set at a factory default of three inches.

The learn process – once performed and verified during elevator installation – will be transferred and permanently stored by the three microprocessors that make up the Pixel controller’s main processing unit (MP, SP1, SP2). The learn process must be accomplished and transferred before the car can be run on any passenger automatic mode of operation.

NOTE: Pixel always “knows” the car position by reading it from the encoded tape and validating it through comparison to the learned/stored positional image.

Verification of Landa™ Main Sensor Head:

a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from responding to hall call demand.

b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.

c. Enter a car call to a floor several floors away from current car position (if two stop elevator place a call to the other floor).

d. While car is running, unplug the Main Selector RJ45 cable labeled "SELECTOR" from Pixel MP, and observe that Pixel displays a **Main Selector Fault**, makes an emergency slowdown, and positions the elevator cab at the next available landing.

e. Pixel will remove the car from service until proper Landa™ Main sensor head communications is re-established.

f. Verify that the car will not respond to car calls.

g. Reconnect the RJ45 cable at the Pixel MP. Confirm that Pixel clears the **Main Selector Fault**, and that the car to respond to car call demand.

h. Return the CAPTURE and TEST switches to their off positions, which will enable the car to return to Automatic Mode of operation and serve hall call demand.

Verification of Landa™ Auxiliary Sensor Head:

a. Set CAPTURE switch, located on the MP board, to CAPTURE, which will prevent the car from responding to hall call demand.

b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.

c. Enter a car call to a floor several floors away from current car position (if two stop elevator place a call to the other floor).

d. While car is running, unplug the cable labeled "CAB CAN" from the Pixel MP, and observe that Pixel displays briefly **SP1 Aux. Selector Comm. Fault**, before being overwritten by a higher priority **CAB Comm. Fault**, makes an emergency slowdown, and positions the elevator cab at the next available landing.

e. Pixel will remove the car from service until proper Landa™ Auxiliary sensor head communication and CAB communications are re-established.

f. Verify that the car will not respond to car calls.

g. Reconnect the RJ45 cable at the Pixel MP. Confirm that Pixel clears the **CAB Comm. Fault and SP1 Aux. Selector Comm. Fault,** and that the car responds to car call demand.

h. Return the CAPTURE and TEST switches to their off positions, which will enable the car to return to Automatic Mode of operation and serve hall call demand.

Item 2011

2.26.9.4 Methods to Satisfy 2.26.9.3

The car position data values read from the Main Reader and Auxiliary Reader are continuously compared against each other, while the car is running or at rest, independently by the P-MP, SP1, and SP2, to validate that each reader is operating in accordance with the other. Each reader is self-diagnosing in that each is designed to detect when it can no longer reliably read the encoded hoistway tape due to internal failures, inadequate installation, or installation failures.

Verification of operation is included as part of test procedure for **2.26.9.3 Protection Against Failures** above.

The following safety inputs are verified against failures by cycle testing after each run before allowing the car to start another:

List of components verified against failures prior to allowing the car to start an automatic run:

1. Landa Positioning System
2. EB1-EB2, EBX1-EBX2, emergency brake relays
3. AA, Motor Contactor, used as Delta or Solid State Starter output
4. P, potential Contactor, used as Y for Y-Delta design only
5. BK, Contactor, used as auxiliary motor protection contactor for Delta and Y-Delta designs only.
6. ESCO Emergency Slowdown command contactor
7. SP1 Learned terminal speed profiles, landing positions and virtual limit positions Flash memory contents Integrity.
8. SP2 Learned terminal speed profiles, landing positions and virtual limit positions Flash memory contents Integrity.
9. P-MP Learned terminal speed profiles, landing positions and virtual limit positions Flash memory contents Integrity.
10. $AAo1_{SP1}$ and $AAo2_{SP2}$ AA Contactor control outputs
11. $Po1_{SP1}$ and $Po2_{SP2}$ P Contactor control outputs
12. Safety Inputs:
    a. GOV_{SP1} and GOV_{SP2} Governor
    b. $SAFH_{SP1}$ and $SAFH_{SP2}$ Safety String Hoistway
    c. $SAFC_{SP1}$ and $SAFC_{SP2}$ Safety String Cab
    d. ICT_{SP1} and ICT_{SP2} Car top Inspection
    e. $ICTE_{SP1}$ and $ICTE_{SP2}$ Car top Inspection Enable
    f. IIC_{SP1} and IIC_{SP2} In Car Inspection
    g. IIC_{SP1} and IIC_{SP2} In Car Inspection Enable
    h. IA_{SP1} and IA_{SP2} Hoistway Access

i. $ESTP_{SP1}$ and $ESTP_{SP2}$ COP Emergency Stop
j. IMR_{SP1} and IMR_{SP2} Machine Room Inspection
k. $IMRE_{SP1}$ and $IMRE_{SP2}$ Machine Room Inspection Enable
l. CDB_{SP1} and CDB_{SP2} Car Door Bypass
m. HDB_{SP1} and HDB_{SP2} Hoistway Door Bypass
n. $DLAT_{SP1}$ and $DLAT_{SP2}$ Door Lock Access Top
o. $DLAB_{SP1}$ and $DLAB_{SP2}$ Door Lock Access Bottom
p. $DLSF_{SP1}$ and $DLSF_{SP2}$ Front Door Lock String
q. $DLSR_{SP1}$ and $DLSR_{SP2}$ Rear Door Lock String
r. $DCAT_{SP1}$ and $DCAT_{SP2}$ Door Closed Access Top
s. $DCAB_{SP1}$ and $DCAB_{SP2}$ Door Closed Access Bottom
t. $DCSF_{SP1}$ and $DCSF_{SP2}$ Front Door Closed String
u. $DCSR_{SP1}$ and $DCSR_{SP2}$ Rear Door Closed String
v. CGF_{SP1} and CGF_{SP2} Car Gate Front
w. CGR_{SP1} and CGR_{SP2} Car Gate Rear

To verify cycle test operation follow steps below to perform as an example the GOV input cycle testing verification:

1. Place the car on Test and Capture
2. Turn power to controller off
3. Jump terminal GOV to terminal 4A to simulate a latched input
4. Turn controller power on
5. Place a car call and allow the car to travel to the commanded landing.
6. Verify display shows a Cycle test fault and that the car cannot be commanded to move by entering car calls
7. Turn power off
8. Remove jumper from GOV to 4A
9. Turn Power on
10. Verify the fault remains through power lost
11. Press the System Fault Reset push button in the P-MP board to clear fault and return car to service
12. Place Test and Capture switches to off position.

NOTE: The remaining listed input components can be verified by repeating procedure above

Item 2012
2.26.9.5 / 2.26.9.6 Sections do not apply to hydraulic elevators.

Item 2202
2.26.2.4 Section does not apply to hydraulic elevators

Item 2210
2.26.2.12 Section does not apply to hydraulic elevators

Item 2213
2.26.2.16 Emergency Terminal Stopping Devices
Pixel elevator controllers comply with section 2.25.4.2 and are except from complying with this section 2.26.2.16

Item 2219
2.26.2.29 Section does not apply to hydraulic elevators.

Item 2220
2.26.2.30 Section does not apply to hydraulic elevators.

Item 2224
2.25.2 Normal Terminal Stopping Devices
The NTS Slowdown test forces the car to execute an emergency slowdown into the terminal landing (up or down), energizing the ESCO contactor to drop voltage to the common side of the high speed valves through ESCO $_{SP1}$ or/ and ESCO$_{SP2}$ outputs, ,utilizing the Landa Auxiliary sensor head Only to verify that the failure of the primary terminal slowdown device, the Main Land Sensor head, does not prevent the car from landing into terminal landing position, the NTS Slowdown tests are accomplished using simple menu driven process and the procedures below:
Down Direction:

a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.
b. Drive the car to the top landing by entering a Car Call.
c. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
d. Navigate to:

Home

Install

Code Compliance Tests

Safeties Speed Tests

NTS Slowdown Test

NOTE: The **NTS Slowdown Test** parameter "Slowdown Position" represents the hoistway position at which the car must start its deceleration into the bottom landing (relative to the down normal limit).

Press the **Run Test** soft key to start the **NTS Slowdown Test** run or the **Back** soft key to abort test run.

CAUTION: Once the Run Test soft key has been pressed, the car will accelerate to contract speed in the down direction and run past the Slowdown Position.

e. Observe that the Display shows a **NTS Overspeed** Trip latching fault, and that the car slows down into the bottom landing.

f. Press the System Fault Reset key to clear the fault and enable the car to run.

Up Direction:

a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.

b. Drive the car to the bottom landing by entering a Car Call.

c. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.

d. Navigate to:

Home

Install

Code Compliance Tests

Safeties Speed Tests

NTS Slowdown Test

NOTE: The **NTS Slowdown Test** parameter "Slowdown Position" represents the hoistway position at which the car must start its deceleration into the top landing (relative to the up normal limit).

Press the **Run Test** soft key to start the **NTS Slowdown Test** run or the **Back** soft key to abort test run.

CAUTION: Once the Run Test soft key has been pressed, the car will accelerate to contract speed in the up direction and run past the Slowdown Position.

g. Observe that the Display shows a **NTS Overspeed** Trip latching fault, and that the car slows down into the top landing.

e. Press System Fault Reset key to clear the fault and enable the car to run.

Item 2227

2.26.1.6.6 Overspeed Protection within the Truck Zone

Leveling Overspeed monitors cab speed while the car is running within the door zone or trucking zone, and is in the process of leveling into a landing. Use the following process for verification:

NOTE: Leveling Trip Speed does not monitor the target final programmed leveling speed. Pixel's car landing zone approach is normally greater than the final programmed leveling speed code permits speeds of up to 25 ft/min within the leveling zone.

a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.

b. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.

c. Navigate to:

Home

Install

Code Compliance Tests

Overspeed Tests

Leveling Overspeed

NOTE: The Leveling Overspeed display shows the programmed Leveling speed parameter, overspeed tripping speed setting, and prompts for entry of the leveling tripping speed parameter to be use when running a leveling trip detection test. Enter a speed below the current leveling speed parameter setting before running test.

Press the **Run Test** soft key to enable – for the next leveling run only – to detect **Leveling Overspeed** condition using the **Test Leveling Overspeed** parameter or the **Back** soft key to abort test run.

d. Enter a Car Call to run the car.

e. Observe that the Fault Display entry for the safety processors shows a Leveling Overspeed latching fault as the car slows down into the target landing's door zone, and that the car comes to a halt.

f. Verify the car will not accept a command to run while the latched fault is present.

g. Press the System Fault Reset key to clear the fault and enable the enable the car to accept a command to move.

h. Verify that the car re-levels into the closest landing

i. Set place the TEST and CAPTURE switches to off, which will enable the car to accept hall calls and return to Automatic Mode operation.

Item 2228
2.26.1.6.7 Inner landing Zone

a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.

b. Drive the car to a terminal landing.

c. Place the car on Independent Service and barricade the doors.

WARNING: Place approved barricade across elevator door opening. Station qualified supervision at opening. PREVENT ACCIDENTAL INGRESS ATTEMPT DURING TEST.

d. Place the car on Hoistway Access operation.

e. Drive the car on Access Operation 3 inches above or below the landing.

f. Remove from Access operation and observe that the car will not start repositioning into a landing until after doors have closed.

g. Remove the car from Independent Service

h. Set Capture switch, located on the MP board, to OFF to return car to automatic mode of operation.

Item 2233

ASME 17.1 Section 3.25.2 Terminal Speed Reducing Devices (Emergency Terminal Stop Test)

NOTE: This test verifies failure to reduce speed at terminal landing even do Landa position system is functioning properly.

The Emergency Terminal Stop test forces the car to run on high speed pass slowdown position into the up terminal landing to verify that even do the Landa Position system is working properly the car speed will be used by the safety processors to slow down the car and prevent the plunger from striking its solid limit of travel at a car speed in excess of 50 ft/min in the up direction, the tests is accomplished using the menu driven procedure below:

a. Set CAPTURE switch, located on the MP board, to CAPTURE which will prevent the car from servicing Hall Calls.
b. Drive the car to the bottom landing by entering a Car Call.
c. Set TEST switch, located on the MP board, to TEST which will enable Test Mode operation and disable door operation.
d. Navigate to:

Home

Install

Code Compliance Tests

Safeties Speed Tests

Emergency Terminal Stop

NOTE: The Emergency Terminal Stop parameter “Slowdown Position” represents the hoistway position at which the car must start its deceleration into the top landing (relative to the up normal limit position).

Press the **Run Test** soft key to start the **Emergency Terminal Stop** test run or the **Back** soft key to abort test run.

CAUTION: Once the Run Test soft key has been pressed, the car will accelerate to contract speed in the down direction and run past the Slowdown Position.

e. Observe that the Display shows a **Slowdown Overspeed** Trip latching fault, and that the car comes to a halt.

f. Press the System Fault Reset key to clear the fault and enable the car to re-level into the top landing.

g. Set place the TEST and CAPTURE switches to off, which will enable the car to accept hall calls and return to Automatic Mode operation.

Item 2236

3.26.5 Phase Reversal and Failure Protection.

Test simulates power phase leg switching and phase loss to trigger the reverse phase and phase loss protection devices in the control unit for Delta, Y-Delta and Solid State Starter units as follows:

1. **Delta and Y-Delta control units**:
   a. Turn main Line disconnect off.
   b. Place the Machine Room Inspection switch to INSP.
   c. Remove FL3 fuse, to verify phase loss detection.
   d. Turn main line disconnect on.
   e. Verify that the car cannot be commanded to move up on Machine room Inspection
   f. Turn main Line disconnect off.
   g. Install FL3 fuse
   h. Interchange wires for L1 and L2 terminals on the Reverse Phase Monitor unit to verify phase reversal
   i. Turn main line disconnect on.
   j. Verify that the car cannot be commanded to move up on Machine room Inspection
   k. Turn main Line disconnect off.
   l. Interchange back wires for L1 and L2 terminals.
   m. Turn main line disconnect on.
   n. Verify that the car can be commanded to move up on Machine room Inspection.
   o. Switch Machine Room Inspection switch to Normal.

2. **Solid State Starter control units:**
   a. Turn main Line disconnect off.
   b. Place the Machine Room Inspection switch to INSP.
   c. Remove and Isolate L3 power wire from solid state starter unit, to verify phase loss detection.
   d. Turn main line disconnect on.
   e. Verify that the car cannot be commanded to move up on Machine room Inspection

f. Turn main Line disconnect off.
g. Rewire L3 power wire to solid state starter unit
h. Interchange power wires for L1 and L2 terminals on the solid state starter unit to verify phase reversal
i. Turn main line disconnect on.
j. Verify that the car cannot be commanded to move up on Machine room Inspection
k. Turn main Line disconnect off.
l. Interchange back wires for L1 and L2 terminals.
m. Turn main line disconnect on.
n. Verify that the car can be commanded to move up on Machine room Inspection.
o. Switch Machine Room Inspection switch to Normal.

Item 2237

3.26.7 Recycling Operation for Multiple or Telescopic Plungers

To trigger Recycling operation set the Piston Synch. Start time to the current clock hour time navigating to:

Home

Adjust

Car Performance

Hydraulic Options

Piston Synch Start ; set time to current clock hour

NOTE: The Piston Synchronization will start as soon as the car finishes with current demand, observe the car travel past the Down Normal Virtual Limit Position.

a. Enter a Car Call to observe Piston Synchronization to be temporarily aborted and reinitiated once demand is completed.
b. Reset Piston Synch Start time to its original setting.

Item 2238

3.26.8 Pressure Switch

To trigger Pressure Switch operation follows instructions below:

NOTE: To verify operation an elevator technician must be inside the cab with 2-way radio communications to be instructed to activate the door open button during test.

a. Drive the car to a landing and allow elevator technician to enter cab.
b. Turn main Line disconnect off.
c. Remove and isolate LPS field wire from controller terminal strip.
d. Turn main line disconnect on.
e. Verify Pixel Display Low Pressure Switch Fault
f. Verify doors will not open automatically
g. Instruct elevator technician inside the car to press and hold the door open button and observe the doors opening from constant pressure.
h. Turn main Line disconnect off.
i. Rewire LPS field wire to controller terminal strip
j. Turn main line disconnect on.
k. Verify that Low Pressure Switch fault has cleared from Pixel display

Item 2240
3.26.10 Auxiliary Power Operation
Tests demonstrates that a car utilizing limited power source, from a Rescuvator Device, moves in the down direction and allows for passenger to exit elevator cab automatically while also enforcing requirement for Fire Service Phase 1 & 2 modes of operation while operating with Auxiliary Power Operation as follows:

Instructions to trigger Auxiliary Power activation:
a. Turn main line disconnect off.
b. Jump Terminals 9 and 10 in Rescuvator unit terminal strip.
c. Place the Test switch in Rescuvator unit in the up position.

Automatic Mode Operation:
a. Place an elevator technician in the car to verify door open button opens the door.
b. Drive the car to the top landing.
c. Activate Auxiliary Power by placing the Test switch in the Rescuvator unit to the Up position, and observe Pixel display to show Battery Lowering.
d. Observe the car to move to the bottom landing and open the doors.
e. Observe the car closing the doors after 15 seconds of being open.
f. Instruct elevator technician to press the door open button and observe the doors to open.
d. Place the Test switch in the Rescuvator unit in the down position
g. Remove Jumper from Terminals 9 and 10 in Rescuvator unit terminal strip.
h. Turn main line disconnect on.

Auxiliary Power and Fire Phase 1:

a. Place an elevator technician in the car to verify door open button opens the door.
b. Drive the car to the top landing.
c. Place the Machine Room Inspection switch to INSP position.
d. Turn main line disconnect off.
e. Activate either Main Fire or Alternate Fire Service, the one that will not recall the elevator to the bottom landing by removing and isolating the field wire for FRS or FRA from controller terminal strip.
f. Place the Machine Room Inspection switch to NORMAL position.
g. Activate Auxiliary Power by placing the Test switch in the Rescuvator unit to the Up position, and observe Pixel display to show Battery Lowering.
h. Observe the car to move to the fire recall landing and open the doors and the Fire Warning Indicator turns off.
i. Observe the car closing the doors after 15 seconds of being open.
j. Instruct elevator technician to press the door open button and observe the doors to open.
k. Place the Test switch in the Rescuvator unit in the down position
l. Remove Jumper from Terminals 9 and 10 in Rescuvator unit terminal strip.
m. Rewire FRS or FRA wire to controller terminal strip.
n. Turn main line disconnect on.
o. Reset fire service phase 1 recall mode of operation by returning the car to the main landing and rotating the fire recall switch to reset then to off position.

Auxiliary Power and Fire Phase 2:

a. Place an elevator technician in the car to drive the car on fire service phase 2 mode of operation.
b. Drive the car to the top landing.
c. Place the Machine Room Inspection switch to INSP position.
d. Turn main line disconnect off.
e. Instruct elevator technician in the car to place the fire service phase 2 switch to the On position.
f. Place the Machine Room Inspection switch to NORMAL position.
g. Activate Auxiliary Power by placing the Test switch in the Rescuvator unit to the Up position, and observe Pixel display to show Battery Lowering.
h. Instruct elevator technician in the car to drive the doors to verify open and close behaviors to correspond to fire service phase 2 behaviors.
i. Instruct elevator technician in the car to drive car to a lower landing and observe fire phase 2 behaviors until car is driven to the bottom landing.
j. Place the Test switch in Rescuvator unit in the down position
k. Remove Jumper from Terminals 9 and 10 in Rescuvator unit terminal strip.
l. Instruct elevator technician in the car to place the fire service phase 2 switch to Off position.
m. Turn main line disconnect on.

n. Reset fire service phase 1 recall mode of operation by returning the car to the main landing and rotating the fire recall switch to reset then to off position.

Item 2242
5.2.1.4.4 Car Top Prop
Section does not apply to controller equipment.

[end document]