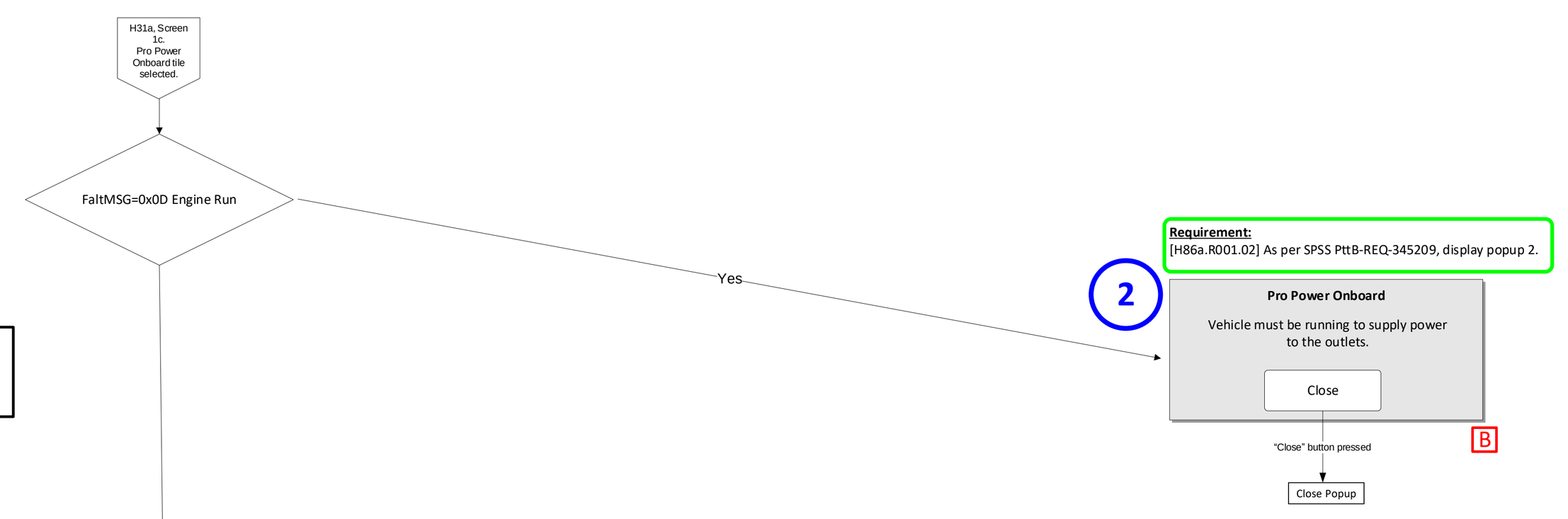
User Experience Product Development

H86a_SYNC4_ProPowerOnboard_RELEASED_v1_14_MY21.vsd

HMI Specification Purpose:
The purpose of this specification is to define the screen layout, behavior and preliminary position of each element on the screen for Pro Power Onboard (Power To The Box).
It is not the purpose of this specification to define the final graphical representation of the elements to be used in the application.
At the implementation stage, in case of conflict with functional specification, please review with Ford team.

Relationship Between HMI Specification and SPSS:
This HMI specification includes references to the *Power to the Box SPSS* which contains CAN signal information in its requirements.



Requirement:
[H86a.R002.01] Display the power button states as per SPSS PttB-REQ-345191.

Requirement:
[H86a.R003.04] When the PttB feature is Off, as per SPSS PttB-REQ-345191, all other buttons on screens 1a and 1b and 22 should be inactive except for H86a_IN1aA icon, H86a_IG1bA icon, Back button, Generator Mode button, and SYNC domain buttons.

Requirement:
[H86a.R044.01] As per SPSS PttB-REQ-345190, when user presses the Power button, it will toggle between On and Off states.

Requirement:
[H86a.R045.01] As per SPSS PttB-REQ-345192, when user presses the Generator Mode button, it will toggle between On and Off states. As per SPSS PttB-REQ-345193, turn on the LED when Generator Mode is On and turn off the LED when Generator Mode is off.

Requirement:
[H86a.R046.01] As per SPSS PttB-REQ-345194, when user presses the Test GFCI button, it will activate the test for ground faults.

Dial Functionality Requirements:

[H86a.R004.01] If HwConfg is 2.0, 2.3 or 2.4 kW, display one dial. If HwConfg is 7.2 kW, display two 3.6 kW dials.
For the screens with one dial, use HwConfg to set the absolute maximum potential power output for the dial (for example, if the state describes the inverter as the 2.0 kW inverter, the maximum number on the dial in Generator Mode (high power) should be 2000 watts).

[H86a.R005.01] OutletA is the instantaneous power output of the first circuit and shall appear in the center of circuit A's dial and also define the endpoint of the animated power usage ring around the dial. OutletB is the instantaneous power output of the second circuit and shall appear in the center of circuit B's dial and also define the endpoint of the animated power usage ring around that dial.

[H86a.R042.1] In low power (base state), the maximum value of 400W should appear on dial A at about "ten o'clock" to make it easy for the user to see how much of 400W is being used. When the feature enters generator mode (high power), the dial should go through a visual transition to the new high power dial where the HwConfig amount is shown at around "five o'clock" on the dial (3600W would appear there for the dual dials).

[H86a.R006.02] PwMax is the instantaneous power limit.
This number will change under various conditions and be displayed on an available power ring on the inside of the dial. Example: when customer is in drive, the momentary power available from a 2kW inverter may only be around 1.5kW. The dial should maintain the same scale to the HwConfg endpoint of the dial, and the end of the red segment of the available power ring should move to 1500W. Absolute maximum potential power value (HwConfg) of 2kW will still be at the far right endpoint of the dial.

[H86a.R007.01] The dial of each circuit will have an available power inner ring underneath the power usage color ring consisting of three colored segments in this order from 0 watts to PwMax: Green, Yellow, and Red. The next three rules describe how to calculate the location of each color segment in the available power ring. (Note: see finished assets from Design and implementation from HMI Framework team for how the dials should appear.)

[H86a.R008.01] The red segment of the available power ring is defined as:
90% ≤ PwMax ≤ 100%

[H86a.R009.01] The yellow segment of the available power ring is defined as:
80% ≤ PwMax ≤ 90%

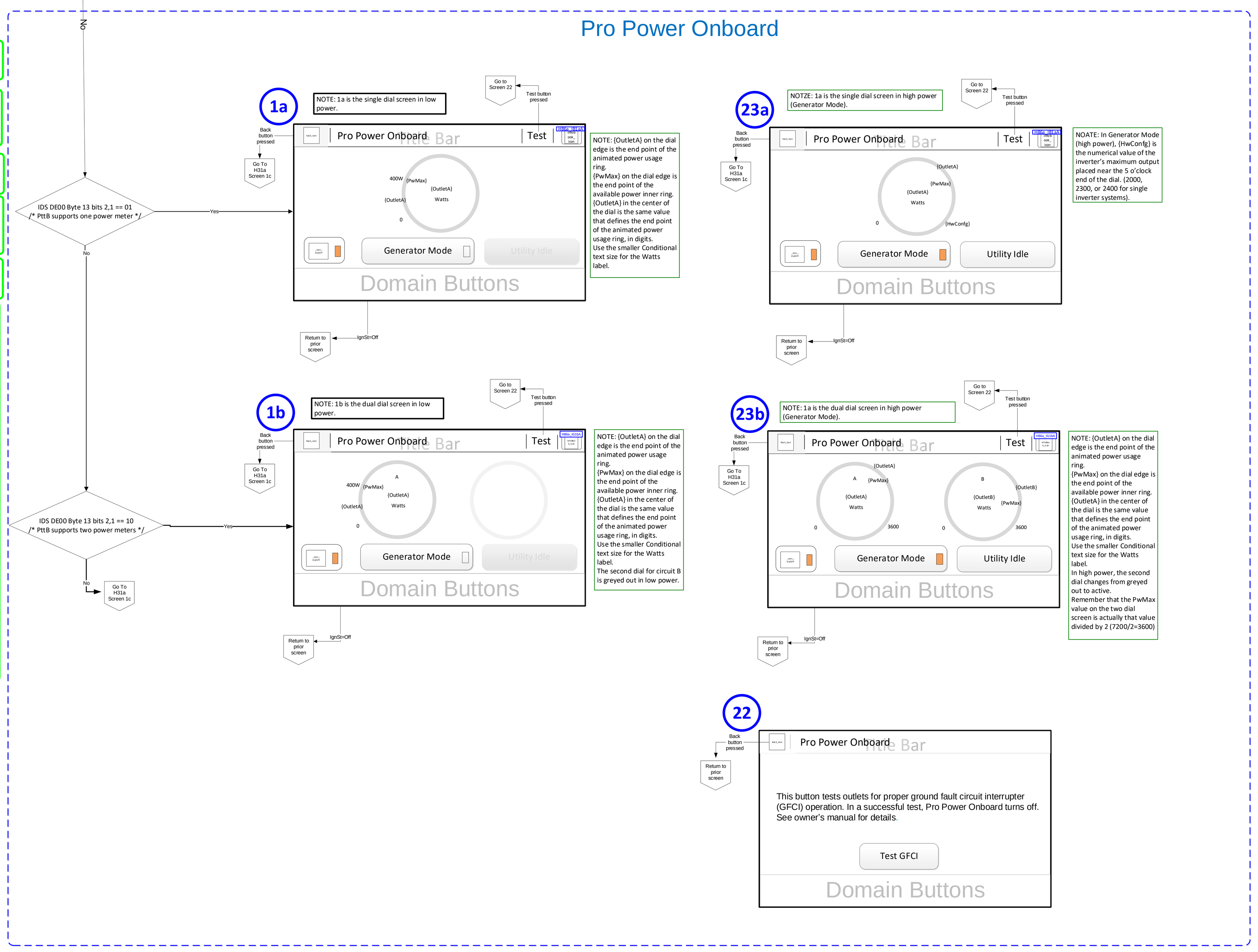
[H86a.R010.01] The green of the available power ring is defined as:
0% ≤ PwMax ≤ 80%

[H86a.R012.01] When 7.2 kW system is in low power mode (ButtnHighlight= 0x01), power will only be available on circuit A and the dial for Circuit B shall be inactive. In other words, if PwMax<=400, Circuit B's dial will display 0 watts and be inactive (greyed out).

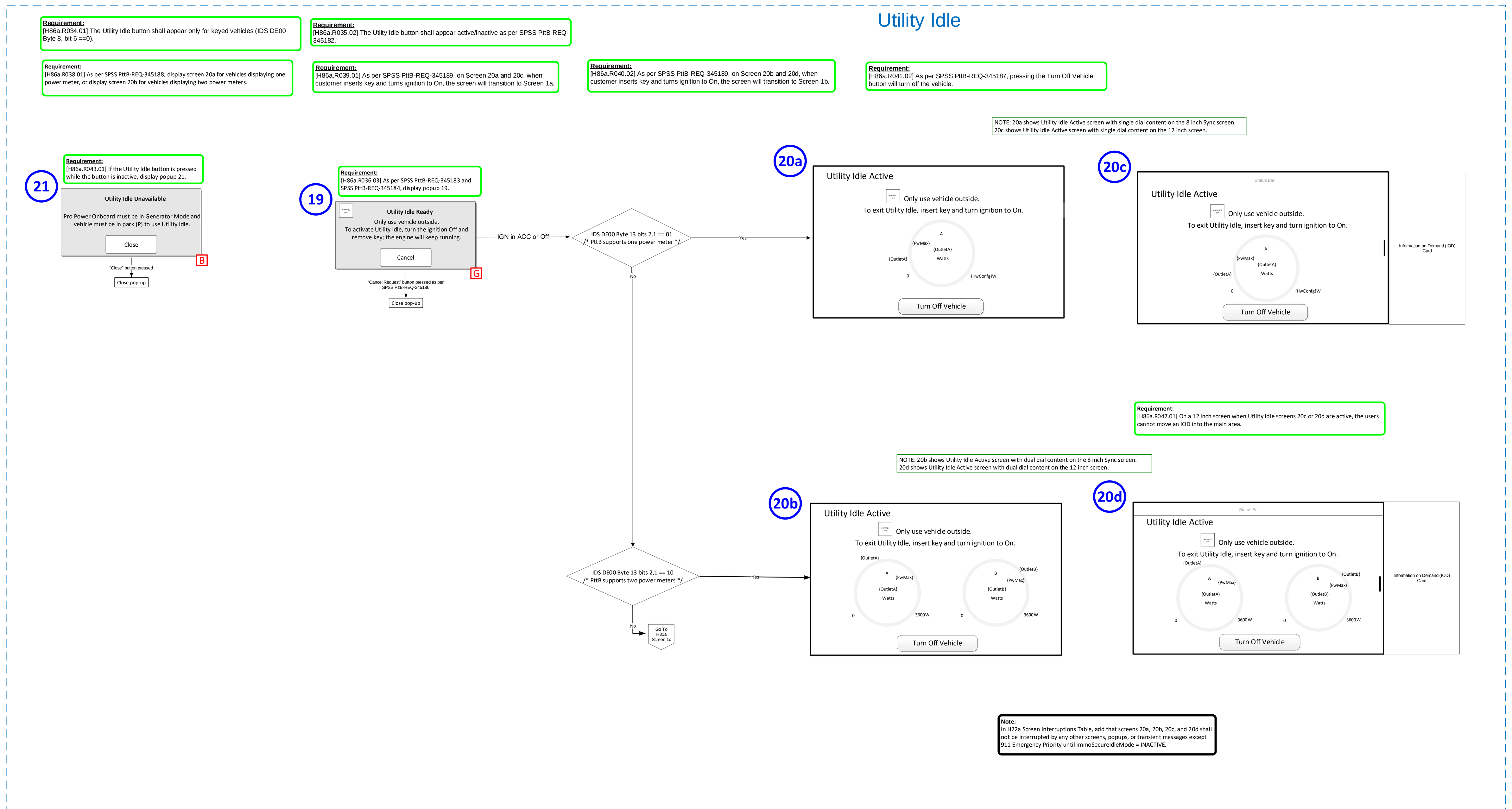
[H86a.R048.01] When the values for OutletA or OutletB are less than 200W, display the value <200 in the center of the dials.

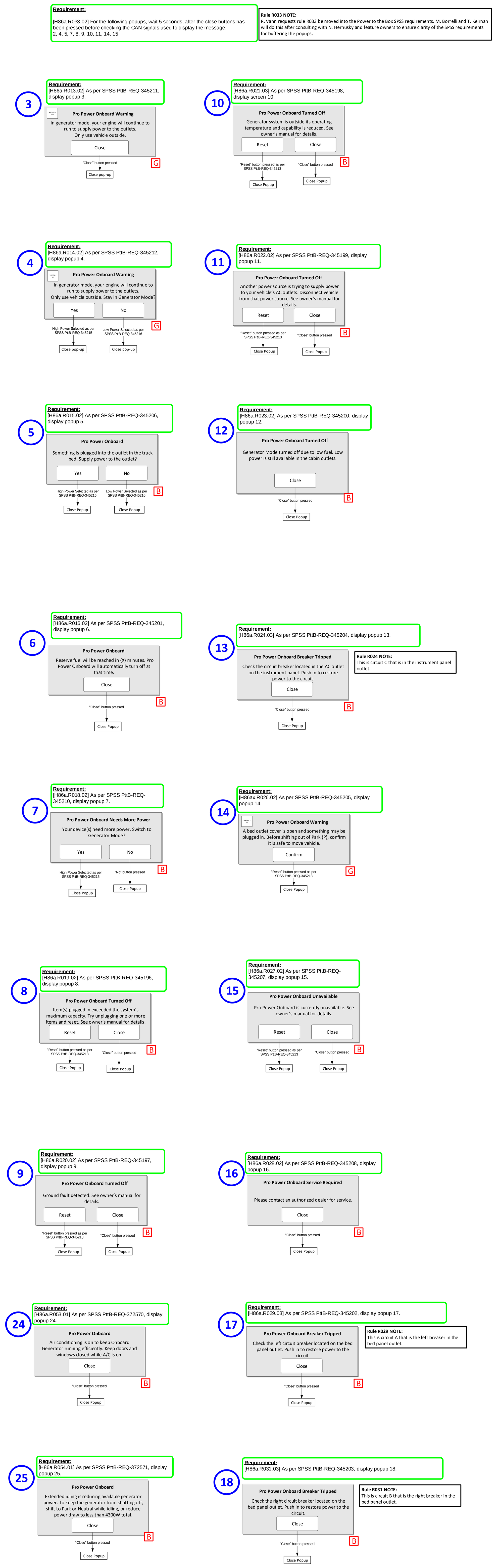
[H86a.R049.01] When the values for OutletA or OutletB are less than 200W, display the animated power usage ring at 200W on the dials.

Pro Power Onboard

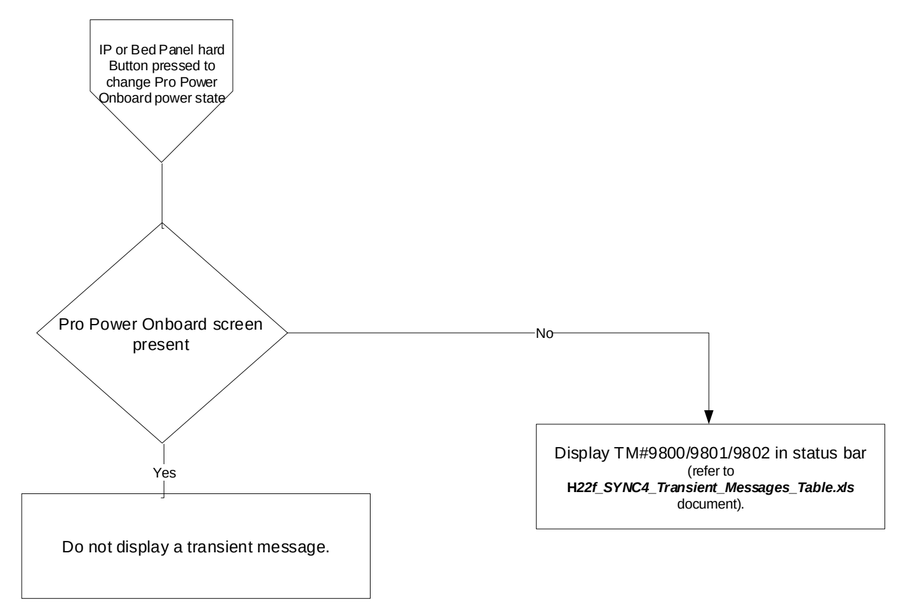


Utility Idle





Transient Messages



REVISION LOG

RELEASE_v1
Tkeirnan October 5, 2018
Initial release based on discussions with feature owner and stakeholders.

RELEASE_v1_01
Tkeirnan December 7, 2018
- Revisions based on discussions with stakeholders to clarify or correct the specification.
- Corrected screen titles in screens 1a and 1b to be "Onboard Generator" instead of "Power to the Box".
- As per N. Herhusky, inserted "left" and "right" side description of circuit breakers in the bed outlet area for screens 17 and 18 respectively.
- As per A. Shaukat, altered the dial functionality rules with Matt Kloepf from HMI Foundations team for these rules: R006.01→ R006.02, R007.01→ R007.02, R008.01→ R008.02, R009.01→ R009.02, R010.01→ R010.02, deleted R011.01, R012.01→ R012.02

RELEASE_v1_02
Tkeirnan December 14, 2018
- Clarification for a typo in the title of screen 1b. As per A. Shaukat, no DCR is required. The text string used for screen 1a's title ("Onboard Generator") should be the same string used for screen 1b's title. The titles of both screens should be "Onboard Generator". Translations are not affected.

RELEASE_v1_03
Tkeirnan March 12, 2019
- As per P. Regan, added rules 34-41, 43, and 47 to enable Utility Idle functionality.
- As per P. Regan, added screens 19, 20, and 21 to enable Utility Idle functionality. TRANSLATIONS ARE AFFECTED for this new content.
- Revised screens 1a and 1b to match Studio's placement of the power button along the same row as the buttons for Generator Mode, Keyless Idle (on keyed trucks only), and Test GFCI. This matches the implementation as per Studio's hero screens.
- Revised the power dials in screens 1a and 1b as per J. Mick to clarify Studio's intent for developers. These dials also appear in screens 20a, 20b, 20c, and 20d.
- Clarified rules R04, R05, and R06 as per T. Keirnan, A. Shaukat, and M. Kloepfer.
- As per R. Vann and G. Cheng, revised **all** rules that referred to CAN signals so that no CAN signals are mentioned in the HMI spec. In this new method of doing HMI specs, HMI rules refer to requirements in M. Borrelli's *Power to the Box SPSS* that explain which signals relate to the HMI. Thus CAN signals can change without the HMI spec needing to change.
- Added rule R042 as per J.Mick and S. Dhawan to clarify how the power dials should work with the 400W value and then the high power value.
- Added rule R044 to clarify the power button behavior.
- Added rule R045 to clarify the Generator Mode button behavior.
- Added rule R046 to clarify the Test GFCI button behavior.
- As per M. Borrelli, deleted text in rules that should now be covered in the SPSS requirements along with CAN signals information.
- Revised popups 9 and 12 title text from "Onboard Generator turned off" to "Onboard Generator Turned Off" (translations not affected for those)

- NOTE: We are having translation issues with the design of Screens 1a and 1b regarding both button placement and button text. A future release may request changes to those things, but not to the logic of how the Onboard Generator and Utility Idle features work.

RELEASE_v1_04
Tkeirnan April 18, 2019
- As per C. Cundiff and T. Keirnan, deleted the Test GFCI button from screens 1a and 1b and put a "Test" link in the top right corner alongside the Infobook icon. This "Test" link leads to new screen number 22 for ground fault testing purposes and is going to be easier for translation into longer languages. The DCR # in Jira for this is 51149.

RELEASE v1_05
Tkeirnan April 29, 2019
- Clarified button location for screens 1a and 1b so that the power button, Generator button, and Utility Idle buttons are evenly spaced across. Also as per clarified location of Test GFCI button on screen 22 so that it is in the same general vertical area as buttons on screens 1a and 1b.

RELEASE v1_06
Tkeirnan May 29, 2019
- For Jira ticket #56050 as per N. Sultana and N. Herhusky, changed the body text in popup 10 from "Generator system temperature limit exceeded. See owner's manual for details." to "Generator system is outside its operating temperature. See owner's manual for details."
- For clarification, all references to the back button icon's label have changed from " _icon_:System-Back" to "back_icon". The actual icon image hasn't changed.
- For clarification, all references of the infobook button's icon have changed from " _icon_:Pttb - Information" to "infobook_icon". The actual icon image hasn't changed.
- For clarification, all references to the warning icon have changed from "[icon]:Settings - Hazard Warning" to "warning_icon". The actual icon image hasn't changed.

RELEASE v1_07
Tkeirnan July 2, 2019

CLARIFICATIONS (not functional changes)
- As per S. Dhawan and M. Borrelli, clarified rules for popup 19. We moved rule R037.02's reference to "SPSS PttB-REQ-345184" into rule R36.03 and then deleted rule R37 because the reference to SPSS PttB-REQ-345186 in it is already covered in the arrow below the popup that points to Close Popup. No functional change results from this, merely condensing of the existing rules to solve some confusion.
- As per S. Dhawan, added screens 23a and 23b to clarify for developers how the single and dual dials move from low power to high power states.
- As per J. Mick and S. Dhawan, clarified the inner available power ring definitions in rules 8, 9, and 10.
- Gathered all Utility Idle screens and popups into their own area labeled "Utility Idle" for easier reading.

TEXT REVISIONS
- As per P702 UX PAT on June 6, revised text in popup 14 from "Something is plugged into the truck bed outlet. Confirm it is safe to move your vehicle before shifting out of Park (P)." to "A bed outlet cover is open and something may be plugged in. Before shifting out of Park (P), confirm it is safe to move vehicle."
- As per C. Bloxsom in ASO, revised text in screen 22 from "This button tests outlets for safety by causing a temporary ground fault. In a successful test, Onboard Generator turns off. See owner's manual for details." to "This button tests outlets for proper ground fault circuit interrupter (GFCI) operation. In a successful test, Onboard Generator turns off. See owner's manual for details."

RELEASE v1_08
Tkeirnan Aug 22, 2019

As per DCR # SYNC-75410
- Added rules R048 and R049 for mitigating the inaccuracy of the feature's reported wattage values below 200W.

As per DCR # SYNC-75941
- Changed body text of popup 6 from "Operating on reserve fuel. Onboard Generator will automatically turn off in {X} minutes. Keep Onboard Generator running?" to "Reserve fuel will be reached in {X} minutes. Onboard Generator will automatically turn off at that time." Also deleted the Yes and No buttons and replaced them with a Close button.

- Changed text of popup 12 from "Onboard Generator turned off due to low fuel. Use reserve fuel to supply power to the outlets?" to "Generator Mode turned off due to low fuel. Low power is still available in the cabin outlets." Also deleted the Yes and No buttons and replaced them with a Close button.

RELEASE v1_09
Tkeirnan Aug 30, 2019

As per DCR # SYNC-75941
Deleted reference to popup 12 in Rule 33 so that popup 12 does not need to wait five seconds when user presses Close. H86a.R033.01 becomes H86a.R033.02 and is now looking like this without popup 12 in it: [H86a.R033.02] For the following popups, wait 5 seconds, after the close buttons has been pressed before checking the CAN signals used to display the message:2, 4, 5, 7, 8, 9, 10, 11, 14, 15

As per DCR # SYNC-65708
- Added Transient Messages rules R050, R051, and R052. The other two HMI specifications for transient messages, H22e and H22f, will have updates soon to complete this DCR's requirements and I will notify IVI.

RELEASED v1_10
12_Sept_2019 tkeirnan
- As per DCR SYNC-80082, changed rule "[H86a.R003.02] When the PttB feature is Off, as per SPSS PttB-REQ-345191, all other buttons on screens 1a and 1b should be inactive except for H86a_IN1aA icon, H86a_IG1bA icon, Back button, and SYNC domain buttons." to "[H86a.R003.03] When the PttB feature is Off, as per SPSS PttB-REQ-345191, all other buttons on screens 1a and 1b should be inactive except for H86a_IN1aA icon, H86a_IG1bA icon, Back button, Generator Mode button, and SYNC domain buttons." The only difference is adding "Generator Mode button" to be active when the PttB power button is Off.
- As per DCR SYNC-83702, changed the text in popup 10 (from rule [H86a.R021.02)] from "Generator system is outside its operating temperature. See owner's manual for details." to rule [H86a.R021.03)] "Generator system is outside its operating temperature and capability is reduced. See owner's manual for details."
- Corrected/clarified the revision log for v1_08 by changing the references to rules R050 and R051 to R048 and R049, respectively.
- Corrected/clarified the transient message numbers referred to from 9700/9701/9702 to 9800/9801/9802 in the diagram for the Transient Messages area of this specification that supports rules R050, R051, and R052.

RELEASED v1_11
6_Oct_2019 tkeirnan
Per Ron Puri and Isaac Emesowum, added clarifications that do not require a DCR.
* Clarified screen 23B's left dial that was incorrectly labeled B when it should be labeled A.
* Clarified that Rule H86a.R003 applies to screen 22 as well as to screens 1a and 1b. H86a.R003.03→H86a.R003.04 with the addition of the words "and 22" after the words "screens 1a and 1b".

RELEASED v1_12
16_Nov_2019 tkeirnan
* As per **Azhar Piracha** (Cross Vehicle Marketing Manager) email message on October 17, changed the name of the feature in all screens in this specification from Onboard Generator to Pro Power Onboard.

RELEASED v1_13
6_Dec_2019 tkeirnan
* As per Laura Check and Mustapha Mourtada, the simple breakers popup changes were removed from the larger DCR 97788 for FHEV derating solutions and placed in their own DCR.
* During testing HMI and Feature Owners discovered the SPSS rules are mismatched to the correct popup messages. This would result in confusion for the customer when they are told a particular circuit breaker has tripped and they shoud push it in, when it is in fact a different circuit breaker that tripped.
* No CAN signals are changed or added. Changes are simply to point the correct popup messages to the correct SPSS rules and add consistent action text to one of the popup messages so they are all consistent.
* For popup 13, Rule H86a.R024.02 → H86a.R024.03 by switching SPSS rule 345202 with rule 345204, which is the appropriate SPSS rule for circuit C's breaker that should be on the IP outlet.
* On popup 13, added text to be consistent with the other two breaker resetting popups (17 and 18) to read "Push in to restore power to the circuit."
* On popup 17, Rule H86a.R029.02→ H86a.R029.03 by switching SPSS rule 345203 with rule 345202, which is the appropriate SPSS rule for circuit A's breaker that should be on the left in the bed panel outlet.
* On popup 18, Rule H86a.R031.02→ H86a.R031.03 by switching SPSS rule 345204 with rule 345203, which is the appropriate SPSS rule for circuit B's breaker that should be on the right in the bed panel outlet.

RELEASED v1_14
14_Jan_2020 tkeirnan
* As per DCR 88542, added rule "[H86a.R053.01] As per SPSS PttB-REQ-372570, display popup 24." to control popup 24, and added new popup message number 24.
* As per DCR 97788, added the sentence "See owner's manual for details." to popup message number 8. The owner's manual should now include text about the 7.2kW truck not just overloading a circuit beyond 3600W and shutting down the feature, it should also discuss the 5.7kW limited max power while in Drive, and the possibility of derating below 5.7kW in hot weather and prolonged idling that could shut down the feature and invoke popup 8.
* As per DCR 97788, added new popup number 25 that states "Extended idling is reducing available generator power. To keep the generator from shutting off, shift to Park or Neutral while idling, or reduce power draw to less than 4300W total."
As per DCR 97788, added new rule "[H86a.R054.01] As per SPSS PttB-REQ-372571, display popup 25." to control popup 25, and added new popup message number 25.

Last Used Story # 25

Last Assigned Rule # R054

Timothy Keirnan
tkeirnan
Jan 14, 2019