**ON A/C ALL

TASK 30−60−00−810−807
PROP DEICE (Caution) − Fault Isolation

1. General

A. This fault isolation procedure is for when the PROP DEICE caution light on the Caution and Warning Panel (CAWP) is on.

B. The PROP DEICE caution light on the CAWP comes on when Timer Monitor and Control Unit No. 1 (TMCU1) or TMCU2 senses a condition that follows:

- Built in Test (BIT) senses an internal malfunction
- There is a malfunction of the synchronization of the deicing heater element between TMCU1 and TMCU2
- Does not receive valid Total Air Temperature (TAT) data from Air Data Computer No. 1 (ADC1) and Air Data Computer No. 2 (ADC2)
- TAT difference that is more than 8 °C (46.4 °F) between ADC1 and ADC2
- Does not receive valid propeller speed (NP) data from its related Full Authority Digital Engine Control (FADEC)
- There is a malfunction of the isolator contactor
- The ICE PROTECTION panel PROPS advisory light incorrectly comes on
- Calibration failure
- Input AC voltage is low
- A deicing heater element AC current is low (less than 17 A)
- A deicing heater element AC current is high (more that 30 A)
- There is an open circuit in a deicing heater element
- There is an short circuit in a deicing heater element (AC current is more than 39 A).

NOTE: The TAT and NP data is supplied through the related Input/Output Processor No. 1 (IOP1) or Input/Output Processor No. 2 (IOP2).

NOTE: If the propeller deicing system does not receive temperature data, the on and off cycle time is automatically set to 12 seconds on and 78 seconds off.

NOTE: The propeller deicing system heating cycle will continue to operate if the NP data was more than 400 rpm before it malfunctioned. If the NP data was less than 400 rpm, the heating cycle is stopped.

NOTE: If the propeller deicing system senses that a deicing heater element has a short circuit, the isolator contactor will open and all heaters will not operate. The related PROPS advisory light on the ICE PROTECTION panel will not come on.

C. During DC power up, the two TMCUs will do a BIT that continues for 20 seconds. The two related PROPS advisory lights on the IRPS panel and the PROP DEICE caution light on the CAWP will momentarily come on. The lights will go off if no discrepancies are sensed.

D. The PROP DEICE caution light also comes on when the maintenance PROP DEICE CAL toggle switch is set and the conditions are not correct for a calibration.

E. TMCU1 or TMCU2 continues to supply AC electrical power to its related propeller de−icing elements when a condition is as follows:

- Internal ARINC receiver fault
- Internal isolator contactor drive fault for three seconds
- Internal fault indicator (PROP DEICE caution light) drive failure for three seconds
- Internal heating on (PROPS advisory light and synchronization) drive failure for two seconds
- Synchronization line not toggling for two maximum off times
- Synchronization line stays high for maximum off time
- Internal open Signal Controlled Rectifier (SCR) for three seconds
- No ADC temperature data for 30 seconds
- No propeller speed (NP) data for more than 60 seconds during start up or 30 seconds during operation
- Isolator contactor failed closed for 10 seconds
- Fault indicator (PROP DEICE caution light) line failure for two seconds
- Heating on (PROPS advisory light and heating synchronization) line failure for two seconds
- Calibration failure
- Input AC low phase A for 10 seconds
- Input AC low phase B for 10 seconds
- Input AC low phase C for 10 seconds
- Under current phase A for five seconds
- Under current phase B for five seconds
- Under current phase C for five seconds
- A de−icing heater element has an open circuit for five seconds.

NOTE: The related ICE PROTECTION panel PROPS advisory light will continue to come on.

F. TMCU1 or TMCU2 opens its related isolator contactor circuit and does not supply AC electrical power to the propeller de−icing heater elements when a condition is as follows:

- Internal watchdog timer failure
- Internal EPROM failure
- Internal RAM failure
- Internal NVRAM failure
- Internal reference voltage fault for two seconds
- Internal shorted SCR for three seconds
- Isolator contactor line fault

- Shorted output phase A (more than 39 A) for five cycles
- Shorted output phase B (more than 39 A) for five cycles
- Shorted output phase C (more than 39 A) for five cycles
- Overcurrent phase A (more than 30 A) for more than five seconds
- Overcurrent phase B (more than 30 A) for more than five seconds
- Overcurrent phase C (more than 30 A) for more than five seconds
- Loss of DC supply.

NOTE: The related ICE PROTECTION panel PROPS advisory light will not continue to come on.

G. The Audio and Radio Control Display Unit (ARCDU) can show the related Central Diagnostic System (CDS) messages that follow:

- TMCU(1)
- TMCU(2)
- TMCU(3)
- TMCU(4)
- TMCU(5)
- TMCU(6)
- TMCU(7)
- TMCU(8)
- TMCU(9)
- OTHER TMCU(NT)
- OTHER TMCU(SH)
- TMCU(13)
- TMCU(14)
- ARINC RECEIVE BUS−1
- ARINC RECEIVE BUS−2
- CONTACTOR
- CAUTION LIGHT
- HEATER LIGHT
- CALIBRATION FAILURE
- INPUT AC LOW PHASE A
- INPUT AC LOW PHASE B
- INPUT AC LOW PHASE C
- SHORTED PHASE A

– SHORTED PHASE B
– SHORTED PHASE C
– OPEN PHASE A
– OPEN PHASE B
– OPEN PHASE C
– OPEN HEATER.

2. Job Set−Up Information

Subtask 30−60−00−946−007

A. Reference Information

REFERENCE	DESIGNATION
AMM30−61−00−720−801	Functional Test of the Propellers De−icing System
AMM34−11−11−710−801	Operational Test of the Static Air Temperature Probe
AMM45−00−30−742−801	Retrieval of Data from the Central Diagnostic System (CDS) − Timer Monitor Control Unit (TMCU)
AMM45−00−30−743−801	Erase the Data from the Central Diagnostic System (CDS) − Timer Monitor Control Unit (TMCU)
FIM30−61−00−810−802	TMCU(3), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−803	TMCU(2), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−804	TMCU(4), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−805	TMCU(1), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−806	TMCU(6), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−807	INPUT AC LOW PHASE A, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−808	INPUT AC LOW PHASE B, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−809	INPUT AC LOW PHASE C, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−810	SHORTED PHASE A, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−811	SHORTED PHASE B, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−812	SHORTED PHASE C, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−813	OPEN PHASE A, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−814	OPEN PHASE B, on TMCU1 (Status) − Fault Isolation

REFERENCE	DESIGNATION
FIM30−61−00−810−815	OPEN PHASE C, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−819	TMCU(7), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−820	TMCU(13), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−821	TMCU(14), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−823	TMCU(8), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−825	OTHER TCMU(NT), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−826	OTHER TCMU(SH), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−828	ARINC RECEIVE BUS−1, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−829	CALIBRATION FAILURE, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−831	CONTACTOR, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−832	CAUTION LIGHT, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−833	HEATER LIGHT, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−840	TMCU(3), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−841	TMCU(2), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−842	TMCU(4), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−843	TMCU(1), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−844	TMCU(6), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−845	INPUT AC LOW PHASE A, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−846	INPUT AC LOW PHASE B, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−847	INPUT AC LOW PHASE C, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−848	TMCU(7), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−849	TMCU(13), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−850	TMCU(14), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−851	TMCU(9), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−852	TMCU(8), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−853	OTHER TMCU(NT), on TMCU2 (Status) − Fault Isolation

REFERENCE	DESIGNATION
FIM30−61−00−810−854	OTHER TMCU(SH), on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−855	CALIBRATION FAILURE, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−856	OPEN HEATER, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−857	OPEN HEATER, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−858	HEATER LIGHT, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−859	CAUTION LIGHT, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−860	CONTACTOR, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−861	ARINC RECEIVE BUS−1, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−862	ARINC RECEIVE BUS−2, on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−863	ARINC RECEIVE BUS−2, on TMCU2 (Status) − Fault Isolation
FIM30−61−00−810−864	TMCU(5), on TMCU1 (Status) − Fault Isolation
FIM30−61−00−810−865	TMCU(5), on TMCU2 (Status) − Fault Isolation
FIM34−11−00−810−870	ED DISPLAY − White dashes replaces the SAT indication − Fault Isolation
AMM34−11−11−000−801	Removal of the Static Temperature Probe
AMM34−11−11−400−801	Installation of the Static Temperature Probe

3. Fault Confirmation

Subtask 30−60−00−810−014

A. Confirm the fault as follows:

(1) On the ARCDU, do the CDS fault indication retrieval (Refer to AMM45−00−30−742−801).

(2) Erase the data from the CDS (Refer to AMM45−00−30−743−801).

(3) Do the functional test of the propellers deicing system (Refer to AMM30−61−00−720−801).

(a) If the PROP DEICE caution light does not come on, no maintenance procedure is necessary. Do the Close Out.

(b) If the PROP DEICE caution light does come on, do the operational test of the Static Air Temperature (SAT) probe (Refer to AMM34−11−11−710−801).

1 If the Engine Display (ED) shows three white dashes in the SAT display area when the EFIS ADC SOURCE on the ESID control panel is set to the NORM and the number 2 position, the PROP DEICE caution light will come on. Do the fault isolation for the ED DISPLAY − White dashes replaces the SAT indication (Refer to FIM34−11−00−810−870). Do the Close Out.

NOTE: If the SAT indication shows dashes for only the NORM (number 1 position) or the number 2 position, the system will continue to operate.

2 If there is a difference between the SAT values when the EFIS ADC SOURCE switch is set to the NORM and the number 2 position, the PROP DEICE caution light will come on. A difference is more than 6 degrees between the units will make the caution light come on. Remove and replace the static temperature probe (Refer to AMM34−11−11−000−801 and AMM34−11−11−400−801).

3 Do the CDS fault indication retrieval again (Refer to AMM45−00−30−742−801). Do the fault isolation.

4. Fault Isolation

Subtask 30−60−00−810−007

A. Isolate the fault as follows:

(1) For TMCU1:

(a) If the message is TMCU (1), do the fault isolation for TMCU (1) (Refer to FIM30−61−00−810−805). Do the Close Out.

(b) If the message is TMCU (2), do the fault isolation for TMCU (2) (Refer to FIM30−61−00−810−803). Do the Close Out.

(c) If the message is TMCU (3), do the fault isolation for TMCU (3) (Refer to FIM30−61−00−810−802). Do the Close Out.

(d) If the message is TMCU (4), do the fault isolation for TMCU (4) (Refer to FIM30−61−00−810−804). Do the Close Out.

(e) If the message is TMCU (5), do the fault isolation for TMCU (5) (Refer to FIM30−61−00−810−864). Do the Close Out.

(f) If the message is TMCU (6), do the fault isolation for TMCU (6) (Refer to FIM30−61−00−810−806). Do the Close Out.

(g) If the message is TMCU (7), do the fault isolation for TMCU (7) (Refer to FIM30−61−00−810−819). Do the Close Out.

(h) If the message is TMCU (8), do the fault isolation for TMCU (8) (Refer to FIM30−61−00−810−823). Do the Close Out.

(i) If the message is TMCU (9), do the fault isolation for TMCU (9) (Refer to FIM30−61−00−810−822). Do the Close Out.

(j) If the message is OTHER TMCU (NT), do the fault isolation for OTHER TMCU (NT) (Refer to FIM30−61−00−810−825). Do the Close Out.

(k) If the message is OTHER TMCU (SH), do the fault isolation for OTHER TMCU (SH) (Refer to FIM30−61−00−810−826). Do the Close Out.

(l) If the message is TMCU (13), do the fault isolation for TMCU (13) (Refer to FIM30−61−00−810−820). Do the Close Out.

(m) If the message is TMCU (14), do the fault isolation for TMCU (14) (Refer to FIM30−61−00−810−821). Do the Close Out.

(n) If the message is ARINC RECEIVE BUS−1, do the fault isolation for ARINC RECEIVE BUS−1 (Refer to FIM30−61−00−810−828). Do the Close Out.

(o) If the message is ARINC RECEIVE BUS−2, do the fault isolation for ARINC RECEIVE BUS−2 (Refer to FIM30−61−00−810−862). Do the Close Out.

(p) If the message is CONTACTOR, do the fault isolation for CONTACTOR (Refer to FIM30−61−00−810−831). Do the Close Out.

(q) If the message is CAUTION LIGHT, do the fault isolation for CAUTION LIGHT (Refer to FIM30−61−00−810−832). Do the Close Out.

(r) If the message is HEATER LIGHT, do the fault isolation for HEATER LIGHT (Refer to FIM30−61−00−810−833). Do the Close Out.

(s) If the message is CALIBRATION FAILURE, do the fault isolation for CALIBRATION FAILURE (Refer to FIM30−61−00−810−829). Do the Close Out.

(t) If the message is INPUT AC LOW PHASE A, do the fault isolation for INPUT AC LOW PHASE A (Refer to FIM30−61−00−810−807). Do the Close Out.

(u) If the message is INPUT AC LOW PHASE B, do the fault isolation for INPUT AC LOW PHASE B (Refer to FIM30−61−00−810−808). Do the Close Out.

(v) If the message is INPUT AC LOW PHASE C, do the fault isolation for INPUT AC LOW PHASE C (Refer to FIM30−61−00−810−809). Do the Close Out.

(w) If the message is SHORTED PHASE A, do the fault isolation for SHORTED PHASE A (Refer to FIM30−61−00−810−810). Do the Close Out.

(x) If the message is SHORTED PHASE B, do the fault isolation for SHORTED PHASE B (Refer to FIM30−61−00−810−811). Do the Close Out.

(y) If the message is SHORTED PHASE C, do the fault isolation for SHORTED PHASE C (Refer to FIM30−61−00−810−812). Do the Close Out.

(z) If the message is OPEN PHASE A, do the fault isolation for OPEN PHASE A (Refer to FIM30−61−00−810−813). Do the Close Out.

(aa) If the message is OPEN PHASE B, do the fault isolation for OPEN PHASE B (Refer to FIM30−61−00−810−814). Do the Close Out.

(ab) If the message is OPEN PHASE C, do the fault isolation for OPEN PHASE C (Refer to FIM30−61−00−810−815). Do the Close Out.

(ac) If the message is OPEN HEATER, do the fault isolation for OPEN HEATER (Refer to FIM30−61−00−810−856). Do the Close Out.

(2) For TMCU 2:

(a) If the message is TMCU (1), do the fault isolation for TMCU (1) (Refer to FIM30−61−00−810−843). Do the Close Out.

(b) If the message is TMCU (2), do the fault isolation for TMCU (2) (Refer to FIM30−61−00−810−841). Do the Close Out.

(c) If the message is TMCU (3), do the fault isolation for TMCU (3) (Refer to FIM30−61−00−810−840). Do the Close Out.

(d) If the message is TMCU (4), do the fault isolation for TMCU (4) (Refer to FIM30−61−00−810−842). Do the Close Out.

(e) If the message is TMCU (5), do the fault isolation for TMCU (5) (Refer to FIM30−61−00−810−865). Do the Close Out.

(f) If the message is TMCU (6), do the fault isolation for TMCU (6) (Refer to FIM30−61−00−810−844). Do the Close Out.

(g) If the message is TMCU (7), do the fault isolation for TMCU (7) (Refer to FIM30−61−00−810−848). Do the Close Out.

(h) If the message is TMCU (8), do the fault isolation for TMCU (8) (Refer to FIM30−61−00−810−852). Do the Close Out.

(i) If the message is TMCU (9), do the fault isolation for TMCU (9) (Refer to FIM30−61−00−810−851). Do the Close Out.

(j) If the message is OTHER TMCU (NT), do the fault isolation for OTHER TMCU (NT) (Refer to FIM30−61−00−810−853). Do the Close Out.

(k) If the message is OTHER TMCU (SH), do the fault isolation for OTHER TMCU (SH) (Refer to FIM30−61−00−810−854). Do the Close Out.

(l) If the message is TMCU (13), do the fault isolation for TMCU (13) (Refer to FIM30−61−00−810−849). Do the Close Out.

(m) If the message is TMCU (14), do the fault isolation for TMCU (14) (Refer to FIM30−61−00−810−850). Do the Close Out.

(n) If the message is ARINC RECEIVE BUS−1, do the fault isolation for ARINC RECEIVE BUS−1 (Refer to FIM30−61−00−810−861). Do the Close Out.

(o) If the message is ARINC RECEIVE BUS−2, do the fault isolation for ARINC RECEIVE BUS−2 (Refer to FIM30−61−00−810−863). Do the Close Out.

(p) If the message is CONTACTOR, do the fault isolation for CONTACTOR (Refer to FIM30−61−00−810−860). Do the Close Out.

(q) If the message is CAUTION LIGHT, do the fault isolation for CAUTION LIGHT (Refer to FIM30−61−00−810−859). Do the Close Out.

(r) If the message is HEATER LIGHT, do the fault isolation for HEATER LIGHT (Refer to FIM30−61−00−810−858). Do the Close Out.

(s) If the message is CALIBRATION FAILURE, do the fault isolation for CALIBRATION FAILURE (Refer to FIM30−61−00−810−855). Do the Close Out.

(t) If the message is INPUT AC LOW PHASE A, do the fault isolation for INPUT AC LOW PHASE A (Refer to FIM30−61−00−810−845). Do the Close Out.

(u) If the message is INPUT AC LOW PHASE B, do the fault isolation for INPUT AC LOW PHASE B (Refer to FIM30−61−00−810−846). Do the Close Out.

(v) If the message is INPUT AC LOW PHASE C, do the fault isolation for INPUT AC LOW PHASE C (Refer to FIM30−61−00−810−847). Do the Close Out.

(w) If the message is SHORTED PHASE A, do the fault isolation for SHORTED PHASE A (Refer to FIM30−61−00−810−816). Do the Close Out.

(x) If the message is SHORTED PHASE B, do the fault isolation for SHORTED PHASE B (Refer to FIM30−61−00−810−817). Do the Close Out.

(y) If the message is SHORTED PHASE C, do the fault isolation for SHORTED PHASE C (Refer to FIM30−61−00−810−818). Do the Close Out.

(z) If the message is OPEN PHASE A, do the fault isolation for OPEN PHASE A (Refer to FIM30−61−00−810−834). Do the Close Out.

(aa) If the message is OPEN PHASE B, do the fault isolation for OPEN PHASE B (Refer to FIM30−61−00−810−835). Do the Close Out.

(ab) If the message is OPEN PHASE C, do the fault isolation for OPEN PHASE C (Refer to FIM30−61−00−810−836). Do the Close Out.

(ac) If the message is OPEN HEATER, do the fault isolation for OPEN HEATER (Refer to FIM30−61−00−810−857). Do the Close Out.

5. Close Out

Subtask 30−60−00−941−005

A. Make sure that the PROP DEICE caution light on the CAWP is not on.

B. Remove all tools, equipment, and unwanted materials from the work area.