

Trotter Controls, Inc. FORT WORTH, TEXAS	<u>ENGINEERING REPORT</u>		NUMBER 0075	REVISION B
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TITLE FRDS GEN2 ERROR CODE DESCRIPTION	BY	CHK'D	SERIAL	
	Len Averyt VT		ALL	
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REFERENCE :

- [1] Trotter Controls Document# 9001-0011, GEN II FRDS Manual
- [2] Trotter Controls Document# TS-0005, GEN II FRDS Maintenance System Tests
- [3] Trotter Controls Document# PS-0029, FRDS GEN2 - Leakage Table Calibration
- [4] Trotter Controls Document# PS-0030, FRDS GEN2 - Pressure Relief Valve Adjustment
- [5] Trotter Controls Document# PS-0031, FRDS GENII - Sensor Calibration
- [6] Trotter Controls Document# PS-0032, FRDS GENII - Dump pit calibration

PURPOSE :

This report describes the error codes generated by the FRDS Gen 2 system. It also gives effect, severity and possible resolutions to each of the errors.

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OVERVIEW:

The GENII FRDS system has comprehensive built in diagnostics to detect the following problems:

- Broken wires
- Burned out valve coil
- Blown fuse
- Stuck hydraulic valve
- Faulty Pressure Switch
- Faulty Pressure Sensor
- Faulty Microprocessor Output
- Faulty Relay
- Faulty pump
- Other hardware faults
- System errors

Some errors are checked anytime power is applied to the system and the operation mode is AUTO or TIMER. These error conditions are checked passively (meaning that no valve or control action is required for the test). Passive errors are detected during Auto and Timer mode operation of the FRDS and the HYD PWR switch is on.

Testing for other error conditions requiring that a valve or other output be turned on is detected during the Pilot Assisted Test or Maintenance Tests (SysTest). These SysTest errors are detected during the Pilot Assisted test or the Maintenance Test.

System errors have to do with the operating software and hardware internal to the CPU chip. These errors should not normally occur.

ERROR CODE TYPES:

The errors generated are derived from 4 different means.

- Boot
- Passive
- System test (SysTest)
- System

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Boot errors are detected during system bootup.

Passive errors are detected during Auto and Timer mode operation of the FRDS. Anytime power is on.

SysTest errors are detected during the Pilot Assisted test. These tests typically require action on the part of the pilot or for an output from the microprocessor to be asserted. These error conditions cannot be passively tested for proper operation.

System errors have to do with the operating software and hardware internal to the CPU chip. These errors should not normally occur.

Some error codes generated are exclusive to one or the other while some are dual purpose. Each of these is describe in the error code tables.

Many of the error codes found in the following lists have primary and secondary errors.

For example many primary errors can cause the following secondary errors.

- 112_Accuracy Loss
- 113_Accur+Redun Loss
- 114_Redundancy Loss

Correction of the primary error(s) will resolve these secondary errors.

112_Accuracy Loss

- This indicates that the control system is operational but that accuracy of the dump has been compromised.
- For example the hydraulic pressure is low which may cause the gates to operate slowly causing more or less water to be dumped.

114_Redundancy Loss

- This indicates that one or more of the backup dump control systems has been compromised and is inoperable.
- For example the Auto Salvo system, supervisor system, is inoperable

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113_Accur+Redun Loss

This indicates that errors that would cause a combination of both accuracy and redundancy loss have been detected.

MON1 AND MON2 DESCRIPTION:

Errors containing MON1 indicate errors generated / detected within the pilot interface unit and cabling to the relay box. These errors are usually very rare and usually require factory service of the pilot interface unit to correct them.

Errors containing MON2 indicate errors generated / detected within the relay box to external interface. Such as a coil open or disconnected connector to a valve. These errors are usually rare and usually can be serviced by a properly trained mechanic.

Some errors are detected only during a System Test, See Trotter Controls Test Specification TS-0005, while other errors are passively detected during the normal operation of the unit.

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COMBINATION ERRORS:

The following combination of errors points to these specific problems.

Error Codes: 17, 27, 31, 62, 64, 66, 71, 73, 75, 92, 113
Check F2 in the relay box. Check connection of wire at J8 terminal 12

Error Codes: 10, 22, 35, 37, 38, 39, 42, 43, 48, 49, 50, 55, 78, 82, 84, 113, 120
Check F15 in the relay box.

Error Codes: 17, 27, 31, 54, 62, 64, 66, 71, 73, 75, 92, 113
Check F16 in the relay box.

Error Codes: 37, 38, 50, 55, 78, 82, 84, 113
Check F20 in the relay box.

Error Codes: 22, 48, 113
Check F21 in the relay box.

Error Codes: 39, 42, 43, 49, 113, 120
Check F23 in the relay box.

Error Codes: 54, 81, 90, 113, 155
Check F17 in the relay box.

TERMS:

Error codes refer to "EM". The use of "EM" is used to describe Electro-mechanical mode. On the Pilot Interface this is called MAN (Manual) Mode.

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ERROR DESCRIPTIONS:

001_System Reset	
Type:	PASSIVE / SYSTEST
Description:	Not an error, indicates system startup
Effect:	No Effect
Severity:	N/A
Resolution:	None Required

002_Accels Differ	
Type:	PASSIVE
Description:	The two accelerometers differed by too much
Effect:	Coverage calculations will not be accurate
Severity:	Moderate
Resolution:	Pilot interface will need to be sent in for factory repair

003_Accel 1 range Err	
Type:	PASSIVE
Description:	Accelerometer 1 was out of range
Effect:	Accelerometer 2 will be used for coverage calculations
Severity:	Moderate
Resolution:	Pilot interface will need to be sent in for factory repair

004_Accel 1 stat Err	
Type:	PASSIVE
Description:	Accelerometer 1 bad status reported back to CPU
Effect:	Accelerometer 2 will be used for coverage calculations
Severity:	Moderate
Resolution:	Pilot interface will need to be sent in for factory repair

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005_Accel 2 range Err	
Type:	PASSIVE
Description:	Accelerometer 2 was out of range
Effect:	Accelerometer 1 will be used for coverage calculations
Severity:	Moderate
Resolution:	Pilot interface will need to be sent in for factory repair

006_Accel 2 stat Err	
Type:	PASSIVE
Description:	Accelerometer 2 bad status reported back to CPU
Effect:	Accelerometer 1 will be used for coverage calculations
Severity:	Moderate
Resolution:	Pilot interface will need to be sent in for factory repair

007_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

008_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

009_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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010_24v bat range err	
Type:	PASSIVE
Description:	Battery voltage out of range. Voltage is greater than 36VDC or less than 22VDC
Effect:	Improper operation to damage to FRDS unit
Severity:	Moderate
Resolution:	Low voltage points to weak and or discharged batteries. High voltage points to bad batteries and or improper charging from generator / alternator.

011_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

012_BleedV-LoPresDrp	
Type:	PASSIVE / SYSTEST
Description:	Pressure did not drop fast enough when Hydraulic Power switch went off and bleed valve opened.
Effect:	System remains pressurized longer than it should. Inadvertent gate operation could occur.
Severity:	Moderate
Resolution:	Possibilities include <ul style="list-style-type: none"> • Stuck on Bleed Solenoid valve (83222-3) • Shorted electronics • Blocked flow control (83222-13)

013_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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014_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

015_BleedOpenProbMon1	
Type:	PASSIVE
Description:	CPU instructed Bleed to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. No pressure to operate
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

016_BleedClosProbMon1	
Type:	PASSIVE
Description:	CPU instructed Bleed to de-energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. No pressure to operate
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

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017_BleedOpenProbMon2	
Type:	PASSIVE
	Also flags error 112
Description:	The system detected an open coil condition when the Bleed solenoid is instructed off by the CPU
Effect:	No operation of gates. No Hydraulic pressure to operate
Severity:	Severe
Resolution:	Check F5 in the relay box. Check connection at Bleed solenoid. Check ohms at Bleed solenoid coil

018_BleedClosProbMon2	
Type:	PASSIVE
Description:	The system detected a shorted coil condition when Bleed solenoid is instructed on by the CPU.
Effect:	No operation of gates. No Hydraulic pressure to operate
Severity:	Severe
Resolution:	Check F5 in the relay box. Check connection at Bleed solenoid. Check ohms at Bleed solenoid coil

019_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

020_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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021_Panel Switch Err	
Type:	SYSTEST
Description:	More than 1 switch changed state during the panel switch test or more than one switch physically actuated at a time.
Effect:	Improper operation of system
Severity:	Moderate to Severe
Resolution:	Actuate only one switch at a time during test or Requires factory service of the pilot interface unit to correct.

022_Dump switch err	
Type:	PASSIVE
Description:	Dump switch normally open and normally closed contacts are showing the same state. Both on or both off
Effect:	Improper or failure to operate
Severity:	Severe
Resolution:	Check switch contacts, check switch wiring for broken or shorted wires.

023_Dump Sw N.C. Coil	
Type:	PASSIVE
Description:	Dump switch normally closed coil does not match the state of the Dump Switch
Effect:	Failure of system to operate
Severity:	Severe
Resolution:	Check: <ul style="list-style-type: none"> • Wiring to dump switch for proper connection and operation. • Relays K25 and K26 in relay box • May require factory service of the pilot interface unit to correct.

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024_Dump Sw N.O. coil	
Type:	PASSIVE
Description:	Dump switch normally open coil does not match the state of the Dump Switch
Effect:	Failure of system to operate
Severity:	Severe
Resolution:	Check: <ul style="list-style-type: none"> • Wiring to dump switch for proper connection and operation. • Relays K25 and K26 in relay box May require factory service of the pilot interface unit to correct.

025_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

026_EDump1 fail Mon1	
Type:	PASSIVE
Description:	CPU instructed EDump1 to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. No pressure to operate
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

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027_EDump1 fail Mon2	
Type:	PASSIVE
Description:	The system detected an open coil condition when the EDump1 solenoid is instructed off by the CPU or a shorted coil condition when EDump1 solenoid is instructed on by the CPU.
Effect:	No operation of gates. No Hydraulic pressure to operate
Severity:	Severe
Resolution:	Check F4 in the relay box. Check connection at EDump1 solenoid. Check ohms at EDump1 solenoid coil

028_EEprom OutOfDate	
Type:	PASSIVE (BOOTUP)
Description:	Format of EE Memory does not coincide with current software version. Due most likely to a Pilot interface software update or corrupted or Damaged EE Memory
Effect:	Improperly loaded calibration and leakage data. System operation impaired or fails
Severity:	Moderate to Severe
Resolution:	Refer to memory management. <ul style="list-style-type: none"> • Reboot and load factory values. • Load analog calibration values. • Resave to "Both" banks

029_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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030_EDump2 fail Mon1	
Type:	PASSIVE
Description:	CPU instructed EDump2 to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. No pressure to operate
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

031_EDump2 fail Mon2	
Type:	PASSIVE
Description:	The system detected an open coil condition when the EDump2 solenoid is instructed off by the CPU or a shorted coil condition when EDump2 solenoid is instructed on by the CPU.
Effect:	No operation of gates. No Hydraulic pressure to operate
Severity:	Severe
Resolution:	Check F3 in the relay box. Check connection at EDump2 solenoid. Check ohms at EDump2 solenoid coil

032_Excess Panel Temp	
Type:	PASSIVE
Description:	Pilot interface internal temperature exceeded 158F (70C)
Effect:	Possible failure of FRDS control unit
Severity:	Moderate
Resolution:	Most likely the result of temperature extremes inside a closed cockpit during hot days. Allow cockpit to vent while aircraft is idle on hot days.

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033_UseFactoryValues	
Type:	BOOT
Description:	All EE memory reads failed - Factory Values used
Effect:	No analog calibration or Leakage tables loaded. Improper or failure of system to operate correctly in Auto and Timer Modes
Severity:	SEVERE
Resolution:	<ul style="list-style-type: none"> • Attempt memory management. • Requires factory service of the pilot interface unit to correct.

034_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

035_EmAutSalvoFuseBad	
Type:	PASSIVE
Description:	Fuse or supplying power to the Electro Mechanical Salvo system has failed.
Effect:	Tertiary backup system will not work as expected when required.
Severity:	Moderate
Resolution:	Check F24 in the relay box.

036_EM AutoSalvo fail	
Type:	PASSIVE
Description:	Mon1 indicates a connection issue between the Relay box and Pilot interface.
Effect:	Tertiary Electro mechanical salvo system may not operate. May still rely on Auto/Timer and Auto Salvo system
Severity:	Severe
Resolution:	Test Manual salvo operation using Pilot assisted test. Check connection of J26 Pin 6 inside Relay box.

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037_VReg8/fuse 20 bad	
Type:	PASSIVE
Description:	+5V supply for sensors has failed.
Effect:	Improper reading of gate angle, hopper gallons
Severity:	Severe
Resolution:	Check F20 in the relay box. Replace driver board in relay box.

038_VReg9/fuse 20 bad	
Type:	PASSIVE
Description:	+15V supply to analog I/O and some sensors has failed.
Effect:	Improper reading of hydraulic pressure, gate angle and hopper gallons
Severity:	Severe
Resolution:	Check F20 in the relay box. Replace driver board in relay box.

039_VReg5/fuse 23 bad	
Type:	PASSIVE
Description:	Power supplying Bleed solenoid for Manual mode has failed
Effect:	No redundant Auto salvo or Manual salvo operation
Severity:	Moderate to severe
Resolution:	Check F23 in the relay box. Replace driver board in relay box.

040_EmCloseVlve3SwBad	
Type:	PASSIVE
Description:	While testing Manual mode, Gate closed switch failed to operate.
Effect:	Unable to close gate while in Manual Mode
Severity:	Moderate to Severe
Resolution:	Try closing gate in another mode. Possible bad switch or Pilot interface wiring.

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041_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

042_VReg6/fuse 23 bad	
Type:	PASSIVE
Description:	Power supplying EDump1 solenoid for Manual mode has failed
Effect:	No redundant Auto salvo or Manual salvo operation
Severity:	Moderate to severe
Resolution:	Check F23 in the relay box. Replace driver board in relay box.

043_VReg7/fuse 23 bad	
Type:	PASSIVE
Description:	Power supplying EDump2 solenoid for Manual mode has failed
Effect:	No redundant Auto salvo or Manual salvo operation
Severity:	Moderate to severe
Resolution:	Check F23 in the relay box. Replace driver board in relay box.

044_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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045_EM Open V3 bad	
Type:	PASSIVE
Description:	In Manual Mode the V3 valve coil failed to operate when the Open gate switch was used.
Effect:	Unable to open gate using Open gate switch. May also be unable to open gate using dump switch.
Severity:	Moderate to severe
Resolution:	Run pilot assisted test to diagnose any valve problems. Check connection to V3 Open valve Check fuse, F8 in relay box.

046_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

047_Hyd Pwr power bad	
Type:	PASSIVE
Description:	In Manual Mode the Hydraulic power relay coil failed to operate.
Effect:	Unable to operate gate in Manual mode due to loss of hydraulic pressure.
Severity:	Moderate to severe
Resolution:	Run pilot assisted test to diagnose any relay problems. Check connection to run pump relay Check fuse, F6 in relay box.

048_EM power fuse bad	
Type:	PASSIVE
Description:	Fuse / Power to Manual Section bad.
Effect:	Improper or non functioning Manual mode.
Severity:	Severe
Resolution:	Check fuse F15 and F21 In relay box

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049_EM Sw pwr fuseBad	
Type:	PASSIVE
Description:	Fuse on Supply line for Manual Switches is bad.
Effect:	Improper or non functioning Manual mode.
Severity:	Severe
Resolution:	Check fuse F15 and F23 In relay box

050_Foam Gal RangeErr	
Type:	PASSIVE
Description:	Voltage from Foam Gallon sensor is out of range. Normal range is .1 Volt min to 3.5Volt Max
Effect:	Inaccurate reading as to quantity of foam liquid in the tank.
Severity:	Minimal
Resolution:	Check to verify that the sensor is properly connected or replace sensor.

051_Fuse14/Vbus 1 bad	
Type:	PASSIVE
Description:	Fuse bad
Effect:	Vbus 1 supplies power to the valves during Auto Salvo operation. These valves are Edump1 and 2, Bleed, Run Pump and V2-Open. This causes improper Auto salvo operation in the event of a Normal controlled discharge failure.
Severity:	Moderate
Resolution:	Check F14 in the relay box.

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052_Fuse13/Vbus 2 bad	
Type:	PASSIVE
Description:	Fuse bad
Effect:	Vbus 2 supplies power to 4 of the 6 valves used to control the gates during Normal controlled discharge operation. These valves are V2-Open and Close, V1-Open and Close; This cause's improper normal controlled operation. Gates will open erratically.
Severity:	Severe
Resolution:	Check F13 in the relay box.

053_Fuse18/Vbus 3 bad	
Type:	PASSIVE
Description:	Fuse bad
Effect:	Vbus 3 supplies power to 2 of the 6 valves used to control the gates during Normal controlled discharge operation. These valves are V3-Open; This cause's improper normal controlled operation. Gates will open erratically.
Severity:	Severe
Resolution:	Check F18 in the relay box.

054_Fuse17/Vbus 4 bad	
Type:	PASSIVE
Description:	Fuse bad
Effect:	Vbus 4 supplies power to several critical valves and systems. These valves are Edump1 and 2, Bleed and Run Pump; This will cause failure of normal controlled discharge operation.
Severity:	Severe
Resolution:	Check F17 in the relay box.

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055_GateAngleRangeErr	
Type:	PASSIVE
Description:	Gate angle sensors voltage out of range(device failure)
Effect:	Failure or Improper gate control in Auto mode
Severity:	Severe
Resolution:	Use Timer or Manual mode till gate angle sensor can be checked. Refer to Maintenance manual for Gate angle sensor diagnosis, adjustment or repair.

056_GateProxsNotEqual	
Type:	PASSIVE
Description:	The redundant gate close proximity switches do not agree. Both should be on when gate fully closed or off when not fully closed.
Effect:	Improper gate operation and or redundancy of dump systems.
Severity:	Moderate
Resolution:	Check mechanical adjustment and electrical operation of both proximity switches. Adjust or replace faulty unit.

057_GateAngleRangeErr	
Type:	PASSIVE
Description:	Gate angle sensor voltage too high for Closed Gate. Normal voltage readings are 1.2V fully open to 4.4 Volts fully closed. Voltage Higher than 4.4Volts detected.
Effect:	Gate angle / position not reading correctly. Inaccurate to Gate operation failure.
Severity:	Severe
Resolution:	Check gate angle sensor and setup as described in this manual.

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058_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

059_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

060_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

061_V1 Clos Mon1 Err	
Type:	PASSIVE
Description:	CPU instructed V1 Gate Close to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates to close. May not close or close hard or to soft.
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

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062_V1 Clos Mon2 Err	
Type:	PASSIVE
Description:	The system detected an open coil condition when the V1 close solenoid is instructed off by the CPU or a shorted coil condition when V1 close solenoid is instructed on by the CPU.
Effect:	Improper operation of gates. May not close or closes too fast or too slow.
Severity:	Moderate to Severe
Resolution:	Check F11 in the relay box. Check connection at V1 Close valve. Check ohms at V1 Close solenoid coil

063_V2 Clos Mon1 Err	
Type:	PASSIVE
Description:	CPU instructed V2 Gate Close to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates to close. May not close, close too hard or too soft.
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

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064_V2 Clos Mon2 Err	
Type:	PASSIVE
Description:	The system detected an open coil condition when the V2 close solenoid is instructed off by the CPU or a shorted coil condition when V2 close solenoid is instructed on by the CPU.
Effect:	Improper operation of gates. May not close or closes too fast or too slow.
Severity:	Moderate to Severe
Resolution:	Check F9 in the relay box. Check connection at V2 Close valve. Check ohms at V2 Close solenoid coil

065_V3 Clos Mon1 Err	
Type:	PASSIVE
Description:	CPU instructed V3 Gate Close to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates to close. May not close or close hard or to soft.
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

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066_V3 Clos Mon2 Err	
Type:	PASSIVE
Description:	The system detected an open coil condition when the V3 close solenoid is instructed off by the CPU or a shorted coil condition when V3 close solenoid is instructed on by the CPU.
Effect:	Improper operation of gates. May not close or closes too fast or too slow.
Severity:	Moderate to Severe
Resolution:	Check F7 in the relay box. Check connection at V3 Close valve. Check ohms at V3 Close solenoid coil

067_ClosOpenGateSwErr	
Type:	PASSIVE
Description:	Both Gate Open Switch and Gate Close Switch are showing the same on state.
Effect:	Failure of gates to open
Severity:	Severe
Resolution:	Most likely a damaged switch or shorted wiring. Send Pilot interface in for service.

068_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

069_Gate Not Closed	
Type:	PASSIVE
Description:	One or both gate prox's not closed
Effect:	May cause redundancy failure of Auto Salvo or MAN Salvo system
Severity:	Severe
Resolution:	Either the gate is not fully closed or a prox switch or wiring failure or a mis-adjusted prox switch.

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070_V1 Open Mon1 Err	
Type:	PASSIVE
Description:	CPU instructed V1 Gate Open to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. May not open or opens too fast or too slow.
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

071_V1 Open Mon2 Err	
Type:	PASSIVE
Description:	The system detected an open coil condition when the V1 open solenoid is instructed off by the CPU or a shorted coil condition when V1 open solenoid is instructed on by the CPU.
Effect:	Improper operation of gates. May not open or opens too fast or too slow.
Severity:	Moderate to Severe
Resolution:	Check F12 in the relay box. Check connection at V1 open valve. Check ohms at V1 open solenoid coil

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072_V2 Open Mon1 Err	
Type:	PASSIVE
Description:	CPU instructed V2 Gate Open to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. May not open or opens too fast or too slow.
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

073_V2 Open Mon2 Err	
Type:	PASSIVE
Description:	The system detected an open coil condition when the V2 open solenoid is instructed off by the CPU or a shorted coil condition when V2 open solenoid is instructed on by the CPU.
Effect:	Improper operation of gates. May not open or opens too fast or too slow.
Severity:	Moderate to Severe
Resolution:	Check F10 in the relay box. Check connection at V2 open valve. Check ohms at V2 open solenoid coil

074_V3 Open Mon1 Err	
Type:	PASSIVE
Description:	CPU instructed V3 Gate Open to energize but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. May not open or opens too fast or too slow.
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

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075_V3 Open Mon2 Err	
Type:	PASSIVE
Description:	The system detected an open coil condition when the V3 open solenoid is instructed off by the CPU or a shorted coil condition when V3 open solenoid is instructed on by the CPU.
Effect:	Improper operation of gates. May not open or opens too fast or too slow.
Severity:	Moderate to Severe
Resolution:	Check F8 in the relay box. Check connection at V3 open valve. Check ohms at V3 open solenoid coil

076_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

077_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

078_HopperGalRangeErr	
Type:	PASSIVE
Description:	Voltage from Hopper Gallon sensor is out of range. Too High or too Low. Normal range is 2.3V min to 4.4V Max
Effect:	Inaccurate reading as to quantity of liquid in the tank.
Severity:	Severe
Resolution:	Check to verify that the sensor is properly connected or replace and calibrate sensor.

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079_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

080_ARMEDsw/HYDPwrErr	
Type:	PASSIVE
Description:	Mon1 is reporting a signal lose inside the Pilot interface.
Effect:	Improper or failure of operation
Severity:	Severe
Resolution:	System may operate in Manual mode. <ul style="list-style-type: none"> • Run pilot assisted test. Specifically the Switch test. • If switch test detects a problem, Pilot interface may require factory service. If problem is internal, Pilot interface may require factory service.

081_Hyd Press low	
Type:	PASSIVE
Description:	Low hydraulic pressure when hydraulic power on. Also indicated by light on panel.
Effect:	Varies
Severity:	Varies
Resolution:	Should be resolved by turning the hydraulic power switch on.

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082_HydPres sensorErr	
Type:	PASSIVE
Description:	Analog voltage signal for the pressure sensor is outside the normal operational voltage range of 0.0 to 5.5V.
Effect:	Improper Hydraulic pressure readout and control for Auto or timer mode. Manual mode can be used as a backup.
Severity:	Severe
Resolution:	Check connections and voltage levels of Hydraulic pressure sensor. Repair or replace as necessary.

083_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

084_HydPresLowSwErr	
Type:	PASSIVE
Description:	Mechanical pressure switch used in Manual mode is not closing on low pressure. This error compares the Auto system hydraulic pressure to the mechanical state of the switch.
Effect:	Improper or failed operation in Electro Mechanical mode.
Severity:	Moderate to severe
Resolution:	Check connection at pressure switch. Run Pilot assisted test. <ul style="list-style-type: none"> • If test indicates a switch failure, replace.

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085_HydPresLowSwErr	
Type:	PASSIVE
Description:	Mechanical pressure switch used in Manual mode is not opening on high pressure. This error compares the Auto system hydraulic pressure to the mechanical state of the switch.
Effect:	Improper or failed operation in Electro Mechanical mode.
Severity:	Moderate to severe
Resolution:	Run Pilot assisted test. <ul style="list-style-type: none"> If test indicates a switch failure, replace.

086_Learn:DumpGalErr	
Type:	
Description:	If LEARN mode is set (in config menu) and Gallons to Dump is not set to one of the four valid leakage table columns (200,400,600, or 800), this error is issued.
Effect:	Dumps will occur normally, but the leakage table will NOT be updated with any learned values.
Severity:	N/A for flight / Severe for Calibration
Resolution:	Make sure that "Gallons to Dump" is set to one of the four column heading values as displayed in "Leakage Table" from the maintenance menu

087_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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088_HydPump 1500/6sec	
Type:	PASSIVE
Description:	The hydraulic pump failed to create 1500 lbs of pressure in 6 seconds
Effect:	Low pressure and flow for opening gates properly
Severity:	Severe
Resolution:	This is most likely caused by a low pre-charge in the accumulator.

089_HydPump 3mins	
Type:	PASSIVE
Description:	The hydraulic pump failed to create 3000 lbs of pressure in 3 minutes
Effect:	Low pressure and flow for opening gates properly
Severity:	Severe
Resolution:	This is most likely caused by a leaking valve or weak pump head.

090_HydPump20psi/4sec	
Type:	PASSIVE
Description:	The hydraulic pump failed to create an additional 20 lbs of pressure every 4 seconds.
Effect:	Low pressure and flow for opening gates properly
Severity:	Severe
Resolution:	This is most likely caused by a leaking valve or weak pump head.

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091_Pump Rly Err Mon1	
Type:	PASSIVE
Description:	CPU instructed Hydraulic pump to run but monitor 1 functions did not detect a signal change between the CPU or the opto isolation and or wiring out to the relay box. Possible bad CPU output pin or short or open in isolation and or wiring out to the relay box.
Effect:	Improper operation of gates. No pressure to operate
Severity:	Severe
Resolution:	Requires factory service of the pilot interface unit to correct.

092_Pump Rly Err Mon2	
Type:	PASSIVE
Description:	The system detected an open coil condition when the Hydraulic run pump relay is instructed off by the CPU or a shorted coil condition when Hydraulic run pump relay solenoid is instructed on by the CPU.
Effect:	No operation of gates. No Hydraulic pressure to operate
Severity:	Severe
Resolution:	Check F6 in the relay box. Check connection at Hydraulic run pump relay solenoid. Check ohms at Hydraulic run pump relay solenoid coil

093_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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094_I2C Therm err	
Type:	PASSIVE
Description:	Time out init/read/write panel temperature sensor. Control unit was unable to communicate with the on board temperature control and monitoring chip.
Effect:	No indication of internal temperature. However chip should stand alone control internal cooling fans.
Severity:	Minimal
Resolution:	If error continues after powering off and then on unit, Send Pilot interface in for factory service.

095_SysAddrErrInterpt	
Type:	SYSTEM
Description:	The microprocessor detected an address error interrupt. This is an internal error and <u>should not occur</u> unless there is a major problem with the software.
Effect:	Improper operation
Severity:	Severe
Resolution:	If error continues after powering off and then on unit, Send Pilot interface in for factory service.

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096_ExtMemA cksumErr	
Type:	SYSTEM / BOOTUP
Description:	A checksum error was detected while reading EEprom. External EEprom is on I2C buss. Bank A is the primary bank for each media. External EEprom is the primary media for the leakage table and other saved user options, which are associated directly with the specific airplane.
Effect:	Improper operational parameters
Severity:	Moderate to Severe
Resolution:	System may still function in Auto / Timer modes but will function in EM mode until problem can be resolved. Follow directions to restore and backup memory. This is detailed in the Memory management section of the manual. Send Pilot interface in for factory service.

097_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

098_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

099_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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100_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

101_SysMathErrIntr	
Type:	SYSTEM
Description:	The microprocessor detected a math error interrupt. This is an internal error and <u>should not occur</u> unless there is a major problem with the software.
Effect:	Improper or failure of system to operate.
Severity:	Severe
Resolution:	System can be run in Manual mode. Software may need to be updated or Send Pilot interface in for service.

102_SysOscFailIntr	
Type:	SYSTEM
Description:	The microprocessor detected an oscillator failure interrupt. This is an internal error and <u>should not occur</u> unless there is a <u>major</u> problem with the software that somehow changed the system to use the external (crystal) oscillator.
Effect:	Improper or failure of system to operate.
Severity:	Severe
Resolution:	System can be run in Manual mode. Software may need to be updated or Send Pilot interface in for service.

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103_SysStackErrIntr	
Type:	SYSTEM
Description:	The microprocessor detected a stack overflow interrupt. This is an internal error and <u>should not occur</u> unless there is a <u>major</u> problem with the software.
Effect:	Improper or failure of system to operate.
Severity:	Severe
Resolution:	System can be run in Manual mode. Software may need to be updated or Send Pilot interface in for service.

104_Lamp/RunPmpSw Err	
Type:	PASSIVE
Description:	Both Lamp Test Switch and Run Pump Switch are showing the same "on" state.
Effect:	Failure to properly control system
Severity:	Severe
Resolution:	Most likely a damaged switch or shorted wiring. Send Pilot interface in for service.

105_Systest_Err	
Type:	SYSTEST
Description:	Indicates that some error had occurred during a previous run of SysTest, and a successful run of SysTest had not been completed since the error occurred.
Effect:	Dependant on item that failed during test
Severity:	Moderate to severe
Resolution:	Resolve issue and rerun systest

106_MODE Sw Err	
Type:	PASSIVE
Description:	Both The Auto Mode and Manual Mode Switch are showing the same "on" state.
Effect:	Failure to properly control system
Severity:	Severe
Resolution:	Most likely a damaged switch or shorted wiring. Send Pilot Interface in for service.

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107_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

108_Monitor salvo Err	
Type:	PASSIVE
Description:	Mon1 is indicating a loss of connection between the pilot interface and Relay box.
Effect:	Auto Salvo system may not function properly or at all.
Severity:	Moderate to severe.
Resolution:	<p>Check function of auto salvo system using pilot assisted tests.</p> <ul style="list-style-type: none"> • Check connection of J10 pin 1 inside relay box. • Check mechanical Edump switches for proper operation. (this should cause other issues as well) • Check K28, K30, K31, K32, K34 and K35. Make sure all are present and seated properly.

109_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

110_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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111_Monitor Err	
Type:	PASSIVE
Description:	Main system could not detect the 1 second supervisor system heartbeat.
Effect:	Possibility of secondary salvo system failure leading to gates not operating in Auto Salvo. However Manual salvo should back this system up.
Severity:	Moderate
Resolution:	Restart system. Possible TW577 setting error. If error persists, send Pilot interface in for service.

112_Accuracy Loss	
Type:	PASSIVE
Description:	No accuracy of controlled discharge assured
Effect:	This is a secondary error caused by many other errors. This indicates that accuracy of the dump is not assured because of the other errors
Severity:	Moderate
Resolution:	Resolve other primary indicated errors

113_Accur+Redun Loss	
Type:	PASSIVE
Description:	No accuracy or redundancy of salvo assured
Effect:	This is a secondary error caused by many other errors. This indicates that accuracy and redundancy of the dump is not assured because of the other errors
Severity:	Moderate to Severe
Resolution:	Resolve other primary indicated errors

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114_Redundancy Loss	
Type:	PASSIVE
Description:	No redundancy of salvo assured
Effect:	This is a secondary error caused by many other errors. This indicates that redundancy of the dump is not assured because of the other errors
Severity:	Moderate to Severe
Resolution:	Resolve other primary indicated errors

115_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

116_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

117_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

118_Photo range Err	
Type:	PASSIVE
Description:	Photo detector signal is out of normal operational range
Effect:	Brightness control of status LED's and operator panel may be compromised. Too bright or too dim.
Severity:	Minimal
Resolution:	Select manual brightness control. Send Pilot interface unit in for service when possible.

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119_+24v battery Err	
Type:	PASSIVE
Description:	+24v (+Vservo) supply is bad. IC2 of Supervisor PCB has lost power or failed.
Effect:	Unable to operate in Auto or Timer Mode.
Severity:	Severe
Resolution:	Pilot interface will require factory service.

120_+24v battery Err	
Type:	PASSIVE
Description:	+24v battery supply to Base PCB or IC2 of Base PCB is bad.
Effect:	Unable to operate in Manual mode.
Severity:	Severe
Resolution:	Pilot interface will require factory service.

121 Monitor +5v Err	
Type:	PASSIVE
Description:	+5volt supply to Supervisor / Monitor processor is bad.
Effect:	No redundancy of dump in Auto Salvo. However Manual salvo should back this up.
Severity:	Severe
Resolution:	Pilot interface will require factory service.

122_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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123_Turn Dump Sw off	
Type:	PASSIVE
Description:	Dump trigger switch is in the on (dump) position at boot up. This could indicate a damaged switch or shorted wiring at the switch or flight stick.
Effect:	Dump will be attempted when Hydraulic power is turned on and Armed switch is armed.
Severity:	Severe
Resolution:	Check switches operation, if problem persists, Replace switch and or check / replace wiring to dump switch.

124_TurnClosGateSwOff	
Type:	PASSIVE
Description:	GATE CLOSE switch is in the on position at boot up. This could indicate a damaged switch or shorted wiring.
Effect:	Gates will close or stay continuously closed when Hydraulic power is turned on and Armed switch is armed. No system control
Severity:	Severe
Resolution:	Check switches operation, if problem persists, Pilot interface will require factory service.

125_TurnOpenGateSwOff	
Type:	PASSIVE
Description:	GATE OPEN switch is in the on position at boot up. This could indicate a damaged switch or shorted wiring.
Effect:	Gates will open continuously when Hydraulic power is turned on and Armed switch is armed. No system control
Severity:	Severe
Resolution:	Check switches operation, if problem persists, Pilot interface will require factory service.

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126_TurnRunPumpSwOff	
Type:	PASSIVE
Description:	RUN PUMP switch is in the on position at boot up. This could indicate a damaged switch or shorted wiring.
Effect:	Pump will run continuously when Hydraulic power is turned on. No system control
Severity:	Severe
Resolution:	Check switches operation, if problem persists, Pilot interface will require factory service.

127_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

128_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

129_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

130_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

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131_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

132_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

133_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

134_SysReset Brownout	
Type:	PASSIVE / BOOT
Description:	Brown out reset occurred. System did not have proper power to supply the main controller of the Pilot Interface. This could also be indicated by other errors.
Effect:	System could reset / reboot during dump operation causing improper gate control.
Severity:	Severe
Resolution:	Check for other errors pointing to voltage issues.

135_SysResetClockFail 1	
Type:	PASSIVE / SYSTEM
Description:	Internal CPU Clock failed.
Effect:	No operation in Auto or Timer mode. No display while in Manual Mode. No Side loader display info in any mode.
Severity:	SEVERE

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Resolution:	System can be run in Manual mode. Pilot interface will likely require factory service.
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136_SysResetIllegalOp	
Type:	PASSIVE / SYSTEM
Description:	Illegal operation trap reset. (software bug)
Effect:	System should reset and start up normally unless software bug persists causing a resetting loop.
Severity:	Moderate to Severe
Resolution:	System can be run in Manual mode. Pilot interface will likely require factory service.

137_SysResetWakeIntr	
Type:	PASSIVE / SYSTEM
Description:	System reset while an internal interrupts wakeup from sleep. This should never happen since unit is never placed in Sleep mode.
Effect:	System should reset and start up normally
Severity:	Minimal
Resolution:	None required.

138_SysReset MCLR	
Type:	PASSIVE / SYSTEM
Description:	Normal master clear reset occurred, external reset (not an actual error)
Effect:	Restarts system
Severity:	Minimal
Resolution:	None required. Usually caused by pushing on board reset button or reset from external programmer.

139_SysReset MC Idle	
Type:	PASSIVE / SYSTEM
Description:	Reset button pressed while unit was in idle mode. This should never happen since unit is never placed in Idle mode.
Effect:	System should reset and start up normally
Severity:	Moderate

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Resolution:	None required.
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140_SysReset MC Sleep	
Type:	PASSIVE / SYSTEM
Description:	Reset button pressed while unit was in Sleep mode. This should never happen since unit is never placed in Sleep mode.
Effect:	System should reset and start up normally
Severity:	Moderate
Resolution:	None required.

141_SysReset Power On	
Type:	PASSIVE / SYSTEM
Description:	Power on reset, not necessarily an error
Effect:	System should reset and start up normally
Severity:	Moderate
Resolution:	None required.

142_SysReset Unk	
Type:	PASSIVE / SYSTEM
Description:	Reset of undifferentiated type. Has been caused by large static discharge to unit.
Effect:	System could reset / reboot during dump operation causing improper gate control.
Severity:	Severe
Resolution:	None required.

143_SysReset Soft	
Type:	PASSIVE / SYSTEM
Description:	Software reset issued. Unit was reset from Pilot interface menu selection
Effect:	Restarts system
Severity:	Minimal
Resolution:	None required.

144_SysReset Multi	
Type:	PASSIVE / SYSTEM

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Description:	Trap conflict reset, multiple hard trap pending at same time. This is an internal error that should not happen.
Effect:	System should reset and start up normally
Severity:	Minimal
Resolution:	None required unless problem persists. Pilot interface may require factory service otherwise.

145_SysReset Watchdog	
Type:	PASSIVE / SYSTEM
Description:	Main control system watchdog timer reset occurred.
Effect:	System could reset / reboot during dump operation causing improper gate control.
Severity:	Moderate to severe
Resolution:	Most likely caused by a software or hardware error in the Pilot interface. Unit may require factory service.

146_SysResetWakeWtDog	
Type:	
Description:	System reset while a watchdog wakeup from sleep. This should never happen since unit is never placed in Sleep mode.
Effect:	System should reset and start up normally
Severity:	Minimal
Resolution:	None required.

147_Ext Memory Err	
Type:	PASSIVE / SYSTEM
Description:	Error while initializing, reading or writing I2C EEPROM
Effect:	Changed values including analog calibration and leakage tables can not be saved in external memory and may be lost. These should be saved to internal memory
Severity:	Severe

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Resolution:	This can be caused by several issues. <ul style="list-style-type: none"> • Bad I2C EE memory module • Faulty I2C module in ether relay or Pilot interface box. • Check that power light (LED1) is on. This is located on the I2C board in the relay box. Power must be on to the pilot interface when checking (LED1)
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148_I2C I/O Read Err	
Type:	PASSIVE
Description:	Error reading /writing I2C extended I/O after initialization.
Effect:	Failure of real-time diagnostic systems
Severity:	Moderate to severe
Resolution:	System may still operate in Auto or Timer but Manual mode is best. Check that power light (LED1) is on. This is located on the I2C board in the relay box. Power must be on to the pilot interface when checking (LED1)

149_Mem No Save	
Type:	PASSIVE
Description:	Write to external I2C EE memory suppressed because a prior read failed
Effect:	Changed values including analog calibration and leakage tables can not be saved in external memory and may be lost. These should be saved to internal memory
Severity:	Severe
Resolution:	This can be caused by several issues. <ul style="list-style-type: none"> • Bad I2C EE memory module • Faulty I2C module in ether relay or Pilot interface box. Check that power light (LED1) is on. This is located on the I2C board in the relay box. Power must be on to the pilot interface when checking (LED1)

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150_HopperGauge Err	
Type:	PASSIVE
Description:	Pilot interface was unable to send data to the Hopper gauges (side loader gauges)
Effect:	Erroneous or no readout on side loader gauges
Severity:	Minimal to moderate
Resolution:	Power cycle unit. If problem persists. Inspect cabling from Pilot interface to each of the side loader gauges. Try exchanging side loader gauges.

151_Pilot Panel Err	
Type:	PASSIVE
Description:	Pilot interface display communications timeout on send.
Effect:	This message will most likely not be seen because primary display screen is not functioning properly. Auto and Timer modes are unable to be displayed or adjusted.
Severity:	Moderate to Severe
Resolution:	Most likely caused by a hardware fault in the Pilot interface. Unit requires factory service.

152_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

153_YES / NO Sw Err	
Type:	PASSIVE
Description:	Both Yes Switch and No Switch are showing the same state
Effect:	Will be unable to select menus or foam injection options
Severity:	Severe
Resolution:	Most likely a damaged switch or shorted wiring. Send Pilot interface in for service.

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154_	
Type:	
Description:	FUTURE USE
Effect:	N/A
Severity:	N/A
Resolution:	N/A

155_EM Err	
Type:	PASSIVE
Description:	Manual system is not powered or regulators are bad. The diagnostics detected one or more of the systems used to operate the Manual system as having failed.
Effect:	Possibly no use of the Manual system
Severity:	Moderate
Resolution:	The following are basic checks. However many of the probable causes require factory service. <ul style="list-style-type: none"> • Hydraulic power on • Armed switch on • Timer or Auto mode • Power indicated by LD3, LD4, LD5 on driver board inside Relay Box. Failure of power on LD3 thru LD5 indicated failure of F23 in the relay box Failure of power at LD3, 4 or 5 individually indicates a damaged or shorted regulator.

156_DumpAbortNotARMED	
Type:	PASSIVE
Description:	Auto/Timer dump aborted because ARMED switch was changed from Armed to OFF
Effect:	Improper control and or accuracy of dump. Dump is aborted or shortened
Severity:	Minimal
Resolution:	Refrain from switching armed in the middle of a dump

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157_DumpAbort ModeEM	
Type:	
Description:	Auto/Timer dump aborted because mode switch moved to Manual Mode
Effect:	Improper control and or accuracy of dump. Dump is aborted or shortened
Severity:	Moderate
Resolution:	Refrain from switching modes in the middle of a dump

158_DumpAbortNoHydPwr	
Type:	PASSIVE
Description:	Auto/Timer dump aborted because Hydraulic Power switch turned off.
Effect:	Improper control and or accuracy of dump. Dump is aborted or shortened
Severity:	Severe
Resolution:	Refrain from switching off in the middle of a dump

159_DumpAbortSalvo	
Type:	PASSIVE
Description:	Auto/Timer dump aborted because AUTO SALVO or Manual SALVO took over control of the dump system. This indicates that for some reason the Auto or Timer system was unable to control the gates in a timely manner causing one of the 2 redundant systems to take over.
Effect:	Accurate dump was impossible
Severity:	Severe
Resolution:	Run Pilot assisted test to find problem with Auto/Timer system.

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160_Save Mem Err	
Type:	PASSIVE
Description:	Error initializing, reading or writing I2C EEPROM
Effect:	Improper operational parameters, Calibration and leakage values.
Severity:	Severe
Resolution:	This can be caused by several issues. <ul style="list-style-type: none"> • Bad I2C EE memory module • Faulty I2C module in ether relay or Pilot interface box. • Check that power light (LED1) is on. This is located on the I2C board in the relay box. Power must be on to the pilot interface when checking (LED1)

161_I2C I/O Err Adr1	
Type:	PASSIVE
Description:	Error init/read/write I2C extended inputs address 1
Effect:	Failure of some real-time diagnostics within the pilot interface
Severity:	Moderate
Resolution:	Power cycle unit. If error persists, send Pilot interface in for factory service

162_I2C I/O Err Adr2	
Type:	PASSIVE
Description:	error init I2C extended inputs/outputs address 2
Effect:	Failure of some real-time diagnostics within the pilot interface
Severity:	Moderate
Resolution:	Power cycle unit. If error persists, send Pilot interface in for factory service

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163_I2C I/O Err Adr3	
Type:	PASSIVE
Description:	error init I2C extended inputs address 3
Effect:	Failure of some real-time diagnostics within the relay box and valves
Severity:	Moderate
Resolution:	Power cycle unit. If error persists, replace the I2C circuit board installed in the relay enclosure. Send faulty board in for factory service

164_I2C I/O Err Adr4	
Type:	PASSIVE
Description:	Error init I2C extended inputs address 4
Effect:	Failure of some real-time diagnostics within the relay box and valves
Severity:	Moderate
Resolution:	Power cycle unit. If error persists, replace the I2C circuit board installed in the relay enclosure. Send faulty board in for factory service