**System Emergencies**

|  |  |  |  |
| --- | --- | --- | --- |
| **SYSTEM** | **Personnel**  **Risk Level** | **SYMPTON** | **RESPONSE** |
| **Starter Engaged Light** | Low | Light stays on after engine start | Shut down engine immediately |
| **Low Battery Light from EarthX Fault Indicator** | **High** | Slow flashing light comes on during flight.  Per EarthX: *The slow flashing fault can indicate an improper state of charge or a problem with the cells internal to the battery. Assume battery management is off-line. If it turns off after 10 minutes it just means the battery was balancing the cells. This is not an imminent situation.* | Shut down all unnecessary electrical items. Land at nearest airport and assess. |
| **High** | Solid light comes on during flight.  Per EarthX: *The solid fault indicates a BMS hardware failure. The battery management system has failed if light does not turn off after 10 minutes. IF at the same time the alternator an over-voltage protection has failed AND you didn’t take the alternator offline then the battery could be at risk of a thermal runaway.* | Assess nearest airport. If less than 10 miles proceed to airport. If more consider off field landing or stay above land-able terrain on the way to nearest airport. Maintain and/or gain altitude. |
| **Flap Switch Indicator** | Low | Flap indicator fails. | No risk to safety of flight. |
| **Flap Switch** | Low | Flap switch fails with flaps extended while airborne. | Maintain airspeed. Fly normal traffic pattern and conduct a normal landing. |
| **High** | Flaps extend unevenly | Use ailerons and rudder to maintain pitch and roll. Keep speed up, but in the flap operating range. Fly the airplane and land after assessing the controllability. |
| **High CHT Light** | **Med.** | Red light flashes | Assess oil temperature and general engine sound and performance. If normal, reduce RPM and increase mixture to see if temperature drops. Is it just one cylinder or all? If all, assess need to land. Land to determine problem. |
| **Low Voltage Light** | **High** | Red light flashes. This light is from the Scadtech alarm system, independent of the battery and alternator system. | Check voltmeter, if at or above 14 the light may be faulty. If 14 or below alternator may be failing. If voltage is low, pull alternator circuit breaker and proceed to nearest airport and land. |
| **Elevator Trim Switch/Indicator** | Low | Elevator trim indicator fails. | No risk to safety of flight. |
| **Med.** | Elevator trim motor fails in extended position. | Maintain airspeed and practice approach speed/pitch at altitude. When comfortable, fly normal traffic pattern and conduct a normal landing. |
| **Airspeed Indicator Fails** | Low | Indicator either fixes in position or reads zero. | Cover gauge if possible. Maintain known pitch and power settings. Practice approach speed/pitch at altitude. When comfortable, fly normal traffic pattern and conduct a normal landing. |
| **Turn Coordinator Fails** | Low | Ball sticks or airplane does not respond to normal turns. | Cover instrument. Use turn coordinator on Dynon D2. Continue flight. |
| **Tachometer Fails** | Low | Instrument fails, either sticks or reads zero with engine RPM sounding normal. | No risk to safety of flight. Continue flight using pitch attitude, throttle position, engine sound and airspeed to judge rpm. |
| **Altimeter Fails** | Low | Instrument fails, either sticks or reads zero altitude. | No risk to safety of flight. Use GPS for rough altitude. Consider flight less than 3000 AGL to avoid traffic conflicts at hemispheric altitudes. |
| **Vertical Speed Indicator Fails** | Low | Instrument fails, either sticks or reads zero altitude. | No risk to safety of flight. Use GPS for rough altitude. Use known pitch and power settings for landing. |
| **Radio Fails** | Low | Radio won’t send or receive. | No risk to safety of flight. Continue flight but be extra vigilant in vicinity of airport. Fly normal pattern. |
| **Fuel Gauge Fails** | **Med.** | One or both indicators read zero in flight. | If one indicator reads low or zero when you know it should be more, consider possible fuel leak from the wing tank and switch to opposite tank and land as soon as practical. If both indicators fail the gauge has likely failed. |
| **High CHT on MGL** | **Med.** | One or more cylinders reading abnormally high – say >360 deg. | Check oil pressure and temp. Reduce RPM, level off if in climb, increase mixture and watch for temp. drop. If temps do not return to normal land as soon as practical. |
| **High Oil Temperature** | **Med.** | Oil temp reads higher than 210 degrees. | Lycoming recommends temps between 185 and 210. Higher than this check oil pressure and CHTs for additional clues. Consider landing if temp continues to rise. |
| **Low Oil Pressure** | **High** | Gauge reads below 60 psi in normal flight. | If there is also a rise in oil temp. problem is serious.  Lycoming limits are 60 to 90 psi (idling 25). If reading is below 60 psi lands as soon as practical. If gauge continues to drop be prepared for off-field landing. |
| **Low Fuel Pressure** | **High** | Gauge reads below 2.5 psi in normal flight. | Switch Pump #2 on. Switch tanks. Proceed to nearest airport and land. |
| **Ammeter** | **High** | Gauge reads Low. | Turn ON Endurance Bus switch and shut OFF Master Switch. Shut down all unnecessary electrical items. Pull alternator circuit breaker. Check voltmeter and assess battery time remaining. Land at nearest airport and assess. |
| **Ammeter** | **High** | Gauge reads High. | Turn ON Endurance Bus switch and shut OFF Master Switch. Pull alternator circuit breaker. Shut down all unnecessary electrical items Voltage regulator may have failed. Check voltmeter and assess battery time remaining. Land at nearest airport and assess. |
| **Voltmeter** | **High** | Gauge reads Low. | Turn ON Endurance Bus switch and shut OFF Master Switch. Shut down all unnecessary electrical items. Pull alternator circuit breaker. Land at nearest airport and assess. |
| **High** | Gauge reads High. | Turn ON Endurance Bus switch and shut OFF Master Switch. Pull alternator circuit breaker. Voltage regulator may have failed. Shut down all unnecessary electrical items. Land at nearest airport and assess. |
| **Alt. Field Circuit Breaker** | **High** | Breaker has popped in flight. | Turn ON Endurance Bus switch and shut OFF Master Switch. Alternator is offline. Shut down all unnecessary electrical items Check voltmeter and assess battery time remaining. Land at nearest airport and assess. |
| **CO2 Detector Turning Grey or Black** | **Med.** | Green Indication | Means “Caution”. Open air vents, consider landing. |
| **High** | Dark Blue or Grey Indication | Means “Danger”. Open air vents. Assess health condition. Land at nearest airport. |