Oxford Flying Club
Flight Operations Incident Report (FOIR)

To: OFC Safety Officer Note: Refer to Club website	From: REDACTED Note: Name is optional but helpful.	Date: 8/27/2020

1. Type of Event - check all appropriate responses

☐ Altitude Deviation	☐ Runway/taxiway excursion	☐ Foreign Object Damage
☐ Navigational Deviation	☐ Runway Incursion	☐ Severe Wake Turbulence
☐ Communication Error	☐ Severe Turbulence	☐ Collision Hazard
☐ Severe Icing	☐ Aborted Takeoff	☒ Other

2. Weather Conditions - check all appropriate responses

☐ IMC	☐ Thunderstorm	☐ Icing
☒ VMC	☐ Turbulence	☐ Crosswind
☐ Precipitation	☐ Windshear	☐ Other

3. Time/Date - check or fill out all appropriate responses

Month August | Day 26	Year 2020	☐ 0400-0759 local time
☐ 1200-1559 local time	☐ 1600-1959 local time	☒ 2000-2359 local time

4. Mode of Flight

☐ Ramp	☐ Climb	☐ Descent
☐ Taxi	☒ Cruise	☐ Approach
☐ Takeoff	☐ Holding	☐ Landing

5. Action Taken - check all appropriate responses

☐ Performed Emergency Proc.	☐ Declared Emergency	☐ In-Flight Engine Shutdown
☒ Followed Checklist	☐ Requested Crash/Rescue	☐ Divert From Dest. Airport
☐ Requested Medical Assist.	☐ Other	

6. Safety Officer, or his/her designee, Initial Assessment

Probability: 2	Severity: 2
Resulting Risk Code: 2	**Note: Risk Assessment Code of 5 requires immediate notification of Club President.**

7. Comments or Suggestions (Use additional sheets as necessary)

See Page 2 attached.

8. Safety Officer, or his/her designee, Investigation summary:

Safety Officer, or his/her designee, Name L. Sock Date 9/20/2020

Tracking # (assigned by Safety Officer) FOIR-2020-003

Summary:

See Page 3 attached.

9. Notes

a) If a NASA form was filed (Strongly Recommended if practical), please attach a copy to this report.

b) For confidentiality, this form may be delivered to any Safety Committee representative.

Thank you for your interest in your Safety Program.

Pilot Report, FOIR-2020-003, Alternator Failure, N4334X, August 27, 2020

Wednesday August 26, 2020, I took a night flight with a friend of mine who is a CFI [redacted]. We were flying Archer N4334X. I currently have a night restriction; however, I believed the flight to be ok since there was a CFI on the plane. We were the only two people on board. We did a NYC tour flight which included entering the NYC Bravo, flying down the Hudson river at 2,000 feet. We did a touch a go at Newark, flew back up the Hudson, flew over central park, followed by a touch and go at LaGuardia. After LaGuardia we flew down the East River then did a stop and go at JFK. The entire flight was done on flight following.

Upon leaving JFK we were immediately handed off to NY approach and were directed to fly a Northeast heading to exit the Bravo. Approximately 4 nm Northwest of KFRG the alternator annunciator light came on. Immediately I turned the alternator switch off then back on. The light then went off. After about 30 seconds the light came back on. I cycled the switch one more time and the light remained on.

At this point I was about 40 nm from KOXC level at 3,500' I went through the CheckMate check list I have for the Archer. We turned all electrical devices off and only left on comm 1, nav lights, anti-collision lights, and transponder. I do have foreflight on an iPad as well at a Stratus to continue to monitor traffic. I believed we had enough batter to make it back to KOXC and definitely enough to get outside of the ADSB requirement zone of JFK.

[redacted] and I discussed our options from here. Both of us agreed that this was not an emergency as we were in very clear VMC. We had both KOXC and KBDR in sight. We decided the biggest risk was if we lost electrical and KOXC lights were off. However, KBDR tower was still attended and lights were still on and we decided that would be our back up landing spot but to continue to KOXC. In the event we did loose radios we did have the phone number for BDR tower and would have been able to call them for a landing clearance. When we were about 20 miles out, I made my initial call to the KOXC CTAF stating we were 20 miles out setting up for a straight in for RWY 36. We heard that there was a Cessna in the pattern doing full stop taxi backs. Because of this the runway lights would most likely remain on. I was making calls every 4-5 miles in from this point. When I was 6 miles out the Cessna was on the Taxiway. And I made a radio call explaining we had an Alternator Failure and were on a 6-mile final. They agreed to wait on the taxi way so in the event we did loose electrical power we would eliminate the risk of us both ending up on short final at the same time on their next pattern.

We turned all lights and panel lights back on at this point. Landing was normal and all electrical systems remained on until we were back at the South Ramp.

OFC Safety Committee Report, FOIR-2020-003, Alternator Failure, N4334X, 08272020

Presented by the member was a flight occurring in night/VMC conditions approximately 40 nautical miles south-southeast of the KOXC airport at 3500ft MSL. The goal of the OFC Safety Committee will be to identify threats associated with the event, ways the member choose to mitigate those threats, then identify where those decisions increase or decrease risk.

Certification and Club Policy

As stated by the member and indicated on his/her report, the flight was conducted at night. The member, although current and checked out in the Club aircraft, was restricted with "NOT VALID FOR NIGHT FLYING" on his/her medical certificate. This would restrict the pilot from being a PIC during this particular event. As stated by the member, a certified flight instructor was on board the aircraft who did meet all FAA required certification to act as PIC. The instructor was not approved to instruct or fly OFC aircraft by the requirements of the *Training and Ops Manual* provided to all members. Allowing a not approved CFI to fly/instruct as PIC in a Club aircraft is a liability risk and risks failure to comply with operational procedures of the Club. The aircraft was not properly insured for this flight.

> **[Training and Operations Manual, Section IV, Flight Requirements]**
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> This section of Club policy requires any pilot or member to have an ICC or AIC to act as PIC in any Club airplanes. *"The ICC will expire on the end of the last day of the 12th month after the month of the date of the original check. Prior to the ICC expiration, you must complete an annual insurance check (AIC) in each make/model Club aircraft you intend to fly as PIC."* Allowing a not approved CFI to fly/instruct as PIC in a Club aircraft is a liability risk and risks failure to comply with operational procedures of the Club. The aircraft was not properly insured for this flight!

Abnormal Electrical Indication

The panel alternator inoperative annunciator light displays -"ALT." Piper Aircraft's "Pilot's Operating Handbook" (POH) has been provided for N4334X and meets airworthiness requirements for operation. It provides a description of the 14V alternator with a 12V electrical system and battery. Whenever the ALT annunciator light circuit detects a voltage of 12 Volts or less the ALT annunciator light will illuminate and indicate a problem to the pilot with the electrical system. The POH provided includes an "Emergency Procedures" section which states:

> **[Pilot's Operating Handbook, Section 3- Emergency Procedures, 3.23 Alternator Failure]**
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> *"Any time that the voltage from the alternator, or lack there of, is at or lower than the voltage of the battery the ALT annunciation circuit is designed to send power through the ALT indicator light indicating a problem with the electrical system"*
>
> *The electrical load should be reduced as much as possible. Check the alternator circuit breaker for a popped circuit*

The next step is to attempt to reset the overvoltage relay. This is accomplished by moving the "ALT" switch to "OFF" for one second and then to "ON." If the trouble was caused by a momentary overvoltage condition (16.5 volts and up) this procedure should return the ammeter to a normal reading.

If the ammeter continues to indicate "0" output, or if the alternator will not remain reset, turn off the "ALT' switch, maintain minimum electrical load and land as soon as practical. All electrical load is being supplied by the battery."

As stated by the member, a CheckMate checklist was used, not the POH, and the choice to fly over KBDR was made to get the aircraft back to KOXC. Although risks were considered for these decisions, it is disregarding FAA and Piper recommendations increasing the risk of the flight. Any condition that would have occurred, even if considered could have left the PIC without as many options or complete electrical failure at night. The need to declare emergency and land at nearest airport were clearly suggested and the disregarding increased risk considerably.

Responsibility and Authority of the PIC

Regardless of OFC Training and Ops manual, a pilot aboard the aircraft was acting as PIC and must comply with POH and FAA regulation mentioned in 91.3 and 91.7. Whenever the POH has an emergency procedure for an item and has the statement "land as soon as practical," it should be assumed that you're in a state of emergency. As stated by the member, considerations and adjustments to a standard method were used by the PIC to accommodate a landing at KOXC. This would indicate that 91.3(b) and (c) may be applicable in this scenario. FAR 91.7(b) requires a PIC to discontinue a flight when an unairworthy electrical condition occurs. Without declaring emergency 91.3(b) is harder to justify and it suggests in the FAA's Airplane Flying Handbook that an electrical malfunction or alternator loss is grounds to land at nearest suitable airport under emergency authority. These recommendations and regulations shouldn't have been ignored and should've been reviewed.

[FAA's Airplane Flying Handbook, Chapter 17, page 2]

The different types of emergency landings are defined as follows:

- Forced landing—an immediate landing, on or off an airport, necessitated by the inability to continue further flight. A typical example of which is an airplane forced down by engine failure.

- Precautionary landing—a premeditated landing, on or off an airport, when further flight is possible but inadvisable. Examples of conditions that may call for a precautionary landing include deteriorating weather, being lost, fuel shortage, and gradually developing engine trouble.

- Ditching—a forced or precautionary landing on water.

[FAA's Airplane Flying Handbook, Chapter 17, page 12]

"Understand that any loss of electrical power is critical in a small airplane—notify ATC of the situation immediately. Request radar vectors for a landing at the nearest suitable airport."

Recommendations From OFC Safety Committee

Proper use and knowledge of OFC policy is an important first step in flying a Club aircraft. These policies protect our Club assets including the members and fall within our insurance guidelines. Disregarding Club recommendations, procedures or policies can be the first step towards disciplinary action from the OFC Board or worse and loss of life or aircraft. The Club may not have provided this member with adequate availability of instruction or opportunity to act as PIC and shall look to establish any mitigation which falls under proper OFC Board authority to provide each member with an increase in flexibility, but at the time of report, no proper procedure was followed regarding PIC of this Club aircraft.

Any abnormal occurrence in an aircraft must be considered an unexpected threat and be handled as professionally as possible. ***Utilizing the appropriate manufacturers checklists and procedures is paramount.*** As stated by the member, a CheckMate checklist was used and did not match the procedure in the manufacture's POH. This can cause more failures or exacerbate the scenario and be a reason that a system correction was unsuccessful leaving the pilot in an emergency scenario instead of reducing the risk and distractions.

The FAA regulation on responsibility and authority of a PIC suggests an emergency landing at nearest suitable airport. (This is also stated in the POH.) Disregarding these steps indicates the use of 91.3(b) and then leads to 91.3(c). The safest option is to reduce work load and requirements is utilizing ATC by declaring and emergency, building the time to properly diagnose and perform checklists, and exercising all privileges of a PIC to safely land the unairworthy aircraft. Over-flying KBDR may have been the safest option for the PIC, but it would've been best if done using emergency authority. ATC could have used CTAF at KOXC to ensure proper lighting, no area traffic and even a "follow me truck" for safe ground operation. If complete electrical failure occurred prior to KOXC and the PIC had decided to turn back to KBDR it could've been much higher risk giving the PIC less options, less fuel, less situational awareness and many more distractions to manage. This increases the likely hood of a loss of control event or controlled flight into terrain. Was a flashlight being utilized? What charts were used? It's recommended that the member read the FAA techniques in the **Risk Management Handbook FAA-H-8083-2** guidance to further understand how to manage a scenario with this many initial risks and how to mitigate them before they become the cause of a more serious incident or accident. Chapter 6 of this handbook is specific to single pilot resource management which plays a role in most of the OFC operations.