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INFORMATION LETTER 214ST-02-16

TO: All Owners/Operators of Bell 214ST Helicopters

SUBJECT: P/N 214-060-056-109 Electric Starter Motor and Starter Electrical System Maintenance

BHT recently released Technical Bulletin (TB) 214ST-02-170 announcing the availability of a new electric starter motor, P/N 214-060-056-109.

This new starter motor incorporates several changes designed to provide improved reliability and serviceability that have been demonstrated in a successful field trial. Among these changes are components that are better suited to the starter motor operational environment including heavier field windings, a new design electronic system, a solid state contactor, a new external resistor package, and higher current handling switching components.

It is important to realize that even with these design enhancements, adherence to established maintenance and operating procedures for the 214ST electrical starting system and the starter clutch assembly will be necessary to achieve the full potential of the new starter motor.

Proper battery maintenance, whether it be nickel-cadmium or lead-acid, has always been, and will continue to be, of paramount importance in achieving reliable starter motor performance. Low battery capacity can result in insufficient available current to provide an engine start. At best this can result in unnecessary starter wear and tear or give the appearance of a defective starter. At worse, the starter could be seriously damaged if starting limitations are not strictly followed by the flight crew.

The recommended starting method is battery system starts and then a generator cross start for the second engine. This shifts the load from the batteries to the airframe start system to provide the required current levels for the starter motor.

Damaged start system components, such as resistive contacts in high current switching relays, reduce the available current and will ultimately affect starter performance.

Starter duty cycle, as defined in the 214ST Flight Manual, likewise remains very important. Inadequate cool downs will cause thermal damage regardless of starter configuration. Very special attention must be given to these limitations especially during engine wash or other maintenance operations that may require motoring, or frequent operation, of the starter assembly.

While technically part of the starter assembly, the clutch is, in fact, a separate unit and can have a great effect on overall starter assembly reliability. Since the clutch is attached to the starter motor, any clutch malfunction will normally cause the starter assembly to be removed. It is important to remember that the clutch can be repaired or replaced independently of the starter motor. Any troubleshooting involving failures to engage or disengage should be directed to the clutch assembly first.

The 250 hour clutch torque and lubrication inspection is intended to ensure proper clutch operation. The cleaning and overhaul procedures provided in BHT TB 214ST-99-160 (Smiths Aerospace Service Bulletin 2CM272B1-80-09) are designed to assist in returning to service clutch assemblies that either fail the 250 hour torque inspection or otherwise exhibit low torque. Oil and dirt contamination are the most frequent causal factors in clutch malfunctions.

Lastly, the 250 hour brush inspection and carbon dust removal continues to be a vital part of maintaining starter health.

The 214-060-056-109 Starter Motor is not a cure for all starter and starting system problems. But with proper system maintenance and continued vigilance of correct starter assembly operation, increased reliability and serviceability can be achieved.