SAFO

Safety Alert for Operators

U.S. Department
of Transportation
**Federal Aviation
Administration**

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Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

*A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to **operators** in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest.*

Subject: MRI interference with compasses and slaved gyros at hospital helipads

Purpose: This SAFO alerts operators of helicopters of a special hazard when operating in the vicinity of hospital helipads, and to recommend procedures to mitigate that hazard.

Background: The Aircraft Maintenance Division, AFS-300, was alerted by pilots of operators of emergency medical services (EMS) helicopters, who experienced interference emanating from active operating MRI scanner equipment, which degraded the indicated directional accuracy of standby compasses and slaved gyroscopic systems. These pilots reported observing large deviations in accuracy of their slaved gyroscopic systems while departing from helipads until flying out of the interfering magnetic field of the MRI.

Discussion: Such accuracy degradation results from high-energy magnetic fields generated by the MRI scanner equipment, which interfere with the magnetic sensing elements of slaved gyroscopic systems, as well as with standby compasses. Accuracy degradation is MORE immediately recognizable by observing the standby compass relative to actual aircraft heading before landing on or departing from the helipad under the influence of an active MRI. Conversely, if magnetic interference is present, accuracy degradation of a slaved gyroscopic system, particularly before landing on the helipad is LESS recognizable due to the characteristic of the slow-slaving (rotation) rate of the "compass card" on the directional indicator of the slaved gyroscopic system. Likewise, if magnetic interference is present when applying electrical power to the slaved gyroscopic system, the compass card may fast-slave to an erroneous directional heading, which might not be obvious to the pilot or flight crewmember.

Recommended Action: Directors of safety, directors of operations, chief pilots, training managers, and flight crewmembers of passenger-carrying EMS helicopters under Title 14 of the Code of Federal Regulations (14 CFR) parts 91 and 135 should be aware of the potential hazard described in this SAFO. Pilots of EMS helicopter operations, law enforcement, and military helicopters particularly departing from hospital helipads are advised to verify the accuracy of their magnetic direction indications by comparing their magnetic directional instruments against a known heading for departure. Instruments should be re-verified before proceeding "on course." Pilots should be prepared to select the "free" directional gyro function, if available, and "slew" the compass heading to a correctly known magnetic heading. Alternatively, pilots may choose to ignore observed erroneous directional indications until clearing the vicinity of the interfering magnetic field of the MRI scanner equipment.

Lastly, since the "strength" and location of MRI operations will vary with each particular site, a "standard" affected area cannot be determined for all cases. Instead, operators should evaluate the impact of MRI operations on their aviation operation in vicinity of the helipad at each site. Consideration should be given to both visual flight rules (VFR) as well as instrument flight rules (IFR) operations.

Approved by: AFS-200