



RECORD OF CONVERSATION

Date: June 6, 2017
Time: Approximately 1800 eastern daylight time
Location: Telephone
Person Contacted: Theresa Condor
Executive Vice President of Corporate Development
Spire
Subject: Weather Reporting from Maritime Vessels

On June 6, 2017, at approximately 1800 eastern daylight time (EDT), Mike Richards and Doug Mansell from the NTSB had a conversation with Ms. Theresa Condor, of Spire. The conversation took place via telephone. Ms. Condor reported the following:

Spire provides satellite-based data and services to their customers, including weather and automatic identification system (AIS) data. The company designs, builds, and operates nanosatellites, equipped with various payloads for data collection and transmission. Spire currently has over 20 satellites in orbit, averages building one or two satellites weekly, and is launching new nanosatellites monthly. A strength of this model is that hardware can be updated as needed and put into operations relatively frequently. Software can be updated remotely. Spire plans on having over 70 nanosatellites orbiting Earth by the end of 2017. Since the company's beginning, weather observations have been a significant emphasis of their business operations. Spire satellites use GPS radio occultation (GPS-RO) to collect atmospheric weather data, and provide near-real-time satellite AIS data to their customers.

Any surface position on Earth "sees" one of Spire's current AIS-enabled satellites approximately every 20 minutes (on average). Their network can be configured to either process all AIS data that is received, or only process conditional subsets of AIS data. With a business model that includes agile design and production, and frequent satellite launches, Spire expects their global AIS coverage and latency to continue improving.

In addition to receiving data transmitted on the AIS 1 and AIS 2 frequencies [161.975 MHz and 162.025 MHz, respectively], Spire's nanosatellites have hardware capable of receiving AIS application specific message (ASM) data transmitted on the ASM 1 and ASM 2 frequencies [161.950 MHz and 162.000 MHz, respectively]. Thus, as ASM usage increases, and data formats

continue to be updated, Spire can remotely update software onboard their nanosatellites to process data transmitted on the VHF data exchange system (VDES).

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