Federal Aviation Administration

Memorandum

Date: July 16, 2013

To: Todd Luepker
ATO Safety, Compliance Services Group

From: Donald H. Kirb[redacted]
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Subject: MSAW Processing of the AAR214 Flight; AJI-131 Request of 7/12/13

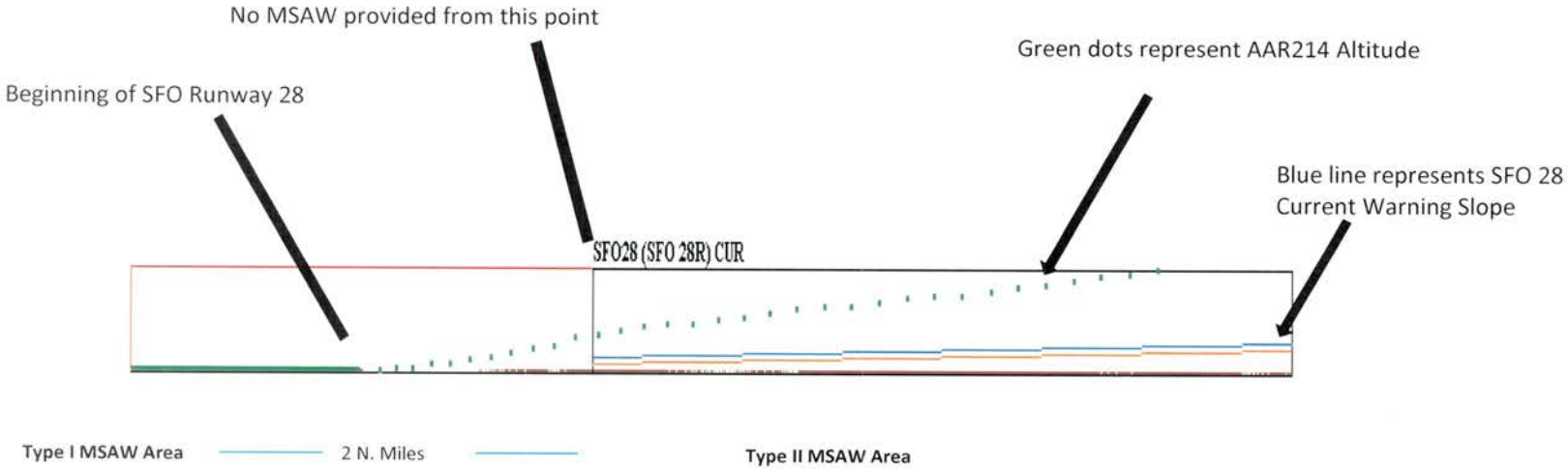
This is provided in response to your request of July 12, 2013, wherein information was requested regarding the Minimum Safe Altitude Warning (MSAW) function and parameters within the Common Automated Radar Terminal System (CARTS) specific to the Asiana Airlines flight 214 (AAR214) landing accident at San Francisco International Airport on July 6, 2013.

MSAW processing is divided into two regions when aircraft are on approach. The first region an aircraft encounters is a Type 2 region wherein aircraft are provided MSAW processing based upon their current altitude, as well as predicted altitude and descent rate. AAR214 did not trigger an MSAW alarm in the Type 2 region as it was well above the current and predicted slopes and in a normal profile descent. The second region an aircraft encounters is a Type 1 region. No MSAW processing is provided in a Type 1 region as the aircraft is supposed to be in close proximity to the terrain as it prepares to land. No alarms are received in the Type 1 region.

The attached graphic provides 2 profile views of the AAR214 flight. The top graphic depicts the AAR214 flight with regard to the "Current MSAW slope" and the second graphic with regard to the "Predicted MSAW slope". AAR214 was well above the Type 2 region MSAW slopes and descent appeared normal. AAR214 descent appeared normal in the Type 1 region until the last few target returns, where the flight was expected to be close to terrain as it landed.

Attachment

Profile view: **San Francisco Runway 28 (note that the MSAW "region" is named 28R, and is constructed to cover both runway(s) 28L & 28R)**



When an aircraft is on approach and located within a Type II MSAW area that aircraft is receiving MSAW processing to see if its' current or predicted location will be in dangerous proximity to obstacles and/or terrain. No MSAW alert was issued to the SFO controller for flight AAR214 because aircraft was above the Current Warning Slope and was not predicted to be at or below the Predicted Warning Slope. When the aircraft transitions to a Type I MSAW area there is no MSAW processing.