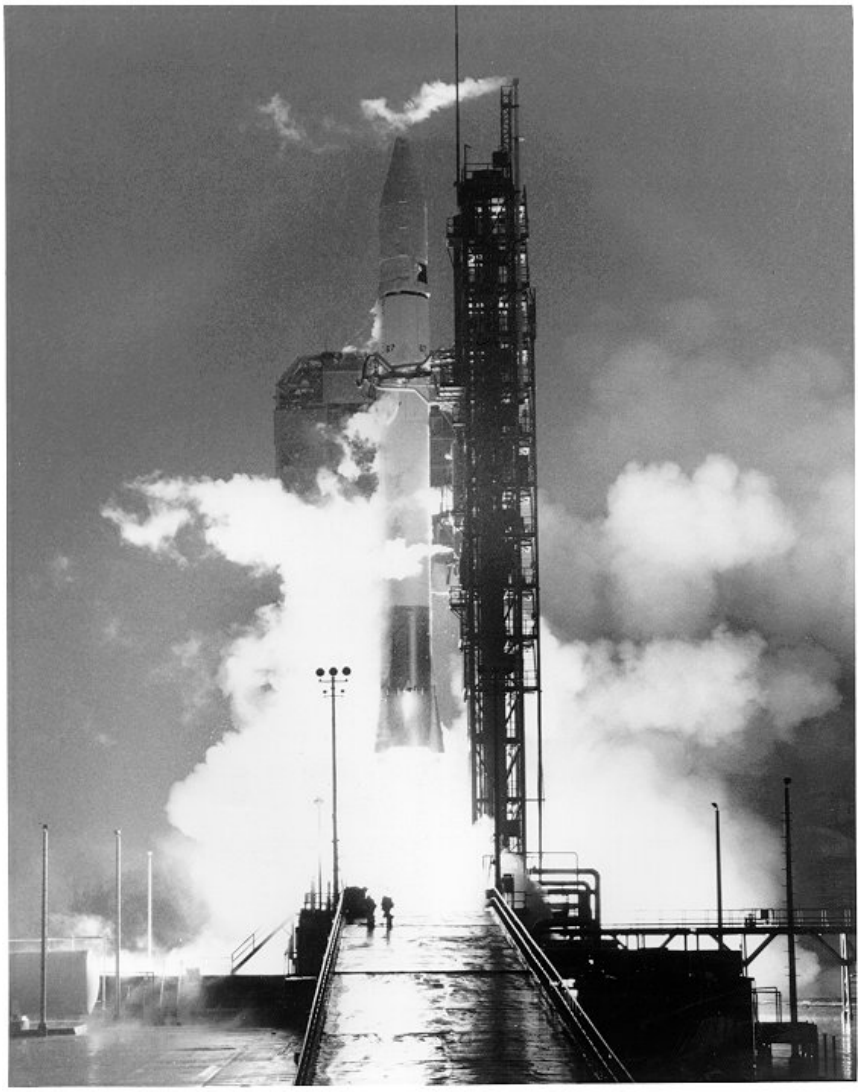
Go/No Go: The Launch Decision for BX-78



Since 1968, NASA had flown the BELTIN XIFI expendable launch vehicle (ELV) into space many times, carrying various scientific, defense, and commercial payloads. On March 27, 1987, BELTIN XIFI mission 78 (BX-78) sat on the launch pad during the countdown to launch a Department of Defense Communications Satellite into orbit. While not an urgent mission, a delay would cost money (~$100,000 per day).

During the scheduled launch day for BX-78, the weather did not look promising. However, the launch team included weather officers and safety personnel responsible for assuring that all launch criteria were met.

The launch director, launch team members, management advisors, and spectators were gathered in the Mission Directors Center (MDC). As launch countdown proceeded, some two-way radios were not providing clear communications between the blockhouse (launch control near the launch pad) and the MDC a few miles away. This created some confusion in the MDC as messages had to be repeated over the radios for clarity and confirmation.

In addition a storm line developed, producing thunderstorms in areas near the launch facility. The weather team verified that each criteria (temperature, wind speeds, distance to lightning, cloud depth, etc.) were within admissible limits. Looking at the available data the weather officer had concern for one remaining criteria he had difficulty verifying. This criteria stated:

Go/No Go: **The Launch Decision for BX-78 (cont.)**

> **"The flight path of the vehicle should not be through middle-level cloud layers 6,000 feet or greater in depth, when the freezing level is in the clouds."**

Some team members in the MDC began to debate the meaning of this weather criteria. Someone suggested that the weather criteria could be referring to vehicle icing concerns. Another member of the team took initiative and contacted a nearby airport to gain insight from any recent aviation activity in the cloud cover. The airport reported two recent flights through the middle level clouds with no icing incidents indicated by the pilots.

The Air Force team was eager to use the launch window that day for its $83 million spacecraft. NASA had launched over 60 of these rockets in a row successfully—many on the launch team felt there was ample experience in the room to make the call if all the weather criteria were met in time.

The Launch Director expressed renewed optimism they could launch safely since there were no icing concerns as per the report from the two airplanes. He would double check with the weather officer one more time before giving the go ahead.

The weather officer did finally obtain data from a balloon which verified the cloud temperature and winds enough to meet the last remaining launch criteria. He could give the go ahead for the launch.

At T-3 minutes the weather officer confirms a "go-for-weather"—which surprises some members of the team who are looking out the window at the black clouds. The launch director looks around the room for any other concerns… T-2:55, :54, :53…!!

You sit nervously thinking to yourself but have a hard time articulating your concerns. You notice others are uncomfortable but no one raises their hand to speak. If you object the launch will be halted and you will be asked to explain (and provide evidence for) your last minute decision to abort the launch.

What would you do? Why? What do you think they did? Why?

Record your notes for discussion during the class session.