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Witnesses: Panel 1 Mary Kicza Assistant Administrator for Satellite and Information Services, National Oceanic and Atmospheric Administration Alexander MacDonald Deputy Assistant Administrator of Research Laboratories and Cooperative Institutes, Office of Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration John Murphy Chief, Programs and Plans Division, National Weather Service, National Oceanic and Atmospheric Administration Panel 2 Eric Webster Vice President and Director, Weather Systems, ITT Exelis David Crain

Chief Executive Officer, GeoMetWatch

Vice Chairman. AirDat LLC

Berrien Moore

Dean, University of Oklahoma College of Atmospheric and Geographic Sciences, and Director, National Weather Center

Subcommittee Members Present: Andy Harris (R-MD), Chair Brad Miller (D-NC), Ranking Member Roscoe Bartlett (R-MD)

Committee Members Present: Ralph Hall (R-TX), Chair

On March 28, 2012 the House Committee on Science, Space, and Technology Subcommittee on Energy and Environment held a hearing to discuss how the National Oceanic and Atmospheric Administration (NOAA) procures data for weather forecasting.

Chairman of the Subcommittee Andy Harris (R-MD) opened by disapproving of the proposed budget for NOAA's satellite programs. NOAA's satellites program provides the nation with crucial weather data for weather forecasting. He referred to the satellites program as being "fraught with a long history of major problems" and accused NOAA of "placing nearly all its eggs in one basket." Harris exclaimed that nearly 40 percent of the \$5.1 billion NOAA budget is dedicated to satellite programs. He said this has forced NOAA to eliminate or reduce programs essential to protecting lives and property like the tsunami buoy network. Harris emphasized the necessity of this hearing to assure Congress that "our data procurement is based on costs and benefits, rather than subjective thinking." Harris called for NOAA to reevaluate the necessity and funding of their observing systems when he said, "NOAA needs to undertake comprehensive, objective, and quantitative evaluations of observing systems that incorporates cost."

Ranking Member of the Subcommittee Brad Miller (D-NC) expressed concern in his opening statement over the continued cost overruns and delayed launch schedules of NOAA's satellite programs. However, Miller acknowledged the importance of satellites when he said, "Yes, satellites are expensive, but they are essential to protecting life and property, and the costs of inferior systems could be far greater." Miller said strategic decisions need to be made "while considering their cost and realistic lead-time for their development." Miller expressed his concern that a gap in weather data would hinder the nation's forecasting ability and the subsequent health of the American people. A gap in weather data is expected between the end of the life span of the National Polar-Orbiting Partnership (NPP) in early 2016 and the launch of the Joint Polar Satellite System (JPSS) satellite in late 2016. If the JPSS is not up before the NPP goes off line than the U.S. will have a period of time where it is receiving no remotely sensed

One opening testimony representing the three NOAA witnesses on the first panel was given by Mary Kicza NOAA's Assistant Administrator for Satellite and Information Services. Kicza stated that NOAA's mission of providing science, service, and stewardship to the nation is fundamentally dependent on data from environmental observations. Kicza proclaimed that NOAA's environmental observations come from both earth-based in-situ platforms and remotely-sensed data from satellites. She made it clear that the NOAA Observing Systems Council (NOSC) determines the most cost effective means of acquiring the data from the environmental observations. Kicza reported that the NOSC process involves a disciplined and effective process of documenting, validating, and assessing the priorities of the observing requirements. She asserted that NOAA regularly evaluates new observing capabilities that help to reduce cost. Kicza closed by assuring that NOAA is using a range of tools within its means to guide its investment decisions.

Harris asked the panel to comment on this potential gap in weather data that the U.S. could be facing. Kicza began by clarifying that the concern is not so much over the lapse in the physical amount of time that the satellites will be in orbit as it is over the inability of the instruments on the two satellites to cross calibrate while they are both in functioning orbit. She said the calibration of these instruments varies from instrument to instrument with some taking six months and others taking a year or longer. Consequently, if NPP goes offline before JPSS goes online than JPSS will have to be calibrated with instruments on the ground. This would create a large gap in data, but Kicza said there are already agreements in place with European counterparts to make up for this data gap. Harris asked John Murphy, Chief of the Programs and Plans Division of NOAA's National Weather Service (NWS), if satellites are more effective than in situ platforms at severe weather forecasting. Murphy responded that satellites provide most of the forecast model input which helps predict the longer range 2-5 day severe weather predictions, while the in situ platforms are responsible for the severe weather warnings.

Miller asked Kicza to comment on the relationship between the data collecting capabilities of satellites and the data collected capabilities of the in situ observing platforms. She responded that the two work in concert with each other, but she stated that 94 percent of the data used in weather forecasting comes from satellites while 6 percent comes from the in situ platforms. Murphy added that the in situ platforms play a key role in tornado forecasting.

Eric Webster, Vice President and Director of Weather Systems at ITT Exelis, began the second portion of the hearing by presenting his opening statement. Webster told the subcommittee that ITT Exelis has been responsible for building every imager and sounder instrument used on NOAA's polar satellite programs including NPP and JPSS. Webster stated that NOAA and NASA must find ways to reduce the overall systems cost of the instruments on these satellites because it is affecting their overall sustainability. He encouraged NOAA to look to incorporate commercial capabilities to improve future weather forecasting.

David Crane Chief Executive Officer of GeoMetWatch opened by stating that the fiscal and programmatic challenges faced by NOAA present an opportunity for the implementation of commercial alternatives. He believes that integrating the commercial industry will help to provide the more valuable solutions to weather forecasting. Crane encouraged the subcommittee to take legislative action to clarify the authorities of NOAA, NOAA's ability to acquire meteorological data, and confirm the critical role of the commercial sector in improving severe weather forecasting.

In his opening statement Bruce Lev, Vice Chairman of AirDat, LLC, touched on the importance of weather forecasting in saving lives, reducing injury, and saving the federal government billions of dollars. Lev emphasized the necessity of accurate data in creating reliable forecasts. Lev said that AirDat has developed the Tropospheric Airborne Meteorological Data Reporting (TAMDAR) which is a multi-function sensor that collects data from a large area. He said that TAMDAR is fully operational and that if implemented by NOAA it will improve weather forecasting at a much cheaper cost than traditional weather balloons.

Berrien Moore, Director of the National Weather Center at the University of Oklahoma College of Atmospheric and Geographic Sciences, opened by calling for the increased use of local surface data (Mesonet) observations in severe weather forecasting. He said that in 1990, \$3 million in funding from the state of Oklahoma contributed to the creation of 120 weather observation stations that transmit data every five minutes. He believes the incorporation of a national Mesonet system similar to Oklahoma's combined with data from the National Weather Service would create a "powerful partnership." He called this partnership an "ideal" model in these tough fiscal times.

Harris questioned Webster on why he believes fixed price procurement contracts for NOAA satellite instruments would be more effective than the current system. Webster said that fixed price contracts are set by the contractor, which would allow the contractor to build the instrument in the most cost effective way. He said this ends up costing the government less because the cost of the risk associated with this project is taken on by the contracted company. He believes these fixed price contracts are the most effective with technologies that already been developed. Companies would be less likely to take on a developmental fixed price contract because of the associated risk in attempting to develop a technology that has not already been proven.

Roscoe Bartlett (R-MD) asked Lev to comment on the degree to which TAMDAR would improve National Weather Service forecasting. Lev said a joint study by NOAA and the Federal Aviation Administration (FAA) found that TAMDAR improved the reliability and accuracy of weather forecasts by up to 50 percent. He said that further improvements in TAMDAR technology have increased the reliability and accuracy of forecasts to over 50 percent.

Opening statements, witness testimony, and a web cast of the hearing can be found on the Committee web page.