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Under Secretary of Commerce
for Oceans and Atmosphere

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SUBJECT: Under Secretary Decision Memorandum

Providing our nation with accurate, timely and world-class weather forecasts and warnings is one of NOAA's most important and critical missions. NOAA's satellites are integral to this mission because they provide the data that make our modern weather forecasts and warnings possible. NOAA's weather satellites are essential to public safety. Moreover, they underpin the entire public and private weather enterprise.

Polar and geostationary satellites provide complementary essential information. Polar-orbiting satellites supply the majority of data for the numerical weather models, including the data that aid in forecasting hurricane, tornado and snow storm conditions days in advance of the severe weather events. Satellite observations are also essential to the assessment of environmental and economic hazards such as drought, forest fires, poor air quality and harmful coastal water conditions. Early and accurate warnings result in better preparation by federal, state and local emergency managers, which in turn reduces the impact on lives and property. Geostationary satellites are our "sentinels" in the sky, providing a constant vigil for atmospheric "triggers" of severe weather conditions such as tornadoes, flash floods, hail storms, and hurricanes. When these conditions develop, geostationary satellites monitor storms and track their movements. Their data provide short-term warnings, and "now-casts," complementing the polar satellites' vital role in longer-term forecasting. Both are necessary for providing a complete global weather monitoring system.

From the moment I arrived at NOAA, I made stabilizing our weather satellite portfolio a top priority. The geostationary weather satellite program (GOES-R), jointly managed with NASA, was functioning well, but the polar-orbiting weather satellite program (then called the National Polar-orbiting Operational Environmental Satellite System, or NPOESS), a tri-agency program of the Department of Defense (DoD), NOAA and NASA, had been in serious trouble for years. Together with the White House Office of Science and Technology Policy, the Office of Management and Budget, NASA and the DOD, we accepted the challenge of fixing this dysfunctional program that had become a national embarrassment due to chronic management problems and consequent significant cost overruns, delays and observing capacity losses. With the helpful advice of an Independent Review Team (IRT) chaired by A. Thomas (Tom) Young, a widely recognized expert in satellite acquisition programs, we dissolved NPOESS and

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established the Joint Polar Satellite System (JPSS) Program to address the root causes of the failures – the unwieldy tri-agency management structure and flawed contracts. The newly restructured JPSS capitalized on the long-standing, successful NOAA and NASA partnership the Nation has relied upon for decades to develop the nation’s civilian weather satellite systems.

In the two years since the JPSS Program was formed, we have made considerable progress. The numerous and complex contracts were transferred and a new management system was put in place. Complications arose during this process, including the unexpected need for JPSS to take on additional requirements when the DoD altered its plans and a significant delay in funding due to the Continuing Resolution in FY2011. Even with these challenges, the JPSS program has delivered impressive outcomes, including the successful completion, launch and commissioning of the Suomi-National Polar-orbiting Partnership (Suomi-NPP) satellite. However the restructuring is not yet complete. Significant challenges remain and work vital to the success of this mission lies ahead.

The partnership between NOAA and NASA has produced many successful missions. NOAA understands the needs of its 24/7 operational mission; NASA contributes its deep experience with acquisition and technological review. Recent examples include GOES-P and Suomi-NPP. Seven months after launch – nearly three times faster than any other mission in our history – NOAA’s National Weather Service (NWS) began using data from the Suomi-NPP satellite operationally. Our partnership is currently managing the GOES-R program efficiently and effectively. I am confident that our tested and durable partnership has the strength needed to ensure the success of our current weather satellite enterprise, including our JPSS program.

Our work to stabilize and strengthen the NOAA satellite enterprise continues while we confront fiscal constraints and the imperative to ensure all of NOAA’s important missions are vibrant, and are delivering science, services and stewardship to the Nation. It is my goal to have each of our missions conducted as effectively and efficiently as possible and to ensure the proper balance across our portfolio. The new JPSS program contains a variety of climate and weather instruments in various stages of design maturity. In the transition to JPSS the re-vetting and re-evaluation of costs and requirements presented significant complex challenges, and these challenges generated concern within NOAA and among our stakeholders.

NOAA has used external advice and assistance for many years to ensure our satellite programs are well managed, efficient and effective. In recent months, our efforts have been informed by invaluable input and critique from our essential partners in Congress, officials in other Federal agencies and offices, and independent expert review.

Since 2006, NOAA’s National Environmental Satellite, Data, and Information Service (NESDIS) has employed senior Independent Review Teams (IRT) to review its satellite programs. These

expert panels have consistently provided useful guidance that strengthened our programs. In late 2011 we decided to convene a NESDIS IRT to assess our progress to date and challenges ahead in our satellite programs. Of particular interest to us was where we stood in implementing the newly structured JPSS program, specifically how well it was functioning and what additional changes might be in order. Concerns expressed by Congress about JPSS underscored the importance of such a high-level external, review. This independent review was conducted this summer and again chaired by Tom Young.

The feedback we received this spring and summer from our partners, experts and stakeholders, including the IRT, has been hard hitting and valuable, just as we expected. The concerns and advice enable us to complete the process of restructuring JPSS. In response, we moved swiftly to synthesize this feedback and translate it into the actions I direct in this memorandum.

It is imperative that we implement these actions rapidly. The arrival in July of our new Deputy Under Secretary for Operations, Rear Admiral David Titley (USN, ret.), will aid this. With the addition of his leadership and expertise, I am confident we will accelerate our work to stabilize our satellite programs and swiftly implement my direction today.

This memo details the actions we undertook in recent months and directs specific additional actions that will strengthen our programs and respond to the concerns of our stakeholders. Ensuring NOAA's National Weather Service has the real-time data and information needed to produce life- and property-saving forecasts and warnings for the American people has driven those efforts and the actions I set in motion today. I am cognizant of the urgency of completing the restructuring of our satellite program and, hence take strong actions toward that end.

Oversight

As NOAA Administrator I am accountable to the Secretary of Commerce for the success of our satellite enterprise. To achieve stable and lasting success we must improve and streamline oversight at NOAA Headquarters and the Office of the Secretary. This oversight must clearly define the responsibility, role and authority of each senior-level manager and clarify the roles and responsibilities of each relevant staff office. At each level of oversight, we must use reasonable and appropriate metrics to assess mission progress, and we must not allow inefficient oversight processes at any level to unnecessarily complicate the decision-making process.

To maximize the probability of our satellite enterprise success and ensure the streamlined oversight structure is effective, we must strengthen NESDIS – the operational decision authority and the organization with the primary responsibility for implementing our satellite programs. To this end NOAA will hereby:

- Make it a priority to find and hire an exceptionally qualified NESDIS Deputy Assistant Administrator for Systems;
- Establish positions within NESDIS for a Chief Systems Engineer and a Ground System Development lead; and
- Work with other agencies to identify qualified individuals with critical skills to augment NOAA while we are recruiting for the positions above.

I share the principles that Acting Secretary Blank laid out in her memo today, and agree that oversight at NOAA Headquarters and the Office of the Secretary must:

- (1) Establish mission success as the overriding and urgent goal;
- (2) Ensure the effective implementation of a quality assurance program; and
- (3) Conduct work transparently and be responsive to oversight authorities.

We have already taken steps to improve the oversight of our satellite programs. This has included strengthening our requirements development and prioritizing processes, implementing joint program management council reviews with our NASA partner at the NESDIS and NOAA Headquarters levels, and adopting proven approaches for regular and independent technical and programmatic review.

Today Acting Secretary Blank issued a memo directing a series of actions to further strengthen Secretarial-level oversight of these programs. I will ensure NOAA carries out those actions and meets the Acting Secretary's expectations and timelines. I am directing further actions herein. Most of the actions I direct today, and the work NOAA has engaged in since receiving the IRT's report, are designed to ensure it is clear that NESDIS holds the operational decision authority for NOAA's satellite programs and that they receive the support needed to succeed in that role. To that end, I hereby:

- Eliminate the NOAA Headquarters Program Oversight Board;
- Authorize the NOAA Program Management Council (PMC), chaired by the Deputy Under Secretary for Operations, to be the frontline NOAA Headquarters oversight mechanism; and,
- Direct Assistant Secretary-level program reviews to focus on strategic issues, overall portfolio composition and external engagement.

I further direct my Deputy Under Secretary for Operations to:

- Streamline NOAA PMC membership to include only those who have decision-making authority, or whose presence is needed to inform decision-making.
- Establish a metrics working group responsible for establishing a standard set of metrics, based on best practices, to define and support the program oversight appropriate to each organizational level.

These actions are intended to ensure our new, streamlined oversight system is both effective and efficient. I have instructed this working group to ensure that this set of metrics does not complicate or confuse the timely decision-making that is vital to the program's success, and the new system communicates efficiently the information that is necessary and sufficient to inform key decisions and illustrate the status at a strategic level. The working group's first meeting was held on Sept 5, 2012, and their work is due to the Deputy Under Secretary of Operations on September 28, 2012.

These improvements to our oversight mechanisms are also intended to alleviate substantially the communication issues identified by the IRT, key Congressional stakeholders and others. I am committed to improving our responsiveness to our external stakeholders' requests for information. Timely external communication is essential to program success, and cannot be achieved without clear responsibility for its provision. I firmly believe that frequent and consistent communication from our Program Managers directly is critical to resolving this issue, but that communication must be supported by NOAA Headquarters. To these ends, I direct:

- NESDIS to establish simplified and standardized satellite quarterly reports for OMB, OSTP and Congressional Authorizing and Appropriations staff.
- NESDIS Program Managers to prioritize frequent and sustained communication with appropriate offices in Congress.
- My office to track all requests from external stakeholders and the timeliness of our responses, to provide me written bi-weekly updates, and to make the necessary changes to the current clearance process to increase the timeliness of our responses.
- My Assistant Secretary for Environmental Observations and Prediction to maintain open lines of communication with our external stakeholders and to use the quarterly information our Programs provide to ensure we respond rapidly to inquiries from our stakeholders with consistent and high quality materials.

Governance and Program Direction

NOAA's GOES-R and JPSS Programs are developed, built, launched and flown in service to NOAA's mandate to provide weather data, forecasts and warnings to the Nation. The effective management of these programs is essential to meeting our mission. No one knows that mission or the requirements for it better than NOAA. Our GOES-R program's governance and program direction structure is widely regarded as highly effective and efficient. It is our goal to ensure that the governance and program direction for JPSS mature into a similarly effective and efficient structure.

Like GOES-R, development and launch of JPSS satellites is implemented by teams comprised of NOAA and NASA personnel. The JPSS program currently operates under a much more complex organizational structure. GOES-R has a clear, single line of program direction to the joint NOAA-NASA teams. JPSS' initial structure had two, parallel lines of direction. The JPSS Program is significantly more complex than the GOES-R Program, making it even more essential to have clear governance and program direction structures that ultimately serve NOAA's weather mission. With important guidance from the NESDIS IRT and our Congressional stakeholders, we have worked with NASA to identify changes to the JPSS governance structure that ensure there are clear lines of responsibility, authority and accountability. Pursuant to this, I direct my Deputy Under Secretary for Operations to work with his counterpart at NASA to take the following actions:

- Establish unambiguously the responsibility and authority of the NOAA JPSS Director to direct all elements of JPSS. The NOAA JPSS Director will work directly with NASA's Joint Agency Satellite Division and achieve mission assurance by directing the coordinated efforts of NOAA and NASA.
- Integrate all JPSS systems engineering under a single JPSS Program System Engineer, with end-to-end responsibility for requirements and performance. This individual will also be responsible for identifying and managing the relationship between systems.

These changes are intended to ensure clear and timely program direction and avoid duplicative management overhead. I have directed these changes to be implemented as soon as feasible without disrupting the critical work in progress.

JPSS Program and Gap Mitigation

There is no more critical strategic issue for our weather satellite programs than the risk of gaps in satellite coverage. This has been my top concern for JPSS since 2010. Gaps in coverage can occur if appropriations are delayed, current schedules slip or a launch failure occurs. We

already have a number of actions underway within the JPSS program to address these risks. Those actions include the following:

- A comprehensive requirements review and prioritization process as a part of the progression towards the next major JPSS milestone, Key Decision Point One. This requirements update is critical to informing NOAA's strategic decisions, which will ensure JPSS resources are concentrated on the high priority weather mission.
- This comprehensive requirements review and prioritization process will be used to develop options for the NOAA Program Management Council and examination and deliberation by the administration in determining the President's FY2014 budget and inform the FY 2014 Appropriations Process.
- Investigation of operational measures to maximize the life of the Suomi-NPP spacecraft.
- The 2010 decision to make JPSS 1 a near clone of the Suomi-NPP spacecraft to reduce schedule risk.
- The most rapid possible development of JPSS-2, and accelerated development of the high-priority weather instruments, including pursuit of an acquisition strategy to reduce instrument cost and risk (sole sourcing, purchasing critical spares, and pursuing contracting authority for procuring additional instruments).
- On July 25, 2012, NESDIS established a working group to analyze risk and develop an operational mitigation plan to address potential data gaps that would impact NOAA's weather mission before JPSS 1 becomes operational. This plan, due to the Under Secretary on September 28, 2012 - will feed into a broader end-to-end review of options to maintain the performance of NOAA's weather forecast missions.

Our goal is to ensure that NOAA's National Weather Service has the critical data they need to sustain the accuracy and timeliness of our weather forecasts and warnings. We have been working hard to minimize the risk of a satellite data coverage gap. However that is not the only way we can address the risk to our weather forecast mission. I agree with our stakeholders that we must engage in contingency planning and explore all possibilities for mitigating an impact to our weather forecasts.

To this end, in August I directed NOAA's Assistant Secretary for Environmental Observations and Prediction to develop a written, descriptive, integrated, end-to-end plan that considers the entire flow from candidate alternative sensors through data assimilation and on to forecast model performance. She is assembling a team that includes independent technical consultants to make an enterprise-wide examination of contingency options that could be exercised in the

event of a gap in polar satellite observations. This will include the use of alternative observations (from, e.g., other satellites or *in situ* instrumentation), changes in data assimilation and/or modeling methods and so forth. I have directed this study be under contract no later than mid-October.

The satellite enterprise – government wide – is evolving rapidly towards smaller, less expensive programs. It is therefore critical that NOAA stays abreast of activities and trends in both the government and commercial domains. As a consequence, today I direct:

- My NESDIS Assistant Administrator to maintain close contact with NASA and United States Air Force counterparts, and ensure that the Air Force is aware of NOAA's requirements and capabilities moving forward.
- My Assistant Secretary for Environmental Observations and Prediction to ensure that our satellite system architectures and acquisition strategies make optimum use of commercial capabilities.

It is evident from both the IRT recommendations and other feedback that we at NOAA need to explain more clearly which instruments and missions are a priority for the JPSS program. The unequivocal top priority for JPSS is collecting the data and observations needed to maintain the accuracy and timeliness of NOAA's National Weather Service's forecasts and warnings.

In support of this priority, I direct NESDIS to examine cost-saving and/or schedule-saving options beyond the current program as presented in the President's FY13 budget as follows:

- Reduce or identify alternate Visible Infrared Imaging Radiometer Suite (VIIRS) capabilities, focused on weather mission needs.
- Identify alternate accommodations and/or approaches for the Cloud and Earth Radiant Energy System (CERES) and the Total Solar Irradiance Sensor (TSIS) instruments.
- Identify alternate accommodations and/or approaches for the critical Search and Rescue Satellite Aided Tracking (SARSAT) and Advanced Data Collection System (A-DCS) missions.

All of this work will be reviewed for the implications to cost, technical risk and schedule risk. Alternatives must strive to reduce technical, cost and schedule risk to the JPSS program. Between now and Key Decision Point One (scheduled for September 2013), I direct NOAA's Deputy Undersecretary for Operations to hold bi-monthly progress reviews to ensure timely delivery of options to NOAA leadership. I expect options to be available to inform the FY2014 budget.

Budget

Making the most efficient use of taxpayer money and ensuring reliable access to critical weather data are core NOAA responsibilities. Effective management demands the ability to control procurement costs and minimize eliminate cost and schedule overruns. Clear program requirements and a credible Independent Cost Estimate (ICE) are essential components of these efforts and allow us to articulate reliable funding profiles to our Congressional counterparts.

The IRT stressed the need to complete our requirements review in time to support and inform the JPSS Independent Cost Estimate (ICE). I strongly agree and have directed NESDIS to ensure that they prioritize completing the requirements review no later than September 30, 2012, and ensure the Cost Analysis Requirements Document (CARD) is well executed to support this ICE. In addition I directed the Chief, Resource Operations Management, to contract for an Independent Cost Estimate. The ICE baseline assessment will address the program of record. Additionally, it will include two scenarios beyond the program of record to understand the tradeoffs between reduced capability and cost while at all times maintaining top priority on supporting the weather mission. This is to be managed in concert with the Office of the Secretary and the US Air Force Cost Analysis Agency. I have made it clear that I expect these Independent Cost Estimates to inform our discussion of the FY2014 Budget and for the final estimates to be available inform the FY 2014 Appropriations Process.

As the primary user of NOAA satellite data, the National Weather Service works hand-in-hand with NESDIS to determine critical satellite data needs and to implement the corresponding requirements. The work between NESDIS and the National Weather Service to ensure requirements are well defined and meet the weather forecast mission is absolutely critical to our ability to provide the American people with accurate and timely forecasts and warnings. Any changes to the scope of JPSS will need to be assessed for their effects on NOAA's weather mission. The National Weather Service's National Center for Environmental Prediction (NCEP) and the NOAA-NASA-DoD Joint Center for Satellite Data Assimilation (JCSDA) will conduct Observing System Experiments to provide a quantitative basis for assessing potential program changes.

Conclusion

The NESDIS IRT report made clear that the committee determined the JPSS program is performing well tactically. This assessment is most welcome and gives me confidence that we

can address the remaining challenges identified by the IRT and other stakeholders over the past several months. I fully realize the importance of completing the transformation of the polar-orbiting weather satellite program successfully. We have come too far, and the program is too important to Americans, for us not to succeed. I take the advice provided by the IRT and members of Congress very seriously and commit to swift implementation of the essential improvements needed in oversight, governance, program direction, gap mitigation and cost analysis. My goal is to ensure that these critical programs are strong on all fronts. All of these steps will help to stabilize and strengthen these critical national programs and assure mission success.

NOAA's mandate to provide the nation with accurate and timely weather forecasts and warnings cannot be met without successful NOAA weather satellite programs. We will ensure mission success with the invaluable support and engagement of our key Congressional stakeholders, the vital feedback from independent reviews and the strength of our partnership with NASA.