

REPORT TO CONGRESS

SPACE WEATHER FOLLOW-ON: DETERMINATION OF READINESS

Developed pursuant to: Direction provided in 33 U.S.C. § 878a(b) Major Program Annual Report for satellite development program Elsayed R. Talaat, Ph.D., Director Office of Projects, Planning, and Analysis National Environmental Satellite, Data, and Information Service National Oceanic and Atmospheric Administration

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MAJOR PROGRAM ANNUAL REPORT FOR SATELLITE DEVELOPMENT PROGRAM, 33 U.S.C. § 878a.(b), INCLUDED THE FOLLOWING LANGUAGE

(b)(1) NOAA shall not enter into a contract for development of a major program, unless the Under Secretary determines that—

(A) The technical, cost, and schedule risks of the program are clearly identified and the program has developed a plan to manage those risks;

(B) The technologies required for the program have been demonstrated in a relevant laboratory or test environment;

(*C*) The program complies with all relevant policies, regulations, and directives of NOAA and the Department of Commerce;

(D) The program has demonstrated a high likelihood of accomplishing its intended goals; and

(E) The acquisition of satellites for use in the program represents a good value to accomplishing NOAA's mission.

(2) The Under Secretary shall transmit a report describing the basis for the determination required under paragraph (1) to the appropriate congressional committees at least 30 days before entering into a contract for development under a major program.

(3) The Under Secretary may not delegate the determination requirement under this subsection, except in cases in which the Under Secretary has a conflict of interest.

THIS REPORT RESPONDS TO THE COMMITTEE'S REQUEST.

DETERMINATION OF READINESS BY THE UNDER SECRETARY OF COMMERCE

The Under Secretary of Commerce for Oceans and Atmosphere has determined that the Space Weather Follow-On (SWFO) Program as designed meets the requirements as specified in 33 U.S.C. § 878a.(b):

- A. The technical, cost, and schedule risks of the program are clearly identified and the program has developed a plan to manage those risks;
- B. The technologies required for the program have been demonstrated in a relevant laboratory or test environment;
- C. The program complies with all relevant policies, regulations, and directives of NOAA and the Department of Commerce (DOC);
- D. The program has demonstrated a high likelihood of accomplishing its intended goals; and
- E. The program represents a good value to accomplishing NOAA's mission.

Submitted by:

7.42

Neil A. Jacobs, Ph.D., Assistant Secretary of Commerce for Environmental Observation and Prediction, Performing the Duties of Under Secretary of Commerce for Oceans and Atmosphere

June 15, 2020

Date

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I. Executive Summary

33 U.S.C. § 878a.(b) requires the Under Secretary of Commerce for Oceans and Atmosphere to notify Congress on the readiness of any major program with a total life cycle cost (LCC) greater than \$250 million prior to entering into contracts for development.

The Under Secretary of Commerce for Oceans and Atmosphere has determined the Space Weather Follow-On (SWFO) Program's readiness to begin development activities with NASA through an Interagency Agreement (IAA) and award prime development contracts for: 1) SWFO-Lagrange 1 Observatory; 2) Ground Services Segment; 3) Compact Coronagraph (CCOR); and 4) accommodate CCOR on GOES-U. This report documents the SWFO Program readiness based on the satisfaction of the following criteria:

- A. Identification and management of technical, cost, and schedule risks;
- B. Demonstration of all required technologies in a relevant laboratory or test environment;
- C. Compliance with all relevant policies, regulations, and directives of NOAA and the Department of Commerce (DOC);
- D. High likelihood of accomplishing its intended goals; and
- E. Represents good value to accomplishing NOAA's mission.

II. Program Description

The National Oceanic and Atmospheric Administration (NOAA), an agency within DOC, is formulating the SWFO Program to sustain the baseline operational space-based observation and measurement capabilities for coronagraph imaging and upstream solar wind measurements. The SWFO Program's main goal is to provide critical data to the National Weather Service's (NWS) Space Weather Prediction Center (SWPC).

SWPC provides space weather products and services to meet the needs of users in the United States and internationally. Space weather data is utilized by a broad array of external stakeholders including the electric power industry, airline industry, utility and telecommunications companies, commercial and government satellite operators, U.S. and foreign governments, and the space weather research and academic community. SWFO and related NOAA activities are aligned with the *National Space Weather Strategy and Action Plan* (2019).

Requirements for these measurements derive from the NOAA Space Weather Mission Service Area Observational User Requirements baselined by the NOAA Observing System Council (NOSC) in November 2017. On November 19, 2019, the Deputy Secretary of Commerce signed the SWFO Milestone Decision Memorandum (Appendix C), which indicates that SWFO is manageable within the program's resources identified in the Milestone 2/3 DOC Independent Cost Estimate (ICE), reconciled with the Program Office Estimate (POE), and adopted by the program.

Funding provided within the Consolidated Appropriations Act, 2016, to present continues the development of two CCORs, definition and procurement of the SWFO-Lagrange 1 (SWFO-L1) spacecraft accommodating one CCOR instrument, a Solar Wind Instrument Suite (SWIS), and

continued accommodation of one CCOR on the Geostationary Operational Environmental Satellite–U (GOES-U).

SWIS will include a Solar Wind Plasma Sensor (SWiPS), a set of magnetometers (MAG), and a low-energy ion spectrometer called the SupraThermal Ion Sensor (STIS). SWIS will provide continuity and extend measurements from NOAA's Deep Space Climate Observatory (or DSCOVR).

The SWFO Program is being developed to take advantage of a rideshare opportunity on NASA's Interstellar Mapping and Acceleration Probe (IMAP) mission and instrument accommodation capacity on the GOES-U, both scheduled for launch in 2024.

SWFO-L1 Mission Objectives **CCOR on GOES-U Mission Objectives** Establish operational capability and continuity of space Establish operational capability and continuity of Sun weather observational requirements. Enable space CME imaging observational requirements with multiple weather watches, warnings, forecasting and predictions platforms; primary operational objectives: Coronal White Light Images for detection Coronal Observe CME parameters, shape, density and velocity Mass Ejections (CMEs) · Produce CME characteristics for input into operational Observe CME parameters, shape, density, velocity heliospheric propagation code · Produce CME characteristics for input into · Enable space weather watches, warnings, forecasting operational heliospheric propagation code and predictions · In situ solar wind measurements · Measure solar wind magnetic field, thermal plasma, and energetic particles Mission Overview Mission Overview Launch: 2024 Launch: 2024 Orbit: Lagrange Point 1 (L1) Orbit: GEO · Rideshare with NASA IMAP CCOR Integrated onto GOES-U Solar Pointing · ESPA Grande compatible spacecraft bus Platform CCOR, Solar Wind Instrument Suite, ESA X-Ray Flux · Commanding and data flow through GOES-R Ground Commanding and data flow through SWFO Ground System Services Segment

Figure 1: SWFO Mission Overviews

III. Readiness Criteria

III.A. Technical, Cost, and Schedule Risk Management

The SWFO Program will manage risk through its comprehensive Risk Management program in compliance with NOAA National Environmental Satellite, Data, and Information Service (NESDIS) Risk Management Procedural Requirements (NESDIS-PR 1303.1) shown in Figure 2, NASA NPR 7120.5 NASA Engineering and Program/Project Management Policy, NASA NPR 8000.4 Risk Management Procedural Requirements, and NASA Goddard Space Flight Center (GSFC) risk management policies and documented in the SWFO Risk Management Plan. The Plan details the functional structure and responsibilities for identifying and reporting program risks. The SWFO Program is using a proactive process to identify, communicate, assess, and mitigate risks effectively that have been identified in NOAA and NASA risk assessments.



Figure 2: NESDIS Enterprise Risk Management Framework

III.A.1. Technical Risk

NOAA/NASA have determined that no program level technical risk impedes the procurement of the spacecraft, instruments, and ground services.

This determination is based on studies, market research, and an engineering analysis performed jointly with the GSFC Mission Design Laboratory (MDL) in February 2018. MDL provides expertise in engineering analysis and services for mission conceptual design and analysis. Significantly, MDL subject matter experts found the SWFO-L1 conceptual architecture to be low risk with no new technologies and most parts having previous flight heritage.

These MDL findings were confirmed through a series of requests for information for separate aspects of the system. Responses and subsequent engineering analyses by the NOAA/NASA team indicate that multiple responsible vendors are available in each of the mission components including spacecraft, instrument, mission operation systems, and antenna systems. These findings were reviewed as part of the joint NOAA/NASA acquisition strategy meeting March 20, 2019.

The primary drivers for technical risk in a program are the overall mission complexity and the technology readiness level (TRL) of the major program elements. Because SWFO is a schedule-driven program, the acquisition approach has revolved around mature technologies with high TRL (see discussion under Technological Maturity, section III.B) and minimizing customization.

Subsequent acquisition activities have validated the market research and the availability of high TRL instruments and spacecraft. The Request for Proposals for all three instruments were released in late 2019, and the Request for Offer for the spacecraft was announced in January 2020 through the NASA Rapid Spacecraft Development Office. All the proposals have since been received.

An award for the magnetometer, the first of three SWFO-L1 *in situ* solar wind instruments, occurred on April 10. A second instrument is scheduled for the end of April and the third in June. The spacecraft is the most complex mission element, and the critical path for the overall SWFO-L1 mission. NOAA anticipates concluding the spacecraft contract award before the end of FY 2020.

With work in FY 2019 and continuing in FY 2020, the timeline necessary to meet the NASA IMAP 2024 launch has been maintained.

III.A.2. Cost Risk

Table 1: SWFO Program Resource Baseline (\$M)*

Prior	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	Total
Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
41.7	38.6	108.1	146.9	136.2	97.2	41.2	22.3	21.8	19.7	19.1	692.8

Source: Signed Milestone Decision Memorandum, November 19, 2019 (Appendix C).

*Note: The SWFO Congressional Baseline Report, for purposes of implementing 33 U.S.C. § 878a(c) and (d), will be developed following Program Preliminary Design Review (PDR) of the space and ground systems and delivered following decision authority acceptance at the Key Decision Point-C (KDP-C) milestone.

III.A.3. Schedule Risk

NOAA/NASA have determined the schedule risk to be acceptable within the planned resource levels identified in the MS-2 POE/ICE budget profile, the Consolidated Appropriations Act, 2020, and FY 2021 President's Budget request.

The SWFO Program is carrying schedule risks for the SWFO-L1 mission schedule and the Ground Services Segment schedule. Once flight and ground contracts are awarded we will have contractor schedules that will enable the Program to provide critical path and days of reserve assessments. One of the criteria for contract award is the ability to meet the rideshare. By separating the bus and instrument procurements, the instruments are able to be awarded earlier than would have been possible with a combined spacecraft and instrument award, reducing schedule risk for mission critical instruments.

The Milestone Decision Memorandum (MDM) describes the need for expedient contract actions, in particular for the SWFO-L1 spacecraft bus, as well as adequate funding to execute the program on a compressed schedule. Given that the SWFO-L1 spacecraft bus must be awarded no later than October 2020, the MDM directs the SWFO Program provide a plan prior to spacecraft award that demonstrates funding availability necessary to meet the schedule, and accounts for the possibility of a continuing resolution during the first quarter of FY 2021. NOAA is currently working on a plan in response to the direction provided in the MDM. With current FY 2020 appropriations and the identified funding profile for the FY 2021 and beyond, NOAA anticipates that contract action-related schedule risks have been mitigated. Additionally, NOAA is working closely with NASA to ensure that IMAP and SWFO-L1 technical and schedule milestones are fulfilled in order to meet our mutual launch date.

	SWFO Program Major Milestones
FY 2020	
• Instru	ment Request for Proposals (RFP) Release
• DOC	Milestone-2/3 Review
• SWFC	D-L1 Spacecraft Request for Offer (RFO) Release
• Instru	ment Award
• SWFC	D-L1 Spacecraft Award
FY 2021	
• CCOF	R delta Critical Design Review (CDR) for SWFO-L1
• Groun	d Services Award
• SWFC	Program System Requirements Review/Mission Definition Review/ System
Defini	tion Review
• CCOF	R GOES-U Integration
• SWFC) PDR
FY 2022	
• KDP-	~
) CDR
FY 2023	
	ments ship to SWFO L-1
• KDP-	D
FY 2024	
	S-U Launch
	D-L1 Spacecraft Ship
FY 2025	
	D-L1 Spacecraft Launch
• SWFC	D-L1 Initial Operational Capability

Figure 3: SWFO Program Major Milestones

The flight systems schedule was identified as aggressive by the MDL exercise. The schedule was developed following market capability research and industry responses to a Request for Information conducted in October 2018 by GSFC on behalf of SWFO; the acquisition strategy was approved in March 2019. The acquisition strategy leverages the efficient NASA Rapid Spacecraft Development Office for spacecraft procurement and separate low-risk instrument procurements to mitigate schedule risk.

SWFO is developing the Ground Services Segment that will include command and control, data acquisition, product generation and product distribution, and long term archive and access at NOAA's National Centers for Environmental Information.

Upon award of the spacecraft and ground services contracts, the schedule will be updated and schedule reserve defined. The SWFO Program will establish the Baseline Integrated Master Schedule after the Program PDR. Stability and timeliness of the funding profile is necessary to maintain the schedule necessary to meet the rideshare launch date for SWFO-L1 and the launch date for GOES-U.

III.B. Technological Maturity

The SWFO Program has been designed to have high technical maturity. There is no new technology development foreseen for the SWFO Program. The only component in the program that underwent a technology development effort was CCOR. CCOR successfully met the TRL requirement to be TRL 6 by the CCOR PDR in September 2018. Achievement of TRL 6 means that models or prototypes of all the components have been successfully tested in the environment in which the component will operate. All other components are expected to be greater than TRL 6 at contract award. Market research via RFI indicates that multiple organizations can develop and deliver the solar wind instruments (STIS, SWiPS, and MAG) for integration to the SWFO-L1 spacecraft within the mission schedule.

SWFO Instruments	Description
SWiPS	 Measures flux of major population of solar wind plasma as a function of energy Used to generate warning (~15-60 minutes) ahead of impending geomagnetic activity
STIS	 Measures ion flux population Aids in estimating arrival time of coronal mass ejections (CME)
MAG	 Measures magnetic field vector that has travelled out from the Sun with the solar wind Used to generate warnings of the severity of geomagnetic activity
CCOR	 Detects CMEs from the surface of the Sun Measures and images solar coronal white light, including CME imagery Used to provide 1-4 day warnings of geomagnetic storms

III.C. Compliance with Policies, Regulations, and Directives

NOAA has determined that the SWFO program is in compliance with applicable policies, regulations, and directives of NOAA and DOC.

In preparation for the initiation of the SWFO Program, development activities, numerous reviews, and approvals have been required to demonstrate the program has met the required NOAA, NASA, and DOC policies, regulations, and directives.

The SWFO Program has satisfied the requirements set forth in 33 U.S.C. §878a.(b). In addition, the SWFO Program has satisfied the provisions of the NOAA Administrative Order (NAO) 216-108 "Requirements Management" by rigorous documentation of program requirements through a tiered requirements documentation process. Similarly, NOAA/NASA under the IAA will meet the requirements of NASA Procedural Requirement 7120.5d, "NASA Space Flight Program and Project Management Requirements."

III.C.1. Documentation

The NOAA/NASA launch dates and user/science requirements for the SWFO Program have been documented in the Level 1 Requirements Document, which is controlled by NOAA's Deputy Under Secretary for Oceans and Atmosphere. The technical requirements are further detailed in three Level 2 Documents for the SWFO-L1 mission (SWFO-L1 Level 2 Requirements Document), the CCOR accommodated on GOES-U (SWFO GOES-U Level 2 Requirements Document), and the Ground Services Segment (SWFO Ground Services Level 2 Requirements Document), that are each controlled by the SWFO program manager. These requirements will be further detailed at Level 3, including Functional Specifications and Interface definitions, and will be managed by the appropriate project manager.

III.C.2. Management

NOAA has responsibility for the SWFO program budget, program requirements, Ground Services Project leadership, operations, data product generation, and product distribution to the operational users. SWFO is a NOAA Program established under the authority of the IAA between NOAA and NASA dated July 29, 2019. Program implementation is proceeding consistent with the Acquisition Strategy approach agreed to by NOAA and NASA on March 20, 2019.

Management processes will follow the joint agency processes described in the NOAA-NASA Satellite Program and Projects Management Control Plan (MCP) and the NASA Space Flight Program and Project Management Requirements (NPR 7120.5). MCP also satisfies the requirements of DOC Scalable Acquisition Project Management Framework. Figure 5 illustrates the program interagency lines of authority and governance between NOAA and NASA as provided in the MCP. NOAA and NASA provide joint programmatic leadership for the SWFO Program through programmatic and institutional authority and direct staffing of the SWFO program director and deputy program manager respectively.

NASA has responsibility for system engineering, safety and mission assurance, SWFO-L1 Flight Project leadership, launch accommodation, and interfaces to the Ground Services Project. The Naval Research Laboratory (NRL) is responsible for the development and delivery of two CCOR instruments, one for integration by NASA onto the SWFO-L1 spacecraft, and one for integration by the GOES-R Series Program onto the GOES-U spacecraft. This work is performed under the authority of the IAA between NOAA and NRL dated June 10, 2019. For SWFO, the GOES-R Series Program is managing the CCOR development, integration of the first CCOR to GOES-U and delivery of the second CCOR to SWFO-L1 under the Management Agreement dated August 6, 2019.

The European Space Agency (ESA) has offered to contribute an X-ray flux monitor for integration by NASA to the SWFO-L1 spacecraft. An agreement between NOAA and ESA is being developed. The X-ray flux monitor would be an enhancement to the SWFO-L1 mission, but its inclusion is not a criterion for launch. If the X-ray flux monitor schedule does not match the SWFO-L1 need date, the instrument will not be included.



Figure 5: Interagency Lines of Authority and Governance

Figure 5 shows the governance structure provided in the MCP. The SWFO Program is reviewed monthly at the GSFC Monthly Status Review meeting that is the GSFC Center Management Council chaired by the GSFC deputy center director, and at the NOAA-NASA Agency-level Program Management Council meetings chaired by the NOAA Assistant Secretary of Commerce for Environmental Observation and Prediction. The NESDIS/SMD Directorate Program Management Council (DPMC) convenes for the sole purpose of conducting KDP reviews.



Figure 6: Key Decision Point Authority

Figure 6: DOC delegated Milestone Decision Authority for SWFO to the Under Secretary of Commerce for Oceans and Atmosphere (the NOAA administrator). Per direction of NOAA and DOC, the SWFO Program successfully completed the Milestone-2/3 Review in November 2019. The Under Secretary of Commerce for Oceans and Atmosphere / NOAA Administrator has final decision authority for all programmatic KDP under the MCP.

III.D. Likelihood of Program Meeting Goals

NOAA needs SWFO to maintain continuity of the Nation's operational space weather observational requirements, enabling space weather watches, warnings, forecasting and predictions. This requires a launch of SWFO-L1 as a rideshare on the NASA IMAP mission in 2024. NOAA assessed the technical maturity, evaluated the cost and schedule, and mitigated risk elements leading to high probability of meeting program goals. In developing the program, NOAA has defined and documented a rigorous set of mission requirements in the Level 1 Requirements Document. NOAA and NASA have set up the appropriate management structure to execute the program.

III.E. SWFO Program is a Good Value to Accomplishing NOAA's Mission

NOAA and NASA have established the SWFO Program to sustain a foundational set of space-based observations of CME imagery and solar wind measurements that support the SWPC's space weather forecasting mission. The SWFO Program is directly aligned with NOAA and NASA strategic goals. Requirements for these measurements derive from the NOAA Space Weather Mission Service Area Observational User Requirements baselined by the NOSC in November 2017. By continuing and sustaining operational space weather observation platforms and capabilities and supporting improved observational modeling, the SWFO Program supports NOAA's goal to understand and predict highimpact weather events, including space weather. The SWFO Program also supports other key policy initiatives including: the United States National Space Weather Strategy and Action Plan; DOC's Strategic Objective 3.3: Reduce Extreme Weather Impacts; and NWS Strategic Goal 2: Harness cutting-edge science, technology, and engineering to provide the best observations, forecasts, and warnings. SWFO furthers the NESDIS strategic principles of commitment through continuity of products and services; community through combining internal strengths with contributions and collaborations and partnerships; and capabilities through leverage of observing system integrated architecture and use-inspired science.

The SWFO Program is a good value to accomplishing these objectives through its continued leveraging of the multi-decadal partnership between NOAA and NASA.

IV. Conclusion

The Under Secretary of Commerce for Oceans and Atmosphere has determined with respect to the SWFO Program's readiness:

- A. The technical, cost, and schedule risks of the program are clearly identified and the program has developed a plan to manage those risks;
- B. The technologies required for the program have been demonstrated in a relevant laboratory or test environment;
- C. The program complies with all relevant policies, regulations, and directives of NOAA and the DOC;
- D. The program has demonstrated a high likelihood of accomplishing its intended goals; and
- E. The program represents a good value to accomplishing NOAA's mission.

Appendix A: Acronym List

CCOR	Compact Coronagraph
CME	Coronal Mass Ejection
CDR	Critical Design Review
DOC	Department of Commerce
DPMC	Directorate Program Management Council
DSCOVR	Deep Space Climate Observatory
ESA	European Space Agency
GOES	Geostationary Operational Environmental Satellite
GSFC	Goddard Space Flight Center
IAA	Interagency Agreement
ICE	Independent Cost Estimate
IMAP	Interstellar Mapping and Acceleration Probe
KDP	Key Decision Point
L1	Lagrange Point 1
LCC	Life Cycle Cost
MAG	Magnetometer
MCP	Management Control Plan
MDL	Mission Design Laboratory
MDM	Milestone Decision Memorandum
MSR	Monthly Status Review
NASA	National Aeronautics and Space Administration
NAO	NOAA Administrative Order
NOAA	National Oceanic and Atmospheric Administration
NOSC	NOAA Observing System Council
NRL	Naval Research Laboratory
NWS	National Weather Service
PDR	Preliminary Design Review
POE	Program Office Estimate
RFI	Request for Information
RFO	Request for Offer
RFP	Request for Proposal
RSDO	Rapid Spacecraft Development Office
STIS	SupraThermal Ion Sensor
SMD	Science Mission Directorate
SWFO-L1	Space Weather Follow-On – Lagrange 1
SWiPS	Solar Wind Plasma Sensor
SWIS	Solar Wind Instrument Suite
SWPC	Space Weather Prediction Center
TRL	Technology Readiness Level

Appendix B: References

NASA Procedural Requirement 7120.5 NASA Engineering and Program/Project Management Policy

NASA Procedural Requirement 7120.5d, "NASA Space Flight Program and Project Management Requirements"

NASA Procedural Requirement 8000.4 "Risk Management Procedural Requirements"

NASA Goddard Space Flight Center risk management policies

SWFO Risk Management Plan

SWFO Milestone Decision Memorandum, November 19, 2019

National Space Weather Strategy and Action Plan (2019)

NOAA Administrative Order (NAO) 216-108 "Requirements Management"

NOAA Congressional Report: Space Weather Follow-On: Space Weather Observation Needs and Plans, Including and Beyond a Solar Coronagraph. March 2019

Appendix C: Signed Milestone Decision Memorandum, November 19, 2019



THE DEPUTY SECRETARY OF COMMERCE Washington, D.C. 20230

NOV 19 2019

MEMORANDUM FOR DR. NEIL JACOBS, ASSISTANT SECRETARY OF COMMERCE FOR ENVIRONMENTAL OBSERVATION AND PREDICTION, PERFORMING THE DUTIES OF UNDER SECRETARY OF COMMERCE FOR OCEANS AND ATMOSPHERE

FROM: Karen Dunn Kelley Deputy Secretary of Commerce

SUBJECT: Milestone Decision Memorandum (MDM) Approval of Milestone 2/3 for the Space Weather Follow-On Program

The National Oceanographic and Atmospheric Administration (NOAA)/National Environmental Satellite, Data, and Information Service (NESDIS) presented the Space Weather Follow On (SWFO) Program to the Milestone Review Board (MRB) for Milestone 2/3 approval. The MRB Executive Secretary held an Integrated Product Team (IPT) review of the program. This Milestone Decision Memorandum (MDM) sets out my expectations for officials at NOAA for the SWFO Program.

The Program's presentation to the IPT highlights the criticality of the SWFO program schedule in order to maintain the continuity of space weather data. Existing space weather satellite programs – such as ACE, DSCOVR, and SOHO – are well past their mission design life and are projected to be completely operationally inactive by 2026. In order to meet the L1 rideshare opportunity with NASA's Interstellar Mapping and Acceleration Probe (IMAP), the completed SWFO-L1 Space Vehicle (SV) must be delivered for launch integration by April 1, 2024.

To meet this aggressive program schedule requires expedient contract actions, in particular for the L1 Spacecraft bus, as well as adequate funding to execute the program on a compressed schedule. Since Fiscal Year (FY) 2020 and FY 2021 budget appropriations are not yet enacted, this remains a risk. Therefore, prior to Spacecraft contract award, I direct NOAA to provide the MRB Secretariat an L1 schedule assessment that meets the program rideshare commitment, and a plan that demonstrates the assurance of funding availability necessary to meet this schedule. This plan should account for the possibility of a continuing resolution during the first quarter of FY 2021 and identify how NOAA and the program would respond to maintain the schedule.

In May 2019, the Acquisition Review Board (ARB) provided conditional approval for SWFO to release the SWFO-L1 instrument Request for Proposals. The IPT's review and findings support the previous ARB's approval. Successful MS 2/3 approval constitutes final ARB approval per the Department's combined review structure.

The MS2/3 approval establishes the Department's program baseline, summarized below in Table-1. The program shall report execution against the program baseline in the prescribed Office of Acquisition Management format on an annual basis each January, incorporating the cost, schedule and cost performance data from the previous fiscal year.

SWFO Program Resource Baseline

							SWI	FO	Prop	gra	m Re	so	urce	Bas	seline				Same and				
Prior Year		FY20		Y20 FY21		FY22		FY23		FY24		FY25		FY26		FY27		FY28		FY29		Total	
\$	41.7	\$	38.6	\$	108.1	\$	146.9	\$	136.2	\$	97.2	\$	41.2	\$	22.3	\$	21.8	\$	19.7	\$	19.1	\$	692.8
											Table	-1											

In my capacity as Milestone Decision Authority (MDA) for the Department, I approve Milestone 2/3 for the SWFO Program, subject to the above direction.

cc: SWFO MRB Members

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