

27 September 1999

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Space Weather Architecture Guidance Memorandum

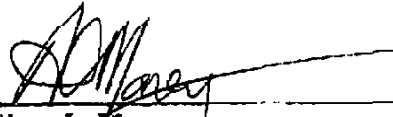
The National Security Space Architect (NSSA) recently concluded a year-long Space Weather Architecture Study. The study recommendations (Attachment 2) are approved as guidance for future Space Weather support capabilities and will serve as the basis for an Integrated Space Weather Architecture Transition Plan that will describe how the recommendations will be implemented.

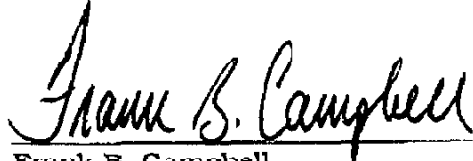
ASD(C3I), in coordination with the National Oceanic and Atmosphere Administration, will oversee a Space Weather Transition Team composed of key Space Weather stakeholders. The stakeholders will be responsible for developing the Transition Plan in accordance with the chart at Attachment 3. This plan will be presented for SSG review and approval 90 days from the date of this memorandum.

The transition team should address all the recommendations; however, the focus should be on the following specific activities that have high potential for near-term payoff in supporting national security users:


- Specifying the radiation environment at all satellite altitudes;
- Specifying and forecasting ionospheric effects (e.g., scintillation);
- Developing space weather models with the supporting R&D that more accurately characterize the space environment; and
- Update the space weather requirements.

Questions on this action should be directed to CAPT Jack Snowden, Director of Space Systems, ODASD (C3ISR&S), at 703-607-0753.

  
Arthur L. Money  
Senior Civilian Official  
Office of the Assistant Secretary of Defense  
(Command, Control, Communications & Intelligence)



Frank B. Campbell  
Lieutenant General, USAF,  
Director for Force Structure,  
Resources, and Assessment

  
Joan A. Dempsey  
Deputy Director of Central Intelligence  
for Community Management

Attachments:

1. Distribution
2. Recommendations
3. Transition Responsibilities

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## **Space Weather Architecture Study Recommendations**

### **1. Space Weather Architecture Vector**

- Increase emphasis on Operational Model development
- Ensure improved Operational Capabilities based on User Needs
  - National Security priorities include Ionospheric and Radiation Environment Specifications and Forecasts
  - Civil priorities also include Geomagnetic Warnings and Forecasts
- Evolve to improved Forecast Capabilities, as phenomenology is better understood, models mature, and user needs are better defined

### **2. Space Weather Importance Awareness**

- Integrate Space Weather information (system impacts and space weather environment data) into User Systems through inclusion in:
  - User Education
  - Simulations
  - Wargaming and Training
  - CONOPS
  - Contingency Planning
  - System Anomaly Resolution
  - Damage Assessment and Reporting

### **3. Space Weather Requirements**

- Develop a set of Approved Validated Space Weather Requirements focused on User Needs
- Update Requirements as User Needs and Technology evolve

### **4. Coordinated Space Weather Architecture Acquisition**

- Identify a cognizant organization in DoD to:
  - Manage the Acquisition of DoD Operational Space Weather Architecture and focus DoD Space Weather Research and Development
- Ensure Validated Models are developed in conjunction with Sensors and User Needs
- Ensure effective transitioning of R&D into Operations
  - Coordinate Acquisition and Integration of Space Weather Resources across Civil agencies and National Security Interest

### **5. Space Weather Information Archive**

- Consolidate and Expand the Existing Archival System
  - Capture Space Weather Environmental Data and System Impacts
- The Archival System should be:
  - Centrally Managed
  - User Focused
  - Incorporate Standard Formats
  - Accommodate Multi-level Security

## **6. Integrated User Information**

- Provide Space Weather Information:
  - In User Impact Terms
  - Routinely Available through Common Dissemination Channels
  - Integrated with Other User Information as required

## **7. Integrated Space Weather Center**

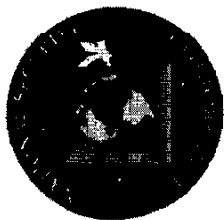
- Evolve to an Integrated Space Weather Center capability to include:
  - Space Weather Expertise available for User Consultation and Support
  - A National Security Support Cell to produce Tailored Products
  - Back-up capability to provide support in the event of Natural Emergencies or Catastrophic Equipment Failures

## **8. Space Weather Research & Development**

- Provide a Robust SWx Research and Development Program to:
  - Develop and Implement the Improved Models
  - Provide options for further growth
- Continue to Leverage Research and Development Missions
  - Enhance Operational Products until Operational Systems are ready
- Develop and Implement Standardized Processes to rapidly and efficiently Transition R&D into needed Operational Products

## **9. Space Weather and Man-Made Effects Information Coordination**

- Support the Space Control Protection Mission by providing timely Space Weather Information
- Incorporate the Operational Specification and Forecasting of Space Environmental Effects of Man-made (Primarily Nuclear) Events as a Mission into the Space Weather Architecture



# Space Weather Architecture Transition Planning Responsibilities

## SPACE WEATHER

- ☛ - Overall S - Support
- ★ - OPR ○ - OCR

	ASDC3I	NOAA	USSPACE	AFSPC	AF/XOW	NASA	SMC	LABs	NRO	NSF	DTRA	NAVSPACE	ARSPACE	DOT/FAA	DOE	DOI	OFCM	NSSA	S	
<b>OVERALL TRANSITION PLANNING</b>																				
1. Pursue Recommended SWx Arch Vector	☛	★	★	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
2. Integrate SWx into User Systems		★	★	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
3. Develop & Update SWx Requirements		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
4. Identify Cognizant DoD Acquisition Agent		○	○	○	○	○	★													
5. Consolidate and Expand Archival System		★	○	○	○	○		○	○	○		○	○		○	○	○	○	○	○
6. Provide SWx Info in User Terms and use Common Dissemination Channels		○	○	○	★		○	○				○	○	○	○	○	○	○	○	○
7. Evolve to an Integrated SWx Center		★		○	★	○	○		○								○			
8a. Provide a robust R&D to develop Operational Capabilities		○			○	★	○	★		○					○		○			
8b. Leverage R&D missions	○	★		★		★	○	○	○	○		○	○		○	○	○	○	○	○
9a. Provide timely data to Space Control Mission			○	★					○											
9b. Incorporate Man-made effects into SWx Arch	○			★		○														○