



May 3, 2005

Reply to Attn of:

480

MEMORANDUM FOR THE RECORD

National Environmental Policy Act (NEPA) Compliance for Polar Operational
Environmental Satellites (POES) Program, NOAA-N and NOAA-N' Satellites

1.0 Introduction

The NEPA of 1969, as amended (42 U.S.C. 4321, *et seq.*), requires Federal agencies to consider the environmental impacts of a project in their decision making process. To comply with NEPA and associated regulations (the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA [40 CFR Parts 1500-1508] and NASA policy and procedures [14 CFR Part 1216 Subpart 1216.3]), NASA has prepared an Environmental Assessment (EA) for routine payloads launched on Expendable Launch Vehicles (ELV's) from Cape Canaveral Air Force Station (CCAFS) and Vandenberg Air Force Base (VAFB) (Ref: *Final Environmental Assessment for Launch of NASA Routine Payloads on Expendable Launch Vehicles from Cape Canaveral Air Force Station, Florida, and Vandenberg Air Force Base, California*, June 2002). The EA assesses the environmental impacts of missions launched from CCAFS and VAFB with spacecraft that are considered routine payloads.

Spacecraft defined as routine payloads would utilize materials, quantities of materials, launch vehicles and operational characteristics that are consistent with normal and routine spacecraft preparation and flight activities at VAFB, CCAFS, and the Kennedy Space Center. The environmental impacts of launching routine payloads from VAFB and CCAFS fall within the range of routine, ongoing and previously documented impacts that have been determined not to be significant. Spacecraft covered by this EA meet specific criteria ensuring that the spacecraft, its operation and decommissioning, do not present any new or substantial environmental or safety concerns.

To determine the applicability of a routine payload classification for a mission launched from VAFB and CCAFS and coverage under the NASA routine payload EA, the mission is evaluated against the criteria defined in the EA using the Routine Payload Checklist (RPC).

2.0 Mission Description

The Geostationary Operational Environmental Satellite (GOES)/ Polar Operational Environmental Satellite (POES) program is a key element in National Weather Service (NWS) operations.

The GOES/POES mission is composed of two geostationary satellites and two polar orbiting satellites. These satellites operate in pairs. The geostationary satellites, GOES-East covering the East Coast and GOES-West covering the West Coast, provide real-time weather data for use in short-term weather forecasting (warnings of severe weather) and space environment monitoring, as well as research and development. The polar orbiting satellites (POES) primarily provide long-range weather forecasting, ensuring that non-visible data, for any region of the Earth, are no more than six hours old.

The POES Program is a cooperative effort between NASA and the National Oceanic and Atmospheric Administration (NOAA), the United Kingdom (UK), and France.

NOAA-N and -N', are the latest in the series of polar orbiting satellites (POES) known as the Advanced Television Infrared Observation Satellites (TIROS) - N (ATN). NASA's Goddard Space Flight Center (GSFC) is responsible for the construction, integration and launch of NOAA satellites. Operational control of the spacecraft is turned over to NOAA after it is checked out on orbit, normally 21 days after launch.

NOAA-N is scheduled for launch in May 2005 from VAFB on a two-stage Delta II launch vehicle and NOAA-N' is scheduled for launch in the 1st quarter 2008.

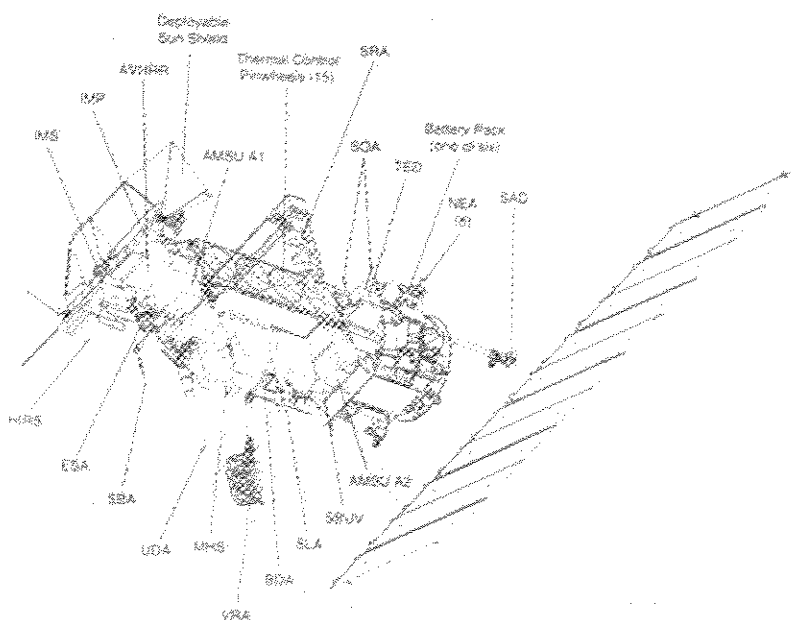
POES data provides economic, humanistic, and environmental benefits on a continuous, reliable basis. The benefits that directly enhance the quality of human life and protection of Earth's environment include:

- Over 50% of the U.S. public utilizes 3-to-5 day weather forecasts for planning recreational and business activities
- City, state and federal government agencies utilize TIROS data products to manage resources, plan civic and industrial expansion, schedule services, and monitor population growth
- Countless lives and properties have been saved by monitoring severe storm movement and forecasting national disasters
- From monitoring ozone levels and animal migrations patterns to forecasting and detecting forest fires, TIROS is a vital tool of environmental research and protection
- Global data collected about the earth is used to monitor the environment and trend changes over time

- Search and Rescue instruments carried on POES satellites contributed to saving over 17,000 lives

NOAA-N is a three-axis stabilized spacecraft that will be launched into an 870 km (470 nmi) circular, near-polar orbit.

The spacecraft will continue to provide a polar-orbiting platform to support (1) environmental monitoring instruments for imaging and measuring the Earth's atmosphere, its surface, and cloud cover, including Earth radiation, atmospheric ozone, aerosol distribution, sea surface temperature, and vertical temperature and water profiles in the troposphere and stratosphere; (2) measurement of proton and electron flux at orbit altitude; (3) data collection from remote platforms; and (4) the Search and Rescue Satellite-Aided Tracking (SARSAT) system.



The POES collect global data on cloud cover; surface conditions such as ice, snow, and vegetation; atmospheric temperatures; and moisture, aerosol, and ozone distributions; and collect and relay information from fixed and moving data platforms. The instruments carried by POES measure energy levels in specific wavelengths, which are telemetered to the ground and input into complex software that generate the products. The satellites carry seven scientific instruments and two for Search and Rescue.

The NOAA-NN instruments include: the Advanced Very High Resolution Radiometer (AVHRR), the High Resolution Infrared Radiation Sounder/4 (HIRS/4), the Advanced Microwave Sounding Units (AMSU-A1 and -A2), the Microwave Humidity Sounder (MHS), and the Solar Backscatter Ultraviolet Radiometer (SBUV/2), the Data Collection System (DCS), the Search and Rescue Repeater (SARR), the Search and Rescue Processor (SARP), and the Space Environment Monitor (SEM).

The components utilized in the NOAA-N and NOAA-N' satellites are made of materials normally encountered in the space industry. NOAA-N and NOAA-N' will not use any lasers or radioactive materials. NOAA-N and NOAA-N' will not carry any pathogenic organisms, nor will the NOAA-N and NOAA-N' missions pose any substantial hazards or environmental concerns.

3.0 NASA Routine Payload Determination

The NOAA-N and NOAA-N' missions has been evaluated against the NASA routine payload EA for launches from CCAFS and VAFB, using the RPC (see enclosed Evaluation Recommendation Package). The evaluation indicates that the missions meet the criteria for a routine payload. The missions do not present any unique or unusual circumstances that could result in new or substantial environmental impacts. Based on this review, it is determined that the NOAA-N and NOAA-N' missions qualify as a routine payloads and fall within the scope of the reference routine payload EA. No additional NEPA action or documentation is required.



Edward J. Weiler
Director

Enclosure

EVALUATION RECOMMENDATION PACKAGE

**Record of Environmental Consideration
Routine Payload Checklist
NEPA Environmental Checklist**

Enclosure

RECORD OF ENVIRONMENTAL CONSIDERATION

1. Project Name: Polar Operational Environmental Satellites (POES) Project
NOAA-N and NOAA-N' Satellites

2. Description/location of proposed action: NASA builds operational weather
satellites for NOAA. The satellites will be launched from VAFB on a Delta II.

Date and/or Duration of project: NOAA-N (Launch 2nd Q 05)
NOAA-N' (Launch 1st Q 08)

3. It has been determined that the above action:

a. Is adequately covered in an existing EA or EIS.
Title: Final Environmental Assessment for Launch of NASA Routine Payloads
on ELVs from CCAFS, Florida and VAFB, California
Date: June 2002

b. Qualifies for Categorical Exclusion and has no special circumstances which
would suggest a need for and Environmental Assessment.
Categorical Exclusion: _____

c. Is exempt from NEPA requirements under the provisions of:

d. Is covered under EO 12114, not NEPA.

e. Has no significant environmental impacts as indicated by the results of an
environmental checklist and/or detailed environmental analysis.
(Attach checklist or analysis as applicable)

f. Will require the preparation of an Environmental Assessment.

g. Will require the preparation of an Environmental Impact Statement.

h. Is not federalized sufficiently to qualify as a major federal action.

Beth Montgomery
Beth Montgomery NEPA Coordinator, Code 250

4/12/05
Date

Karen Halterman
Karen Halterman Project Manager, Code 480

4/13/05
Date

NASA Routine Payload Checklist (1 of 2)

PROJECT NAME: Polar Operational Environmental Satellites (POES) Project NOAA-N and N' Satellites DATE OF LAUNCH: March 19, 2005 (NOAA-N) March 2008 (NOAA-N')

PROJECT CONTACT: Karen Halterman PHONE NUMBER: 301-286-3250 MAILSTOP: Code 480

PROJECT START DATE: 1974 PROJECT LOCATION: GSFC

PROJECT DESCRIPTION: NASA builds operational weather satellites for NOAA

A. SAMPLE RETURN:		YES	NO
1.	Would the candidate mission return a sample from an extraterrestrial body?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B. RADIOACTIVE SOURCES:		YES	NO
1.	Would the candidate spacecraft carry radioactive materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	If Yes, would the amount of radioactive sources require launch approval at the NASA Associate Administrator level or higher according to NPG 8715.3 (NASA Safety Manual)?	<input type="checkbox"/>	<input type="checkbox"/>
Provide a copy of the Radioactive Materials Report as per NPG 8715.3 Section 5.5.2.			
C. LAUNCH AND LAUNCH VEHICLES:		YES	NO
1.	Would the candidate spacecraft be launched using a launch vehicle/launch complex combination other than those indicated in Table 1 below?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Would the proposed mission cause the annual launch rate for a particular launch vehicle to exceed the launch rate approved or permitted for the affected launch site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments:			
D. FACILITIES:		YES	NO
1.	Would the candidate mission require the construction of any new facilities or substantial modification of existing facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	If Yes, has the facility to be modified been listed as eligible or listed as historically significant?	<input type="checkbox"/>	<input type="checkbox"/>
Provide a brief description of the construction or modification required:			
E. HEALTH AND SAFETY:		YES	NO
1.	Would the candidate spacecraft utilize any hazardous propellants, batteries, ordnance, radio frequency transmitter power, or other subsystem components in quantities or levels exceeding the Envelope Payload characteristics (EPCs) in Table 2 below?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Would the candidate spacecraft utilize any potentially hazardous material as part of a flight system whose type or amount precludes acquisition of the necessary permits prior to its use or is not included within the definition of the Envelope Payload (EP)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	Would the candidate mission release material other than propulsion system exhaust or inert gases into the Earth's atmosphere or space?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	Would launch of the candidate spacecraft suggest the potential for any substantial impact on public health and safety?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.	Would the candidate spacecraft utilize a laser system that does not meet the requirements for safe operation (ANSI Z136.1-2000 and ANSI Z136.6-2000)? For Class III-B and IV laser operations, provide a copy of the hazard evaluation and written safety precautions (NPG 8715.3).	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Would the candidate spacecraft contain pathogenic microorganisms (including bacteria, protozoa, and viruses) which can produce disease or toxins hazardous to human health?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comments:			

NASA Routine Payload Checklist (2 of 2)

PROJECT NAME: Polar Operational Environmental Satellites (POES) Project NOAA-N and N' Satellites DATE OF LAUNCH: March 19, 2005 (NOAA-N) March 2008 (NOAA-N')

PROJECT CONTACT: Karen Halterman PHONE NUMBER: 301286 3250 MAILSTOP: Code 480

PROJECT START DATE: 1974 PROJECT LOCATION: GSFC

PROJECT DESCRIPTION: NASA builds operational weather satellites for NOAA

F. OTHER ENVIRONMENTAL ISSUES:		
	YES	NO
1. Would the candidate spacecraft have the potential for substantial effects on the environment outside the United States?		X
2. Would launch and operation of the candidate spacecraft have the potential to create substantial public controversy related to environmental issues?		X
Comments:		

Table 1: Launch Vehicles and Launch Pads

Launch Vehicle	Eastern Range (CCAFS Launch Complexes)	Western Range (VAFB Space Launch Complexes)
Atlas IIA & AS	LC-36	SLC-3
Atlas IIIA & B	LC-36	SLC-3
Atlas V Family	LC-41	SLC-3
Delta II Family	LC-17	SLC-2
Delta III	LC-17	N/A
Delta IV Family	LC-37	SLC-6
Athena I & II	LC-46 or -20	California Spaceport
Taurus	LC-46 or -20	SLC-576E
Titan II	N/A	SLC-4W
Pegasus XL	CCAFS skidstrip KSC SLF	VAFB airfield

Table 2: Summary of Envelope Spacecraft Subsystems and Envelope Payload Characteristics (EPC)

Structure	Unlimited: aluminum, magnesium, carbon resin composites, and titanium Limited: beryllium [50 kg (110 lb)]
Propulsion	Mono- and bipropellant fuel; 1000 kg (2200 lb) (hydrazine); 1000 kg (2200 lb) (monomethylhydrazine) Bipropellant oxidizer; 1200 kg (2640 lb) (nitrogen tetroxide) Ion-electric fuel; 500 kg (1100 lb) (Xenon) SRM; 600 kg (1320 lb) (AP)-based solid propellant
Communications	Various 10-100 W (RF) transmitters
Power	Solar cells; 150 A-Hr (Ni-H ₂) battery; 300 A-Hr (LiSOC) battery; 150 A-Hr (NiCd) battery
Science instruments	10 kW radar ANSI safe lasers (Section 4.1.2.1.3)
Other	Class C EEDs for mechanical systems deployment Radioisotopes limited to quantities that are approved for launch by NASA Nuclear Flight Safety Assurance Manager Propulsion system exhaust and inert gas venting

NEPA Environmental Checklist

1. Project/Program

Polar Operational Environmental Satellites (POES) Project NOAA-NN' Satellite

2. Points of Contact

Project Manager: Karen Halterman Code: 480 Telephone: 301 286 3250

S/C Manager: Steve Pszcolka Code: 480 Telephone: 301 286 8932

Instrument Manager: Mary Walker Code: 480 Telephone: 301 286 2570

Other: Deputy PM: Wayne McIntyre Code: 480 Telephone: 301 286 6827

3. Schedule

Formulation Process (Phase A/B) not applicable

Implementation Process (Phase C/D): 1974 to 2008

Launch Date: NOAA-N March 19, 2005 NOAA-N' 1st Quarter 2008

Other Milestone Dates: January 13, 2005 ship NOAA-N to VAFB

4. Current status

NOAA-N is in final launch processing

5. Project Description

a. Purpose/Need: NASA builds environmental satellites for NOAA. NOAA-NN' will be operational weather satellites.

b. Spacecraft/Instruments: NOAA-N/AVHRR, AMSU-A1, AMSU-A2, AVHRR, HIRS, SEM, SBUV, DCS, SARR, and SARP

c. Launch Vehicle: Delta II

d. Launch Site: VAFB

e. Alternatives (to or for the mission): None

f. NASA's Involvement/Responsibility: NASA is responsible for building the satellites and launching them

g. Participants/Locations: NOAA operates the satellites from Suitland, MD

h. Mission Life: 2 years

i. End of mission, Re-entry: Will not reenter for more than 500 years

6. Is there anything controversial about the mission?

No

7. Is there anything unique, unusual, exotic about the mission, spacecraft, and instruments?

No

8. Is there any environmental documentation for spacecraft, launch vehicle (NEPA or EO12114)?

NOAA-NN' is covered by the general purpose NASA environmental documentation

9. Is the mission compliant with NASA policy and guidelines for Orbital Debris? (NPD 8710.3 and NSS 1740.14)

No. NOAA-NN' does not meet Guideline 6.1.a of NASA Safety Standard 1740.14, which states that a spacecraft come out of low earth orbit within 25 years of end of mission. The spacecraft design is such that a reentry from that orbit (833 to 870 km) is not possible. It would take extensive redesign of the spacecraft bus to be able to do that, so the spacecraft stored energy sources are depleted and it is left in its current orbit (500+ years). However, NSS 1740.14, Section 1.3, does state that satisfying these guidelines must be balanced with the necessity to meet mission requirements and to control costs.

10. Has an Air Force Form 813 been completed? (Please attach copy)

Yes

11. Does the mission include or involve:

Check all that apply. If uncertain indicate with a "?"
For all that apply provide an explanation. Use the additional space below if needed.

- a. Fuels Less than 10 pounds of Nitrogen gas
- b. Radioactive Material _____
- c. Explosives _____
- d. Chemicals _____
- e. Hazardous Materials/Substances _____
- f. Lasers (Class, Earth Pointing) _____
- g. Disease Producing Pathogenic Microorganisms _____
- h. Construction/Modification of a Facility _____
- i. Discharges of any substances into air, water, or soil _____
- j. Generation/Use/Storage/Disposal of Toxic or Hazardous Substances _____
- k. Generation of Hazardous Wastes _____
- l. Generation of High Noise Levels _____
- m. Sample Return to Earth _____

- _____ n. Generation of Ionizing or Nonionizing Radiation _____
- _____ o. Impact on Local Social or Economic Conditions _____
- _____ p. Removal of Vegetation or Destruction of Habitat _____
- _____ q. Impact/Affect on Minority or Low Income Populations _____
- _____ r. Affect Any Threatened or Endangered Species _____
- _____ s. Affect Areas of Historical or Cultural Significance _____
- _____ t. New or Foreign Launch Vehicle _____
- _____ u. Other Issues of Potential Environmental Impact _____

12. What hazards are associated with the mission?

Other than the propulsion system and some pyros used for deployments, there are no hazards in NOAA-NN'

Karen N. Halterman, Code 480

1/12/05

Project Manager, Code

Date

Explanations

Summary of NOAA-N and NOAA-N' Subsystems

Structural Materials	Primarily Aluminum, some Titanium
Propulsion	High pressure blowdown Nitrogen Gas (9 pounds)
Communications (transmitters)	4 9 watt S band transmitters, 5 watt VHF transmitter, 1 watt VHF transmitter, 5 watt L Band transmitter
Power	Silicon solar array, 3 40 Amp hour NiCd batteries
Science instruments	AVHRR (imager), AMSU-A1 & A2 (microwave sounder), HIRS (IR sounder), MHS (humidity sensor), SEM (charged particle counter), SBUV (ozone detector), DCS (data collection), SARR & SARP (search and rescue instruments)
Other (include dimensions and weight of s/c)	On orbit size is 14' long, 6' diameter with 20' solar array On orbit weight is 3180 pounds Pyros used to deploy solar array, 3 antennas, and sunshade