

**PROJECT-SPECIFIC CATEGORICAL EXCLUSION FOR
ATMOSPHERIC RADIATION MEASUREMENT PROJECT AIRCRAFT
OPERATION, PACIFIC NORTHWEST NATIONAL LABORATORY,
RICHLAND, WASHINGTON**

Proposed Action:

The U.S. Department of Energy (DOE) Pacific Northwest Site Office (PNSO) proposes to operate a Challenger-850 aircraft and Unmanned Aircraft Systems (UAS) to support the Atmospheric Radiation Measurement (ARM) research project at locations worldwide.

Location of Action:

The Challenger-850 aircraft would be housed at the Tri-Cities Airport in Pasco, Washington. Routine maintenance would typically occur at the Tri-Cities Airport. UAS would be housed in locations throughout the United States. Operation of the aircraft and UAS could occur at locations worldwide. This categorical exclusion (CX) is applicable to activities within the United States, activities outside of the United States are exempted from environmental review under the National Environmental Policy Act (NEPA) per Executive Order 12114 (44 FR 1957).

Description of the Proposed Action:

To meet the need for in situ aerial observations to support the Biological and Environmental Research (BER) high-priority science activities, a Challenger-850 aircraft was purchased by DOE in 2019. As part of the ARM project the Challenger-850 aircraft will conduct long term observational campaigns over a range of meteorological conditions and locations around the world. The useful life of the Challenger-850 is expected to be 10 to 20 years.

In addition to the Challenger-850, UAS can be utilized to support research activities. UAS utilized by the ARM project are typically classified as large UAS with a maximum gross takeoff weight between 55 lb and 1,320 lb, which could be considered Group 3 under the standard Department of Defense UAS classification system. UAS such as the Navmar Applied Sciences Corporation (NASC) TigerShark-XP and ArcticShark are examples of the types of drones typically used to support the ARM project. Currently, the ArcticShark is used to support the ARM by performing in situ aerial observations. These UAS are aerial research platforms designed to provide scientific observations. Use of the ArcticShark or a similar UAS may require a chase plane or ground-based observers to comply with Federal Aviation Administration (FAA) regulations.

The aircraft and UAS will be used to conduct surveys and monitoring in support of research activities associated with the ARM Project. Proposed areas of research may include but are not limited to land-atmosphere interactions, boundary layer structure, tropospheric cloud and aerosol properties, and mixed-phase cloud microphysics.

Biological and Cultural Resources:

The proposed action is not expected to have impacts to cultural resources given the project needs and flight altitudes.

The proposed action is not expected to have impacts to biological resources for activities conducted in the continental United States and Hawaii. National Oceanic and Atmospheric Administration (NOAA) overflight regulations for marine sanctuaries, as designated on FAA aeronautical charts, will be complied with. Biological resource reviews will be conducted for low elevation (< 5,000') flights occurring in Alaska to assure U.S. Fish and Wildlife Service marine mammal management guidelines are followed.

Categorical Exclusions to Be Applied:

As the proposed action is to operate aircraft, the following CX, as listed in the DOE NEPA implementing procedures, 10 CFR 1021, would apply:

B3.2 Aviation activities for survey, monitoring, or security purposes that comply with Federal Aviation Administration regulations.

Eligibility Criteria:

The proposed activity meets the eligibility criteria of 10 CFR 1021.410(b) because the proposed action does not have any extraordinary circumstances that might affect the significance of the environmental effects, is not connected to other actions with potentially significant impacts, is not related to other actions with individually insignificant but cumulatively significant impacts, and is not precluded by 10 CFR 1021.211 concerning limitations on actions during environmental impact statement preparation.

The "Integral Elements" of 10 CFR 1021 are satisfied as discussed below:

INTEGRAL ELEMENTS, 10 CFR 1021, SUBPART D, Appendix B (1)-(5)	
<i>Would the Proposed Action:</i>	Evaluation
Threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health?	The proposed action would not threaten a violation of regulations or DOE or Executive Orders.
Require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities?	No waste management facilities would be constructed under this CX. Any generated waste would be managed in accordance with applicable regulations in existing facilities. Waste disposal pathways would be identified prior to generating waste and waste generation would be minimized.
Disturb hazardous substances, pollutants, or contaminants that preexist in the environment such that there would be uncontrolled or unpermitted releases?	No preexisting hazardous substances, pollutants, or contaminants would be disturbed in a manner that or results in uncontrolled or unpermitted releases.

Involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species?	The proposed action would not involve the use of genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species.
<p>Have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited, to:</p> <ul style="list-style-type: none"> • protected historic/archaeological resources • protected biological resources and habitat • jurisdictional wetlands, 100-year floodplains • Federal- or state-designated parks and wildlife refuges, wilderness areas, wild and scenic rivers, national monuments, marine sanctuaries, national natural landmarks, and scenic areas. 	<p>No environmentally sensitive resources would be adversely affected by the proposed actions. NOAA overflight regulations for marine sanctuaries, as designated on FAA aeronautical charts, will be complied with.</p> <p>The proposed action would not adversely affect floodplains, wetlands regulated under the Clean Water Act, national monuments, or other specially designated areas, prime agricultural lands, or special sources of water.</p> <p>Potential impacts to biological or cultural resources would be addressed as described above.</p>

Summary of Environmental Impacts:

The following table summarizes environmental impacts considered when preparing this CX determination.

Environmental Impacts Considered when Preparing this CX Determination	
<i>Would the Proposed Action:</i>	Evaluation
Result in more than minimal air impacts?	Aircraft are very similar to the previously utilized aircraft and would be utilized in the same manner. Air emissions would be similar to typical aircraft of similar size.
Increase offsite radiation dose measurably?	The proposed maintenance and operation of aircraft will not increase offsite radiation dose.
Require a radiological work permit?	The proposed maintenance and operation of aircraft will not require a radiation work permit.
Discharge any liquids to the environment?	The proposed maintenance and operation of aircraft would not include any planned discharge of liquids to the environment.
Require a Spill Prevention, Control, and Countermeasures plan?	None required. Aircraft will not require storage of hydrocarbons that would trigger the SPCC requirement.

Use carcinogens, hazardous, or toxic chemicals/materials?	Other than jet fuel and maintenance fluids no carcinogenic, hazardous, or toxic chemicals or materials would be required. Chemicals and materials used as part of the sample collection and analysis systems currently do not require a Chemical Process Permit.
Involve hazardous, radioactive, polychlorinated biphenyl, or asbestos waste?	PNNL currently maintains a satellite accumulation area at the existing hangar at the Tri-Cities Airport for temporary storage of hazardous waste such as used oil and solvents, oil-soaked rags, etc., and a universal waste storage area for batteries and lamps. These would be continued to support aircraft operations. No radioactive, PCB, or asbestos waste would be created or handled.
Cause more than a minor or temporary increase in noise level?	The proposed maintenance and operation of aircraft will not increase noise beyond current aircraft operations. Noise increases over flight areas may occur, but they would be minor and temporary in nature.
Create light, glare, or other aesthetic impacts?	The proposed maintenance and operation of aircraft will not create light, glare, or other aesthetic impacts.
Require an excavation permit (e.g., for test pits, wells, utility installation)?	The proposed maintenance and operation of aircraft will not require an excavation permit.
Disturb an undeveloped area?	The proposed maintenance and operation of aircraft will not require the disturbance of undeveloped areas.
Result in more than minimal impacts on transportation or public services?	The proposed maintenance and operation of aircraft will not impact transportation or public services.
Disproportionately impact low-income or minority populations?	The proposed maintenance and operation of aircraft will not disproportionately impact low-income or minority populations.
Require environmental or other permits from federal, state, or local agencies?	Pilots will require specific FAA type rating for the aircraft. No other permits would be required.

Compliance Action:

I have determined that the proposed action satisfies the DOE NEPA eligibility criteria and integral elements, does not pose extraordinary circumstances, and meets the requirements for the CX referenced above. Therefore, using the authority delegated to me, I have determined

that the proposed action may be categorically excluded from further NEPA review and documentation.

Signature: _____
Tom McDermott
PNSO NEPA Compliance Officer

cc: ES Norris, PNNL