

# CIRPAS Committee Proposal

## 1. Mission, goals and objectives of the Aircraft committee are:

- To establish CIRPAS as a National Facility, with particular capabilities to support airborne research in the Ocean Sciences.
- To recruit people from the Ocean Science to mentor new instrument development projects.
- To facilitate the transition of new technology from the military to civil use and from our development programs to the market place.
- To coordinate the use of the CIRPAS Aircraft facility with Research Vessel Operations.
- To serve as a conduit for interaction between the atmospheric and oceanographic science communities.
- To seek collaboration with other agency supported oceanographic research operations.
- To facilitate scheduling of joint Research Vessel and Aircraft experiments
- To coordinate Flight Policies and Procedures
- To facilitate the requesting of services from CIRPAS

## 2. Description of the CIRPAS "National Facility":

The Center for Interdisciplinary Remotely-Piloted Aircraft Studies (CIRPAS) is a research center at the Naval Postgraduate School, Monterey, California. CIRPAS provides Remotely-Piloted Aircraft (RPA) as well as manned aircraft services to the science, research, test and evaluation communities at the lowest practical costs. CIRPAS also provides an array of meteorological, aerosol and cloud particle sensors, data acquisition systems, calibration and data reduction service. CIRPAS conducts payload integration, reviews flight safety and provides logistical planning and support to research and test projects. CIRPAS flight operations and the maintenance facility is located at Marina Municipal Airport, formerly Fort Ord's Fritchfield (Fig. 1).



Figure 1. CIRPAS' Twin Otter and Hangar at Marina Airport.

CIRPAS also has a UAV flight operations facility at McMillan Airport, Camp Roberts, California. The airfield is within the restricted airspace of Camp Roberts. Its runway is paved, and is 3,500 feet long. As NPS is not able to operate and maintain the CIRPAS aircraft, it relies on its prime contractor, the California Institute of Technology, for that service.

### ***The CIRPAS Aircraft***

#### **UV-18 Twin Otter**

This manned aircraft (Fig 2) will support the missions proposed here. It has around 1500 lbs payload capacity, and endures about 6 hours of flight. It cruises at 160 Kts, but it can loiter at speeds as low as 80 Kts, which makes it an exceptional platform for aerosol sampling work.



Figure 1. CIRPAS UV-18-6 Twin Otter) in flight.

#### **Other Aircraft**

CIRPAS also has the Pelican, a manned single engine Cessna 337, the Pelican –II, an alternately manned-unmanned Cessna 337, remotely piloted Predators, and Altus.

#### ***CIRPAS Instrumentation***

CIRPAS possesses a variety of scientific instruments and instrument suits. The basic meteorological and GPS suite consists of a Rosemount temperature probe, a Edgetech chilled mirror dew point sensor, a Rosemount flow angle probe with static ports, Vaisala temperature and dew point sensors, Eppley radiometers (total solar, partial solar, infrared, and UV), a Novatel GPS receiver with a ground survey station for differential correction, a TANS Vector GPS attitude system, a C-Midget-II INS-GPS system, an IRGA humidity and carbon-dioxide sensor, and an Aerodyne fast absolute humidity sensor. The CIRPAS aerosol instrumentation suite consists of a TSI 3-color nephelometer, a Radiance soot photometer, a TSI Ultrafine particle counter, and a TSI condensation nuclei counter. The CIRPAS cloud and particle instrumentation suite consists of an FSSP-100, a PCASP-100X, both with upgraded electronics, a CAPS scatter and occultation probes, and DMT 2D-P and 2D-PP probes, a TSI aerodynamic particle spectrometer, and a MOUDI Impactor. A new cloud radar, and a new wind lidar are near completion.

The CIRPAS mobile calibration laboratory is equipped with temperature, dew point, and pressure calibrators, DMA aerosol classifier systems for generation of particle size and concentration standards, integrating sphere for radiometer calibration, various tools and test equipment.

### **3. Draft Bylaws: How the committee will operate (ie. how often it would meet, where, how it makes its recommendations, etc.):**

- The CIRPAS committee will be established under Appendix II of the UNOLS charter concurrent with the establishment of CIRPAS as a National Facility
- This document will serve as the first draft of the <sup>3</sup>Bylaws<sup>2</sup> for this committee's operation. The committee will finalize the Bylaws and approve a final name for the committee.
- The committee will consist of two representatives of CIRPAS management and four members from the oceanographic or atmospheric science community. Every effort will be made to ensure a range of scientific disciplines and no more than one of the science members of the committee will be from the Naval Postgraduate School.
- Other representatives of the facility operator (CIRPAS, NPS and CALTECH) may attend meetings as non-voting representatives, not supported by the UNOLS budget.
- Committee members will serve for three year terms, renewable once for a total of six years. If the committee continues after its initial period of three years, the first members of the committee should stagger their second term from zero to two years in order ensure overlap and continuity in the committee.
- The committee will elect a chair and vice chair from any of the science community members. (alternatively we could say from all members)
- The committee can recommend and with the approval of the funding agencies expand the size of the committee and its scope in the future.
- Meetings will be held twice a year in Monterey or as part of other UNOLS functions as needed.
- Budget support for this committee will be through the UNOLS Office and will support travel costs for members and UNOLS office administrative and salary costs associated with supporting this committee. Federal agency support for this committee will be apportioned as directed by agreement of the agencies.
- Recommendations would be made to the operator and funding agencies through the UNOLS Council. The area of focus will be to ensure the best possible aircraft support for the oceanographic research community including, but not limited to, the goals expressed in section one of this document.