



Proceso selectivo para ingreso, por el sistema de acceso libre, en la Escala de Tecnólogos de los Organismos Públicos de Investigación, convocado por Resolución de 21 de febrero de 2023. BOE nº 47 del 24 de febrero de 2023.

DATE:
05/09/2023

Tribunal Nº12

**Área Global 9. Tecnología Aeroespacial, Naval y de Defensa
Especialidad T6: Sistemas Aeronáuticos. INTA
Segundo Ejercicio de la fase de Oposición**

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CASE NO. 1

The National Institute of Aerospace Technology has a Fixed Wing Aircraft as an Air Research Platform (PAI) with the following characteristics:

- Mission: Tactical and logistic transport.
- Manufacturer / Country: Airbus DS / Spain.
- Crew: 2 pilots and cargo supervisor.
- Capacity: Transport of troops (78 soldiers or 69 paratroopers), medical evacuation (24 stretchers), load 9,250 kg (5 pallets of 108" x 88" or 10 pallets of 88" x 54"), vehicles (3 light vehicles).
- Dimensions / Specifications: Loaded weight 21,000 Kg. / Maximum take-off weight 23,200 Kg. / Wingspan 25.81 m. / Length 24.45 m. / Height 8.15 m.
- Speed: 576 Km. Cruise 480 Km.
- Maximum ceiling: 7,620 m.
- Autonomy: 4.167 Km. and up to 11 hours.
- Engines: 2 Turbopropeller Pratt & Whitney Canada PW127G.

INTA's Department of Aerial Platforms wants to convert the aircraft into an aerial platform for atmospheric research, implementing specific instrumentation for it.

In addition to the above, we want to monitor the status of the aircraft in flight in real time both within it and in the different test centers that INTA has prepared for it.

Among the uses of this aircraft as PAI (Aerial Research Platform) is the study of ice formation and adhesion in icing conditions as well as the measurement of aerosols in suspension in the atmosphere.

- i. Define the type of instrumentation that it considers most appropriate to equip the aircraft.
- ii. Define the steps to follow to implement such instrumentation
- iii. Define the architecture that you consider most appropriate to have the status data of the aircraft in the cabin with the minimum of additional instrumentation and its manipulation
- iv. Define in-cab configuration for real-time test tracking
- v. Define the configuration on the aircraft so that real-time data can be transmitted to the ground
- vi. Define ground configuration for test follow-up

CASE NO. 2

INTA develops an unmanned aerial system with VTOL characteristics of less than 100Kg.

1. Define the architecture of the aircraft from the morphological point of view at the level of design and materials used in it
2. Define the type of system you would select as the aircraft's FCS based on a low-cost concept
3. Define the entire system communications system
4. Define the architecture of the monitoring and control station based on a low-cost concept to cover ranges of up to 20 km away