



AERONÁUTICA CIVIL  
UNIDAD ADMINISTRATIVA ESPECIAL

Policies for Certification, operation and maintenance of UAS  
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**Abstract:** Civil Aviation Authority of Colombia currently in its Regulations (RAC Part Four, Chapter XXV paragraph 4.25.8.2 "Other operations") has regulated the operation of UAS for non-sports or non recreational purposes with certain limitations associated with model airplanes, but not considered in current regulations the certification, operation and maintenance of UAS.

In Colombia there are initiatives UAS design and production and associated technologies. These designs targeting different commercial and military applications, which are being proposed by universities, government agencies and private companies, but they cannot be traded until there is no national standard that enables the certification, operation and maintenance of such aircraft.

Standards currently exist in other states for certification, operation and maintenance of UAS, which should be evaluated to adjust to our environment and make national legislation in this regard. In fact ICAO has already ruled by the document Cir 328 A/N190 "Unmanned Aircraft Systems (UAS)" issued in March 2011.

Because the UAS depending on your configuration and features may occupy the controlled airspace requires the participation of UAEAC in conjunction with the Colombian Air Force for the authorization of future use of such vehicles in commercial and private activities.

**Introduction:**

Currently there are two universities with Aeronautical Engineering program and private companies that are developing and implementing the UAS design, some of which have already made test flights as part of the required tests. These designs are intended to be marketed for funding, however currently there is no legislation in Colombia or technical and operational infrastructure that enables the certification of this equipment and its use.

Considering the above, the CAA of Colombia see the need, to create the regulation, infrastructure and procedures that serve as the basis for design certification, airworthiness, production and operation of UAS.

UAS operations should be as safe as manned aircraft, especially when not pose hazards to persons or property on land or in the air, greater than those attributable to the operation of a manned aircraft of equivalent class or category. In general, the UAS should be handled according to the rules governing the flight of manned aircraft and meet the equipment requirements applicable to the class of airspace in which it intends to fly. The UAS should be able to comply with ATC instructions.

For this reason it is required that the study was conducted in coordination with universities, government agencies and private companies to evaluate the feasibility of operating standards for certification to allow monitoring and control of these vehicles in its production and in its operation.

**Phase 1 Diagnosis and evaluation.** For this purpose it is necessary to perform the following analyzes within the organization:

- a. **Visit and meetings with companies and organizations:** (domestic and foreign manufacturers, foreign authorities, universities, etc.), who build, operate, and regulate UAS, in order to make a preliminary assessment of the standards for design and manufacturing, quality control and quality assurance, operation, maintenance, training and qualification of personnel, financial resources, infrastructure required, etc.
- b. **Infrastructure of Laboratories and Research Centers Public or Private:** define what type of laboratories and infrastructure would be needed to advance and meet certification requirements. Make a census study on existing laboratories in the country and its capacity. This research should define which institutions have adequate laboratories and the infrastructure required to implement.
- c. **Selection and training of staff within the Colombian CAA:** Perform a study to define the number, qualification, quality and conditions of the personnel to carry out all activities required in the processes of design or airworthiness and production certification of UAS. Once the study is done, the definition of the training requirements for this personnel will have to be defined, designing a training program at UAS certification, in accordance with the international standards.

- d. **Economic Evaluation:** Perform studies to define the budget for the development of the stages of diagnosis, evaluation and implementation of the project.
- e. **Regulation:** In accordance with the preliminary assessment of the regulations established by other states concerning the issue of UAS, there will be a proposal for regulation in the RAC regarding the operation and maintenance certification.
- f. **Determination of the operations allowed for UAS:** Determine the scope and limitations, evaluating the operations allowed for UAS to perform aerial photography, aerial surveillance, etc.

After completing this phase is projected to initially establish requirements for universities and companies that are developing projects with academic and / or research purposes only. Also define areas for tests flights and requirements for application, registration, Insurance and special flight permits.

**Phase Two: Implementation:** In order to apply the results of evaluations conducted during the diagnostic phase, it is proposed to perform the following procedure for the regulatory project development:

- a. **Collection, selection, translation and adaptation of the regulation for certification, operation and maintenance of UAS.** to propose a national standard to determine design and construction requirements, technical documentation,

maintenance and inspections, quality assurance systems, personnel requirements, production certification and continued airworthiness for UAS.

A determining factor in the evolution of this task is the harmonization of international regulations in accordance with the policies defined by ICAO.

**b. Publication of regulation draft documents:**

Disclosure to the public the proposed regulations in order to:

1. Receive recommendations regards the draft regulation.
2. Collect the technical information that supports the recommendations.
3. Establish specialized working groups, as required, to investigate, and propose recommendations.
4. Define standards and requirements that would be necessary in the areas of Airworthiness and Operations.

**c. Implementation of courses** regarding Type Certification, Design, Inspection and Surveillance of UAS, for all personnel involved in these areas.

**d. Revision of the standard by the competent departments,** defining the legal, administrative and financial requirements that regulate the creation and continuity of these manufacturers and operators.

**e. Evaluation, development, revision and implementation of procedures for UAS** certification such as guides, circulars and formats required for this purpose.

**f. Divulgation:** Schedule meetings with the areas of the organizations involved, to expose the project designed determining the expectations of manufacturers, illustrating the main components involved in the process itself and the responsibilities that will be assumed by the parties.

**g. Publication of the final rule**

**Conclusions**

Taking into account the objective of Civil Aviation Authority of Colombia to promote and regulate the development, coverage and the growth of civil aviation industry and aeronautical research. The organization will begin a process of technical evaluation and regulatory development of the standard and relevant procedures.

These processes, will require that universities, state and private companies, involved in the manufacture and operation of UASs that are interested in implementing this regulation, cooperate at different stages of elaboration of the proposal.

## Initiatives UAS in Colombia

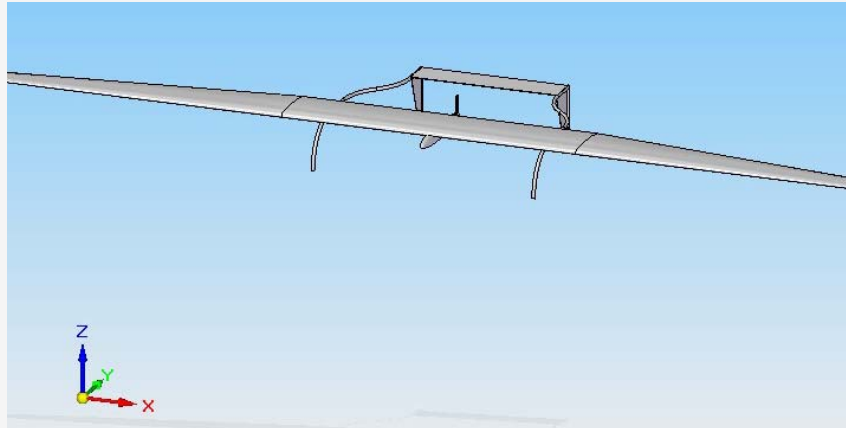


### Navigator X-2 specifications:

- Wingspan of 5 meters
- Length of 3.3 meters
- Wing area of 3.54 square meters
- Maximum takeoff weight of 490 Newton
- Takeoff in less than 100 meters at a density altitude of 3200 meters
- 4 hours at a cruise speed of 90 kilometers per hour with a 100-Newton payload.
- Two 58-cc engines in tandem configuration
- Designed for operating in the typical “hot n’ high” conditions of the Colombian Andes

Condor Andino specifications:

- Wingspan of 5.08 meters
- Length of 2.5 meters
- Wing area of 3.54 square meters
- Maximum takeoff weight of 23kg
- Payload 5 kg
- Endurance 4 hours
- Cruise speed 60 ktas
- Twin engine 86cc 7.5 HP



SOLVENDUS

Solvendus specifications:

- Wingspan of 6 meters
- Maximum takeoff weight of 12kg
- Payload 5 kg

### IRIS Project Colombian Air Force

