

**AIRSHIP OPERATIONAL CONSIDERATIONS IN
DEVELOPED AND UNDEVELOPED AREAS**

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Abstract

In order to provide services throughout the world, airships must be capable to have around-the-clock capability in areas of varying terrain and climatic conditions.

Advanced technologies applied to airships will provide successful operations in both developed and undeveloped areas. This will include onboard devices and systems, as well as unique ground based facilities.

Introduction

Basic characteristics for airship operations in both developed and undeveloped geographic areas having varied terrain and climatic environments will be presented. Only with the application of advanced technologies will airships have successful and economic operations.

Advanced Technologies

The application of advanced technologies will greatly affect:

- Airship Operations
- Ground Facilitation
- Manpower Requirements

Reference 1, a previous ICAS paper, provides detail information. Of course, the application of advanced technologies requires judicious trade-off studies.

Airworthiness Certification

A key factor in airship operations on a world-wide basis is securing government airworthiness certification. Guidance for certification of airships in the United States is contained in Reference 2. Most governments provide reciprocal certification. Of course, the specific regulations of each country will apply.

Because of the application of advanced technologies, some supplemental regulations may be applicable.

Environmental Trials

During the airship development cycle, plans must be made for environmental testing. These trials should include:

- Cold Weather Operations
- Hot Weather Operations
- Low Visibility Operations
- Specific Inclemental Climate Conditions

Such test programs should be planned and coordinated with the government airworthiness authorities.

Mission Evaluation

In concert with customer requirements, mission and route testing and evaluation should be conducted. These tests should focus on the overall airship capabilities and specific sub-systems. Detail prior planning and scheduling should be conducted.

It should be noted that test results should be coordinated with the final preparation of Operating Manuals:

- Flight
- Ground Handling
- Maintenance
- Specific Applications

Operations

Operating techniques should be developed in sufficient detail to establish standard procedures for each application area, either over land or over bodies of water.

Developed Operating Areas

Normally in developed areas, airports or large prepared sites will be available for use. When ADC airships will operate from such locations a mobile mooring mast can be used. This mast incorporates a wheeled chassis and a winch for towing the airship. Either a ground plate or a mobile cart can be used with the mobile mooring mast unit.

Ground Facilities

Figure 1 tabulates ground support equipment to be used and Figure 2 lists storage facilities required. Of course, each airship type may require different items.

- Ground Level Hangar
- Meteorology Equipment and Wind Sock
- Engine Hoist
- Work Benches and Ladders
- Wheeled Vehicles and Carts
- Mobile Mooring Mast
- Mobile Landing Cart
- Jacks
- Power Generation
- Night Lighting
- Fire Protection
- Fuel Trucks
- Communication Systems
- Navigation Systems
- Utilities Services

FIGURE 1 - GROUND SUPPORT EQUIPMENT
FOR DEVELOPED AREAS*

(*Assumed road and/or rail access)

Airship Related

- Helium
- Jet Fuel
- Ballast
- Lubricants

Payload Related

- Medical Supplies
- Food Preparation
- Food Storage
- Water
- Oxygen
- Sleeping Facilities

FIGURE 2 - STORAGE FACILITIES AT
DEVELOPED AREAS

Undeveloped Areas

When airships are operated in remote areas, road and rail services may not be available. In such cases the airship itself must provide airlift to have necessary ground support available. Of course, a cleared area will be required before the airship can provide equipment and supplies.

Unique Areas

Shipboard sea-basing and ice fields can also be applicable for airships when necessary. Of course, special considerations apply.

Ground Facilities

As an example of the airlift that may be required, Figure 3 shows a telescoping fixed ground located mooring mast. The design must permit it being airlifted inside the fuselage of the airship. Also the base plate for the mooring mast and the fixed ground located winch plate will need to be airlifted to the site. Of course, when the site is to be evacuated, all equipment and facilities must be airlifted out.

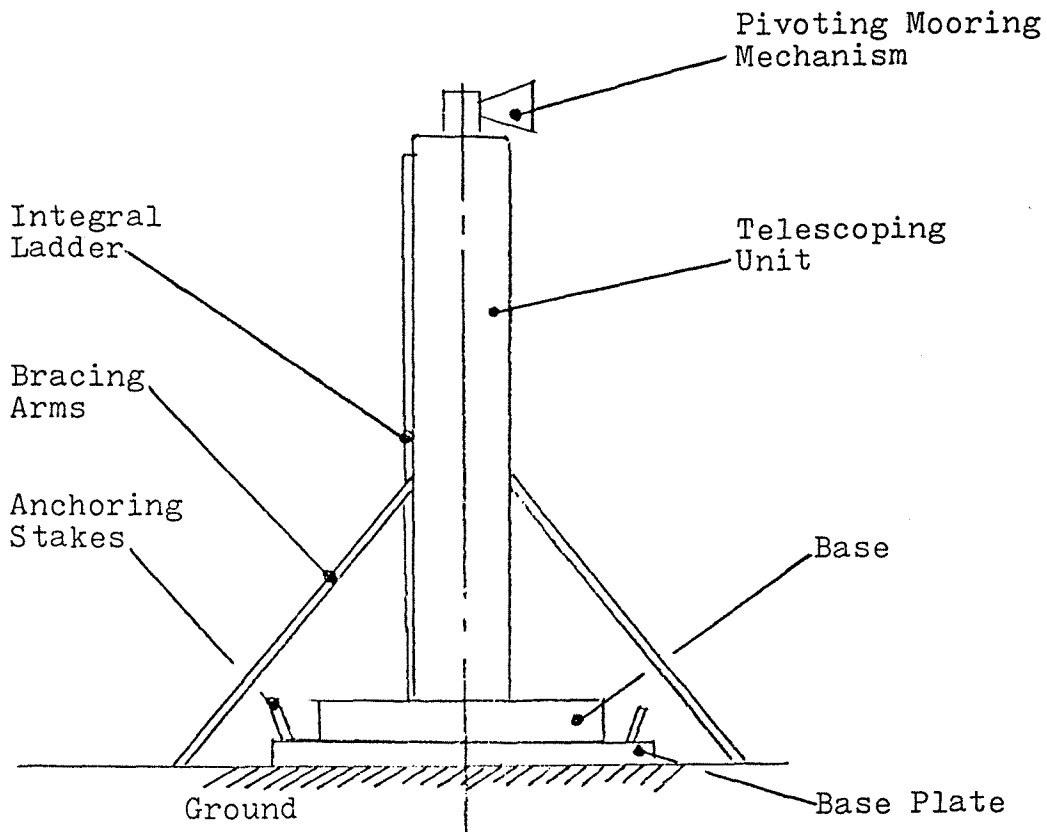


FIGURE 3

MOORING MAST FOR UNDEVELOPED AREAS

Manpower Reductions

Due to the application of advanced technologies, fewer personnel will be required for the operation of airships. For example, electronic communication equipment and navigation devices can reduce the size of the flight crew required.

Furthermore, a one man ground crew can facilitate take-offs and landings for certain sizes of airships.

Summary

To increase the operational window for airship applications, specific criteria should be established during the design and development of airships. The manufacturer should work closely with government regulatory agencies and selected airship customers.

References

1. "Advanced Technologies Airships":
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