AIRSHIP CONSTRUCTION

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ABSTRACT: Forty-four years ago the first successful metal airship was completed and delivered to the United States Navy, the ZMC-2. Between those years and the present, very little effort or serious consideration has been given to the manufacture, design, construction, or economic impact of airships. It is important that we retain and exploit the small but continually diminishing pool of airship talent that will expedite the success of the United States in what is now a pioneering venture. The relative simplicity of airship construction, utilizing the tremendous technical advances of the last 44 years, leads to the conclusion that this form of transportation holds great promise for reducing costs of military missions and improving the international competitive position of the United States in commercial applications.

The design concept for our all metal airship directed the utmost consideration toward manufacturing feasibility. The design is such that existing fabrication and assembly methods can be applied.

Extensive sub-assembly of the airship's structure components into large module segments will substantially reduce the elapsed time required to complete each airship in the assembly dock.

Modular assembly methods in various forms are presently being used in aerospace and modern shipyards to increase productivity, insure quality and reduce costs.

When necessary to accelerate production, a subcontracting program will be negotiated with existing aircraft builders, also their sub-contractors and material suppliers. Thereby we will avail ourselves of additional facilities and skilled personnel.

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The technical skills required to fabricate and assemble metal airships are comparable to those presently employed to construct all metal airplanes. For the forseeable future these skills are readily obtainable.

Certain special tooling and new assembly methods, as they relate to our metal airship construction are being designed and developed during the initial research and development phase. During these early stages of research and development, close coordination between engineering, manufacturing and tooling personnel is very essential.

The team concept is a must on an airship development program. You cannot departmentalize. Time and cost will not permit an elaborate organization.

A delivery schedule commitment applies to all involved on any complex project. A schedule is no more or less than a timetable, or time allotment. It is very important that all functions committed to a "Promise to Deliver" complete their responsibility on time.

A behind schedule condition frequently leads to cost overruns. This is usually caused by expending excessive overtime and resorting to other forms of heroics to make up for lost time. The excessive use of overtime on a fixed price contract can become a bottomless pit inasmuch as a fatigue factor limits output, and not the hours expended. Also, quality is endangered as mental fatigue and discoordination occur.

There are many factors involved in scheduling and they are all of utmost importance and deserving of full consideration before making a contractual delivery commitment.

QUALITY CONTROL

The quality of aircraft starts with the initial design layout. Quality must be designed and manufactured into a craft with each operation performed within approved standards.

Quality cannot be inspected into an aircraft or in any way compromised. There can be only one standard applied as to the degree of quality acceptance. Skill requirements for airship craftsmanship must be above levels acceptable for routine aircraft production line work.

Airship mechanics will require diversified experience and a capability to perform a variety of skills with a minimum amount of supervision.

CONSTRUCTION FACILITIES

Existing airship construction facilities in America are limited and whether any of these could be obtained for an airship development program is being investigated.

If existing facilities are not available, a new and completely modern structure with overhead cranes, elevators, adjoining fabrication facilities and engineering department should be constructed. If such a structure were approved, serious facility design consideration must be given for future growth in size of airships up to thirty million cubic feet or larger. Modern production layout would be taken into account.

For the initial research and development program, present United States government owned facilities exist in Southern California. This property includes two large airship hangars. It is a former Navy Airship Base, now being used as a helicopter repair and storage depot. A close inspection would be required to determine whether they are adequate, or if they are obtainable for a prototype airship development program.

The location, climate and other considerations make this facility desirable.

Information from knowledgeable sources indicates that much government owned surplus machinery of all categories and sizes are stored in various depots. If this equipment could be leased for an airship program, much valuable time could be saved with a considerable reduction in total budget requirements.

In conclusion I would like to share this thought with you. At this late hour we still have access to a diminishing store of technical knowledge and experience relating to modern all metal airship engineering and construction.

This knowledge and experience is a valuable and irreplaceable national asset and should be exploited to strengthen our national defense.

The dirigible also has the potential for resolving our rapidly deteriorating national transport system and thus insuring our future economic well-being.

There is an urgent need in many areas of this world for a modern airship transport system to provide transportation and cargo service where none exists. These multiple needs will insure the economic viability of this transportation medium, a medium which is capable of establishing an entire new industry and sustaining itself on its own merits.