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Summary of Activities

January 1 - March 31, 1984

Aeronautics and Space Engineering Board

Commission on Engineering and Technical Systems

Report

to the

National Aeronautics and Space Administration

under Contract NASW-3455

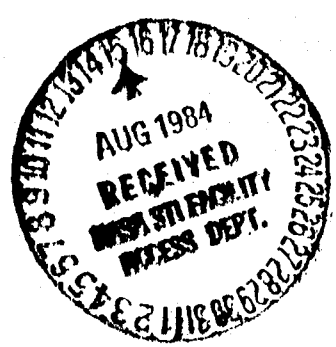
between the

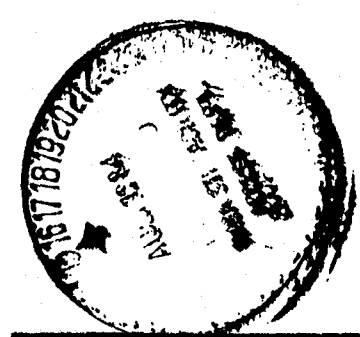
National Aeronautics and Space Administration

and the

National Academy of Sciences

April 1984





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UTTL: Activities of the Aeronautics and Space Engineering Board Commission on Engineering and Technical Systems TLSP: Summary Report, 1 Jan. - 31 Mar. 1984

CORP: National Academy of Sciences - National Research Council, Washington, DC. AVAIL.CASI

SAP: Avail: CASI HC A02/MF A01

CIO: UNITED STATES

MAJS: /*AERONAUTICAL ENGINEERING/*NASA PROGRAMS/*SPACE SHUTTLES/*SPACE STATIONS

MINS: / ROCKET ENGINE CASES/ SPACE MAINTENANCE/ SPACECRAFT COMMUNICATION/ SPACECRAFT COMPONENTS/ SPACECRAFT DESIGN/ SPACECRAFT ENVIRONMENTS/ SPACECRAFT POWER SUPPLIES/ TECHNOLOGY UTILIZATION/ WIND TUNNELS

ABA: R.S.F.

ABS: The agenda of the Aeronautics and Space Engineering Board meeting is reviewed. Items discussed included; engineering and technical requirements of the space station, NASA's altitude wind tunnel, rocket engine casings, advanced flight vehicle technology, the space shuttle, and on-orbit space maintenance. Board members along with their institutional affiliation are listed.

ENTER:

This summary of the activities of the Aeronautics and Space Engineering Board (ASEB) for the period January 1 - March 31, 1984 fulfills a contractual obligation to the National Aeronautics and Space Administration. It is the fourteenth summary-of-activities report and the sixth to be submitted under the current two-year extension of contract NASA-3455 which began October 1, 1982 and will expire on September 30, 1984. The Statement of Task in effect during this reporting period is attached. (Attachment 1)

ASEB Meetings

The 70th ASEB meeting, the fifth during this contract period, was at the National Academy of Sciences, Washington, D.C. on March 20-21, 1984. The meeting conducted under a new format structured to improve/increase the effectiveness of the Board. The agenda focused on issues faced by NASA in its R&T program planning. Other items included: summary of preliminary findings from the Workshop on Aeronautical Technology in the Year 2000 that was held January 16-19, 1984 at the University of Texas; status and plans of the ad hoc Committee for the Review of Engineering and Technical Needs of the Space Station; and, an informal request for a review of the technical feasibility of modifying large civil transports for quick conversion to military airlift vehicles for emergencies which was rejected as having been thoroughly explored in the past--the problem being political/economical rather than technology. The next meeting is scheduled to be held in Washington, D.C. in June 1984.

ASEB Membership

The current Board membership is shown in Attachment 2.

ASEB Committee Activities

Workshop on Aeronautics Technology in the Year 2000

The Workshop on Aeronautical Technology in the Year 2000 was held January 15-19, 1984 in Austin. Eight workshop panels have submitted drafts of their reports which are being reviewed/edited and compiled into a workshop report. After final review and approval of the workshop report by Panel Leaders, the draft is to be submitted for NRC approval prior to publication. As a follow-on to the workshop, an ad hoc Vehicle Applications Panel has been formed to translate and focus the workshop technological projections into advanced flight vehicle concepts. The VA Panel is comprised of some members of the workshop's Systems Integration Panel augmented by additional experts experienced in advanced air vehicle and component design. The first meeting of the VA Panel was held on March 1-2 and a second meeting is scheduled for April 26-27. A report will be issued on completion of the panel's deliberations.

Committee on Space Station Engineering and Technology Development

The ad hoc committee on Space Station Engineering and Technology Development had its organizational and base line data meeting on March 21-22, 1984. NASA presented a series of briefings on space station assumptions and technology issues and on current generic and focused technology effort. The committee organized into two panels. One panel will concentrate on operation mechanisms, structures and onboard propulsion (work under the general purview of MSFC). The other will focus attention on full system operations, data management and communications, thermal control, human performance and support and electric power (under JSC purview).

Ad Hoc Working Group on NASA's Altitude Wind Tunnel

The ad hoc Working Group on the Altitude Wind Tunnel, composed of ASEB members to evaluate and comment on NASA's Altitude Wind Tunnel, remained inactive during the reporting period. The need for maintaining this working group will be determined in the next quarter; the working group will be disbanded if no longer needed.

Ad Hoc Meeting on Filament Wound Solid Rocket Cases for the Space Shuttle

The presentations and discussion from the one-day meeting held on December 13, 1983 have been organized into a proceedings and will be available for limited distribution in April 1984.

Reports Published

No reports were published during this period

Commission on Engineering and Technical Systems
COMMISSION

Aeronautics and Space Engineering Board
DIVISION, OFFICE OR BOARD

SUB-UNIT

STATEMENT OF TASK

The Aeronautics and Space Engineering Board was established to focus the talents and energies of the engineering community on significant aerospace policies and programs. It recommends priorities and procedures for achieving aerospace engineering objectives and offers a way to bring engineering and other related expertise to bear on aerospace issues of national importance.

Following are current activities of the Board:

- A Workshop on Aeronautics Technology in the 1990s to develop a data base for R&T program and facilities planning. As a follow-on to the workshop, an ad hoc Vehicle Applications Panel has been formed to translate and focus the workshop technological projections into advanced flight vehicle concepts.

- An ad hoc Committee on Space Station Engineering and Technology Development to review NASA's technology development program in support of the design, development and operation of a space station. Also to be reviewed is the planning for on-orbit maintenance of the space station and the use of the station as an R&T test facility.

- An ad hoc Working Group on NASA's Altitude Wind Tunnel to review NASA's plan to rehabilitate the Lewis Research Center's Altitude Wind Tunnel. Requirements that could be satisfied with such a facility will be discussed, including support of industry, academe, and the military, as well as usage and desirability of charging for use of the facility by others.

In general, the ASEB conducts periodic reviews of the NASA aeronautics and space technology programs considering factors in each category, such as:

Aeronautics

- The magnitude, direction and emphasis of on-going and planned efforts in aeronautical research and technology.

- The relative balance in NASA aeronautical activities directed to near-term versus long-term problems.

- Potential barriers to the introduction and application of new aircraft technology into commercial use.

- o Provision of NASA aeronautical research and technology to other government agencies.

Space Technology

- o Continuing efforts to reduce the cost and enhance the utilization of the shuttle as a space transportation system, including reevaluation, as necessary, of potential military uses of the space transportation system.

- o Alternatives methods for achieving the ultimate purpose of new and emerging uses of space.

In implementing its activities on behalf of NASA, the Board maintains continuing liaison with other elements having interest in aeronautics and space, both within the National Research Council (e.g., Space Applications Board, Space Science Board) as well as outside the organization.

The National Aeronautics and Space Administration provides general core support for the Aeronautics and Space Engineering Board under contract NASW-3455, effective October 1, 1980 -- September 30, 1984.

AERONAUTICS AND SPACE ENGINEERING BOARD

COMMISSION ON ENGINEERING AND TECHNICAL SYSTEMS

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ATTACHMENT 2

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