

February 1969

Brief 69-10041

NASA TECH BRIEF



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Weight Control System

The problem:

To maintain a complete, up-to-date weights file (by effectivity) and to obtain effective weight reports and working reports to be used for weight control and reporting on any transportation vehicle program.

The solution:

The Weight Control System is a set of linked computer programs which provides weight and balance reports from magnetic tape files. It is presently used for weight control and reporting on launch vehicle programs; but, with minor format modifications, it is applicable to aerospace industries, marine industries, and automotive and other land transportation industries.

How it's done:

The program maintains a complete, up-to-date weights file (by effectivity) and obtains six effective weight reports: (1) Detail Weight Listing, (2) Uniform Weight Distribution, (3) Actual Weight, (4) Cable Assembly, (5) Required Procedure Report, (6) Weight Status Report. In addition, working reports are generated for use by a Weight Control Group or its counterpart. This is an active and workable weight control program which guarantees that the vehicle dry weight will not exceed any specification weight and shall otherwise be compatible with performance requirements.

The weights information is supplied by sources such as engineering design, vendors, and manufacturing organizations. All information is transferred to weight control data forms, keypunched, and run against the weights master files. The data is checked by an edit program for data errors and a merge action places the new information along with the old data

on two new tapes. From these tapes a program checks all unit records for the desired effectivity and writes them on one combined tape. From this resulting tape all of the formal and working reports are generated.

There are certain limitations. The weight distributions are limited to those along the X-axis. Only five mass updates can be handled in one computer run, and the part data file is limited to 36 effectivities (vehicles). However, minor modifications can increase the vehicle capacity of the system of programs.

Notes:

1. This program will be useful in weight control and quality control of vehicle construction in aerospace, marine, plus automotive and other land transportation industries.
2. The program is composed of Fortran IV and MAP subroutines and is intended for use on the IBM 7094/7044 Direct Couple System with 32K storage.
3. Inquiries concerning this innovation may be directed to:

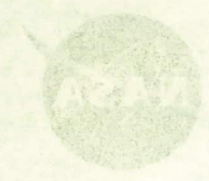
COSMIC
Computer Center
University of Georgia
Athens, Georgia 30601
Reference: B69-10041

Patent status:

No patent action is contemplated by NASA.

Source: Alfred Dyer, Jr., Peter W. Ferrara,
and Harold P. Luke
of The Boeing Company
under contract to
Marshall Space Flight Center
(MFS-15028)

Category 06



NASA TECH BRIEF

NASA Tech Brief Program is a continuing effort to disseminate information on the results of research and development work performed by NASA and its contractors. The program is designed to provide a rapid and efficient means of disseminating technical information to the scientific and technical community.

Weight Control System

The weight control system is a computerized system that monitors the weight of a spacecraft during its mission. It is designed to detect and correct weight changes that could affect the spacecraft's performance. The system consists of a central computer and several sensors that are distributed throughout the spacecraft. The computer receives data from the sensors and calculates the current weight of the spacecraft. It then compares this weight to the target weight and determines if any adjustments need to be made.

The system is designed to be highly reliable and accurate. It is capable of detecting weight changes as small as one percent. The system is also designed to be easy to use and maintain. It is a valuable tool for ensuring the success of a spacecraft mission.

The system was developed by the NASA Langley Research Center. It is a result of research conducted under NASA contract NAS 17-012-001.

Contract Number: NAS 17-012-001
Contract Name: Weight Control System
Contractor: Lockheed Martin Research Corporation
Contract Period: 1968-1970

Contract Officer: Dr. Robert W. Hartman
Contract Office: NASA Langley Research Center
Contract Address: NASA Langley Research Center, P.O. Box 217, Hampton, Virginia 23060
Contract Telephone: (804) 686-1000
Contract Teletype: (804) 686-1000
Contract Fax: (804) 686-1000

The problem is to design a system that can monitor the weight of a spacecraft during its mission. The system must be able to detect and correct weight changes that could affect the spacecraft's performance. The system must also be easy to use and maintain.

The solution is a computerized system that monitors the weight of a spacecraft during its mission. It is designed to detect and correct weight changes that could affect the spacecraft's performance. The system consists of a central computer and several sensors that are distributed throughout the spacecraft. The computer receives data from the sensors and calculates the current weight of the spacecraft. It then compares this weight to the target weight and determines if any adjustments need to be made.

How it's done: The program maintains a computerized record of the weight of the spacecraft and compares it to the target weight. If the weight is found to be outside the target range, the program will automatically adjust the weight of the spacecraft. The program is designed to be highly reliable and accurate. It is capable of detecting weight changes as small as one percent.

The system was developed by the NASA Langley Research Center. It is a result of research conducted under NASA contract NAS 17-012-001. The system is a valuable tool for ensuring the success of a spacecraft mission.