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Brief 71-10130

NASA TECH BRIEF

Manned Spacecraft Center

CSM Programs SM RCS Propellant Quantity Gaging Systems Program

The problem:

To calculate actual and useable remaining propellant quantities in a positive expulsion rocket engine propellant feed system.

The solution:

A computer program which calculates the actual and useable remaining propellant quantities as required.

How it's done:

The program uses the real gas equation PV = ZWRT, along with system pressure and temperature data, to establish a relationship between the helium system pressures and temperatures and the weight of propellant remaining in the tanks. Subroutines within the program are used to calculate propellant, pressurant, and system dependent variables, such as propellant densities, propellant vapor pressure, helium compressibility factor, and helium bottle volume as a function of internal pressure.

Notes:

1. This program is written in FORTRAN IV for the IBM-360 computer.
2. Requests for further information may be directed to:

   COSMIC
   Barrow Hall
   University of Georgia
   Athens, Georgia 30601
   Reference: B71-10130

Patent status:

No patent action is contemplated by NASA.

Source: G. R. Cox and R. G. Reynolds
North American Rockwell Corp.
under contract to
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