



Liquid Hydrogen as a Propulsion Fuel, 1945-1959

By National Aeronautics and Space Administration

Createspace. Paperback. Book Condition: New. This item is printed on demand. Paperback. 342 pages. Dimensions: 10.0in. x 7.0in. x 0.8in. In 1957, when Russia launched the first satellite, the ability of the United States to respond depended on one small launch vehicle still under development, Vanguard, and modifications to ballistic missiles. The subsequent space race featured a rapid buildup of launch vehicle capability in this country during the 1960s, culminating with the giant Saturn V which launched the Apollo lunar expeditions beginning in 1968. A significant part of the increased launch capability resulted from technical decisions made in 1958 and 1959 to use liquid hydrogen in the upper stages of the Centaur and Saturn vehicles-and that story is not well known. The decision to use liquid hydrogen in developing the nations largest launch vehicle was particularly bold, for many experienced engineers doubted the advisability of using a highly hazardous fuel associated with the Hindenburg disaster of 1937, a gas difficult to liquefy, a liquid so cold-close to absolute zero-that storage and handling are difficult, and so light-1/14 the density of water-that large tank volumes are required, with attendant problems of vehicle mass and drag. Hydrogen had been considered in astronautics and...



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