

A MODULAR TELECOMMUNICATION GEOPLATFORM CONCEPT

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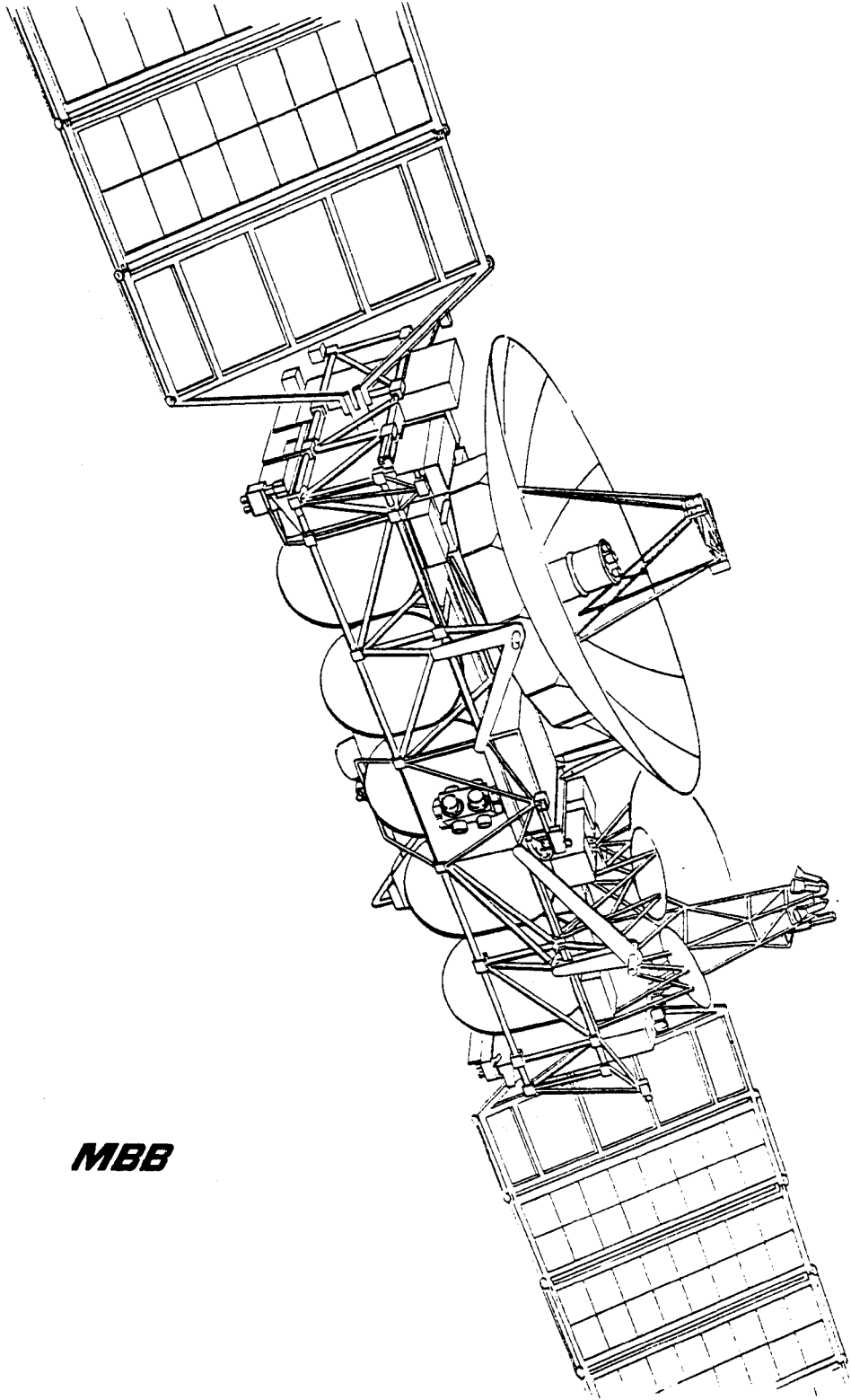


ABSTRACT

The paper describes a new GEO platform design with the special features of modularity and integrated transfer propulsion. It is a candidate for the 3000 kg-class of communication satellites required for the next decade INTELSAT VII and multi-nation (TVBS). The technical results of a study performed for the German Ministry of Research and Technology (BMFT) are presented regarding the GEO platform and its performance in terms of communication payload and mission lifetime.

The reference system design has a total launch mass of 14.3 Mg (metric tons) in LEO including 10.9 Mg transfer propellants mass. The initial mass in CEO is 3.4 Mg allowing for 400 to 700 kg communication equipment, depending on power level, eclipse capability requirements (batteries) and mission lifetime.

The launch vehicle for this platform is the Space Shuttle, the associated launch cost would be only 20 Mio. Dollars (1980), without additional cost for any type of perigee or transfer stage. The platform propels itself from LEO (300 km) to the geosynchronous orbit with a 6 impulse transfer, provided by a 5 kN engine (1100 lbs thrust level). This launch mode - although not being the optimum from the performance standpoint - proves to be the most economic one, compared to other alternatives, by example Shuttle + Centaur, with some 52 Mio. Dollars (80) total launch cost.



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