Introduction

The purpose of this document is to describe concisely what is known in the West about the heritage of the major hardware elements associated with the Mir space station complex. These are

- The Mir base block, launched in 1986
- The modules added to the base block in 1987, 1989, and 1990
- The Soyuz-TM crew transports and Progress-M supply ships, which first appeared in 1986 and 1989, respectively.

This work is divided into four parts. Part 1, "Soyuz," examines the Soyuz spacecraft and its derivatives, including those used in the abandoned manned lunar landing program. Part 2, "Almaz, Salyut, and Mir," looks at the Almaz and Long-Duration Orbital Station (Russians acronym DOS) space stations. The major portion of Part 2 is devoted to the three DOS multiport stations, Salyut 6, Salyut 7, and Mir. Part 3, covering the "Space Station Modules," describes their surprisingly convoluted heritage, with particular attention given to the Mir modules Kvant, Kvant 2, and Kristall. Part 4 is a chronology comparing U.S. and Soviet/Russian manned spaceflight developments in context. It begins with the first manned spaceflight, but attempts completeness only from 1970 to its conclusion (November 1994).

All times and dates are in Universal time (UT) unless otherwise stated. The sources for times and dates were the *Satellite Situation Report*, NASA Goddard Space Flight Center, Vol. 34, No. 1, March 31, 1994; *TRW Space Log 1957-1991*, TRW, 1992; *TRW Space Log 1992*, TRW, 1993; *TRW Space Log 1993*, TRW, 1994; Jonathan McDowell, Harvard-Smithsonian Center for Astrophysics.

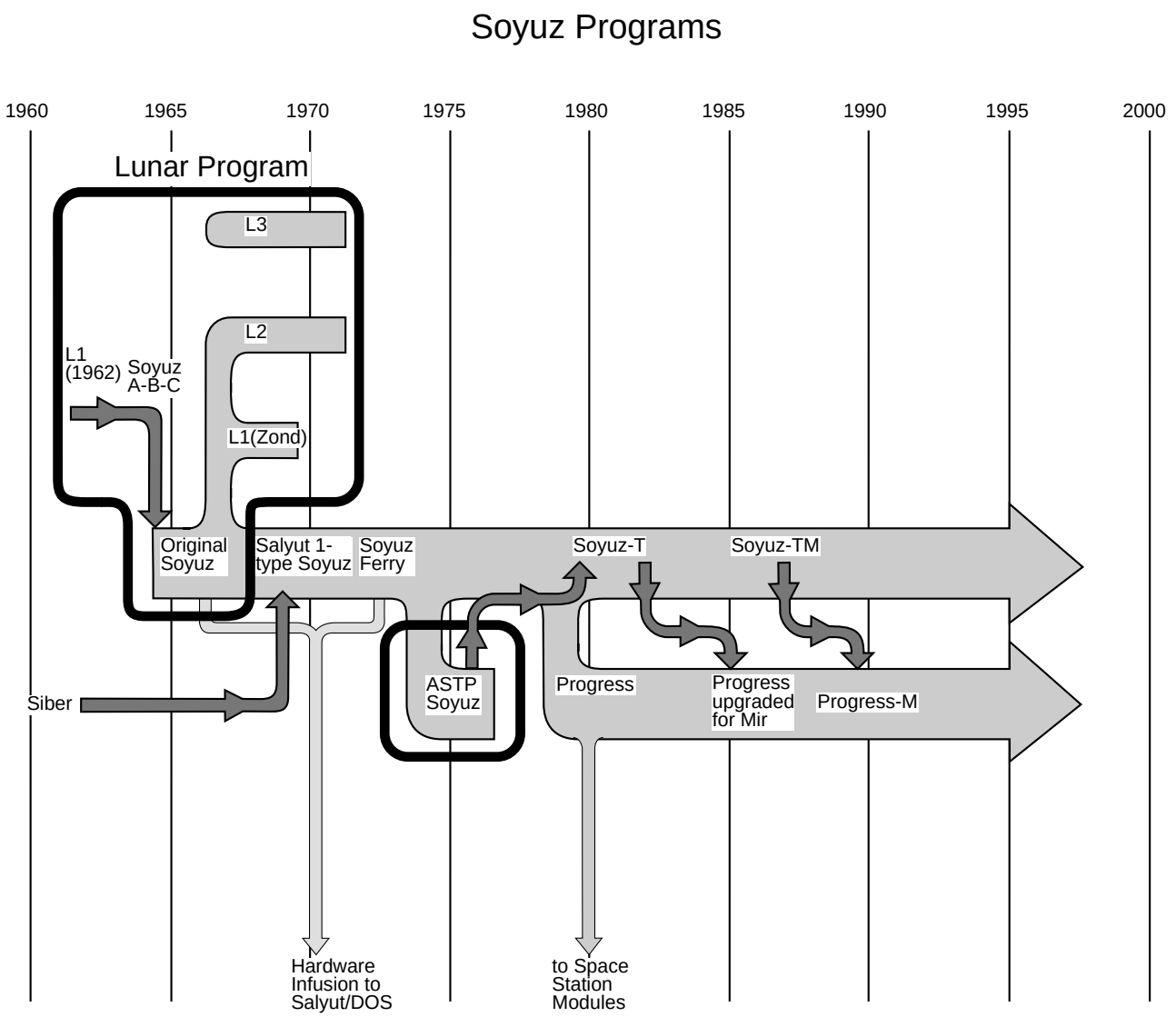

Figure 1-1. Soyuz evolution. The light gray arrows trace the evolution of flown spacecraft. The dark gray arrows show influence of concepts and flown spacecraft on other concepts and flown spacecraft. Broad black lines enclose distinct programs. The stippled and light gray arrows pointing downward, off the chart, connect to the Space Station chart (figure 2-1) and the Station Modules and Tug Programs chart (figure 3-1), respectively.