

## FS Turbojet Engine Simulation

Air file sections 1502, 1503, and 1504 are data tables that define the relationships between throttle setting, compressor rpm (CN2), turbine rpm (CN1), and mach number. The runtime values of throttle setting and mach number are used to look-up values for compressor rpm and turbine rpm.

Tables 1503 and 1504 together form a single three dimensional matrix used to look up a single value for CN2 given throttle setting, mach number and air pressure. Both tables by themselves are two dimensional arrays indexed by throttle percentage and Inverse Airpressure Ratio (IAP). When combined, table 1503 provides the low speed values (typically zero) and table 1504 provides the high speed values (typically mach 0.9); the actual mach numbers of the low and high endpoints are in these tables at index 0, 0.

Table 1502 is a two dimensional array used to look up a value for CN1 given CN2 and mach number. It is indexed by CN2 and mach number.

Table 1506 is a two dimensional array used to look up a "thrust factor" given CN1 and mach number. It is indexed by CN1 and mach number. This "thrust factor" is used to modify the simulator's basic gross thrust calculation.

Table 1505 is a two dimensional array. The data contained in this section is indexed by CN2, and it controls the turbine spool-up rate. Higher numbers slow the turbine spool-up rate. The default data is lowest for low CN2 values, which causes turbine speeds to come up fast initially, and slow down at higher rpm values.

Table 1507 is a two dimensional array indexed by CN1 and mach number. The data in this table is used to calculate the mass airflow rate that is subsequently used to calculate the ram drag.

The following figure presents a diagram of the FS turbojet engine simulation data flow.

