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PILOTS NOTES

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Date: 14 October 1947

Pilot: Capt. Charles E. Yeager

Time: 14 Minutes

9th Powered Flight

1. After normal pilot entry and the subsequent climb, the XS 1 was dropped from the B 29 at 20,000' and at 250 MPH IAS. This was slower than desired.
2. Immediately after drop, all four cylinders were turned on in rapid sequence, their operation stabilizing at the chamber and line pressures reported in the last flight. The ensuing climb was made at .85-.88 Mach<sub>1</sub>, and, as usual, it was necessary to change the stabilizer setting to 2 degrees nose down from its pre drop setting of 1 degree nose down. Two cylinders were turned off between 35,000' and 40,000' but speed had increased to .92 Mach<sub>1</sub> as the airplane was leveled off at 42,000'. Incidentally, during the slight push over at this altitude, the lox line pressure dropped perhaps 40 psi and the resultant rich mixture caused the chamber pressures to decrease slightly. The effect was only momentary, occurring at .6 G's and all pressures returned to normal at 1 G.
3. In anticipation of the decrease in elevator effectiveness at speeds above .93 Mach<sub>1</sub>, longitudinal control by means of the stabilizer was tried during the climb at .83, .88, and .92 Mach<sub>1</sub>. The stabilizer was moved in increments of 1/4 - 1/3 degree and proved to be very effective; also, no change in effectiveness was noticed at the different speeds.
4. At 42,000' in approximately level flight, a third cylinder was turned on. Acceleration was rapid and speed increased to .98 Mach<sub>1</sub>. The needle of the machmeter fluctuated at this reading momentarily, then passed off the scale. Assuming that the off scale reading remained linear, it is estimated that 1.05 Mach<sub>1</sub> was attained at this time. Approximately 30% of fuel and lox remained when this speed was reached and the motor was turned off.
5. While the usual light buffet and instability characteristics were encountered in the .88-90 Mach<sub>1</sub> range, and elevator effectiveness was very greatly decreased at .94 Mach<sub>1</sub>, stability about all three axes was good as speed increased and elevator effectiveness was regained above .97 Mach<sub>1</sub>. As speed decreased after turning off the motor, the various phenomena occurred in reverse sequence at the usual speeds, and in addition, a slight longitudinal porpoising was noticed from 198-96 Mach<sub>1</sub> which controllable by the elevators alone. Incidentally, the stabilizer setting was not changed from its 2 degrees nose down position after trial at .92 Mach<sub>1</sub>.
6. After jettisoning the remaining fuel and lox a 1 G stall was performed at 45,000'. The flight was concluded by the subsequent glide and a normal landing on the lake bed.

/s/

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CHARLES E. YEAGER  
Capt., Air Corps.

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