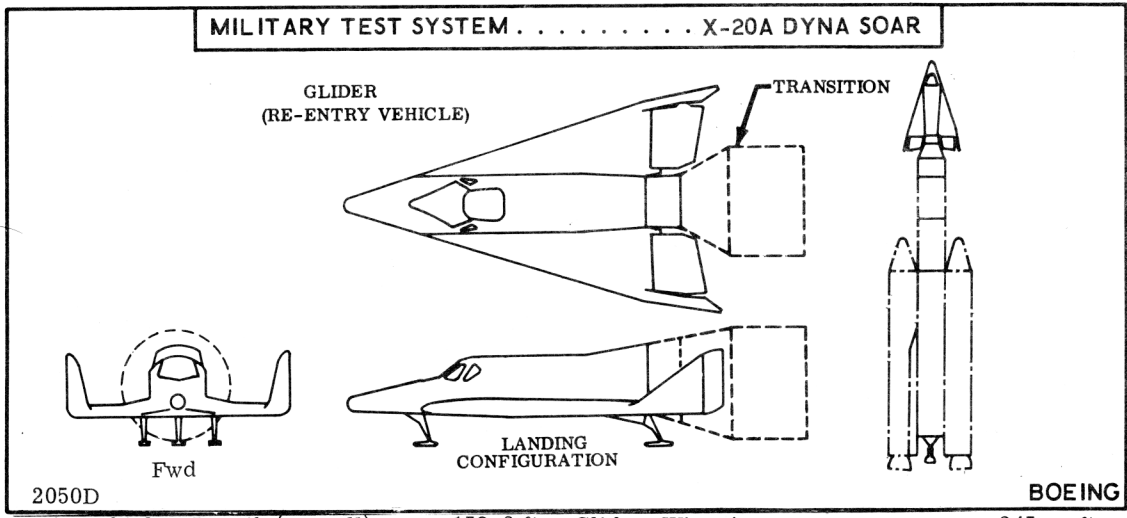


unclassified

B1
Dyna Soar '411' / char

Characteristics Summary

MILITARY TEST SYSTEM X-20A DYNA SOAR



Air Vehicle: Length (overall) 152.0 ft	Glider: Wing Area 345 sq ft
Booster Length (overall) 108.7 ft	Wing Span 20.4 ft
Strap-on Stage Length 85.3 ft	Length (glider only) 35.3 ft
		(glider and transition section)	43.3 ft

PROCUREMENT

Number to be delivered in fiscal years

	FY 64	FY 65	FY 66	FY 67	FY 68	TOTAL
Glider	0	2	4	2	0	8
Refurbished Glider	0	0	0	3	0	3

STATUS

- Orbital Program Go-Ahead 11 Dec 61
- Multi-Orbit Go-Ahead 13 Jul 62
- Launch Dates: (Planned)
 First Air Launch: May 65
 First Unmanned Ground Launch: Jan 66
 First Piloted Ground Launch: Jul 66

PROGRAM TERMINATED: 10 DEC 63

POWER PLANT

Booster:
 Model Titan III
 Mfr SSD and their contractors
 Titan III consists of a transfer stage, the modified Titan II liquid propellant booster and two 'strap-on' solid propellant boosters.
 Glider:
 A solid propellant rocket is provided for escape purposes only in event of abort on the pad or during boost.

Nr & Model . . . (1) XM92
 Mfr Thiokol
 Type Solid Rocket
 Duration 13.4 sec
 Thrust 40,000 lb@SL

FEATURES

Crew 1
 Radiation Cooled Glider Structure with compartment water wall structure utilizing latent heat of evaporation for heat dissipation.
 Reaction plus aerodynamic controls.
 Full time three axis self-adaptive stability augmentation.
 Skid-type three point landing gear.
 Inertial guidance for boost, orbit and re-entry.
 C-Band tracking

SHF & UHF Communications.
 Large data capacity telemetry.
 Total glider abort escape system during boost with pilot seat ejection escape below .9 Mach.
 Pilot Vision
 Side windows only during boost and orbit.
 Side windows and forward windshield after re-entry and during the landing phase.
 SHF beacon & SHF slant ranging
 UHF pilot search & rescue transceiver

Provides piloted, maneuverable vehicle and associated equipment for conducting experiments in the hypersonic and orbital flight regime in order to: (1) gather research data to solve design problems of controlled, lifting re-entry from orbital flight; (2) demonstrate piloted, controlled, maneuvering re-entry with tangential recovery at a pre-selected landing site; (3) test vehicle equipments and explore military man's function in space.

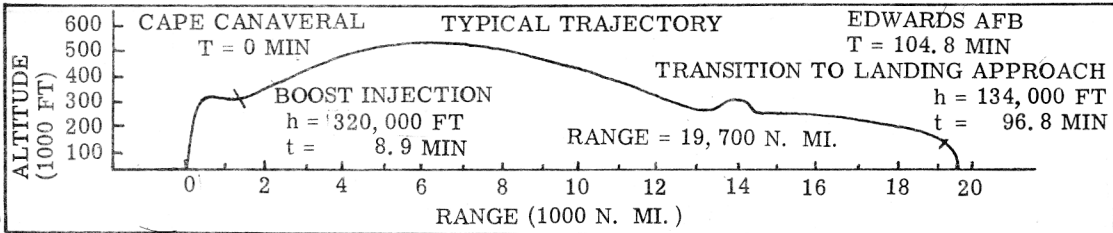
DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

15 Jan 64

CONFIDENTIAL

X-20A DYNA SOAR

Characteristics Summary Basic Mission . . . X-20A DYNA SOAR



PROGRAM TERMINATED: 10 DEC 63

PERFORMANCE

LAUNCH	BOOST	VELOCITY
Site: Cape Canaveral Initial Heading: 105° (planned) Heading at injection (Planned): 115°	Thrust (nominal) Stage 0 2,540,000 lb Stage 1 474,000 lb Stage 2 100,565 lb Trans. stage . 16,000 lb Boost Injection Altitude 320,000 ft Range 1085-n. mi Time 8.9 min	V boost injection . 24,450 fps V apogee 24,192 fps V re-entry 23,000 fps V approach 270 knots
ACCELERATION	RANGE	LANDING
(Nominal) Peak axial load factor Boost 3.96 Glide -0.08 Peak normal load factor Glide 1.1 Approach +4.0 -1.0	Longitudinal Range Orbital Once Around Distance (once around) 19,700 n mi Time (once around) . 104.8 min	Site: Edwards AFB Landing Speed: . . 200 knots Run-out Distance . . .5000 ft
TEMPERATURE	WEIGHTS	LOADS
Max during flight: Nose Stagnation 3250° F Wing Leading Edge 2650° F	Launch (gross) 1,365,245 lb Glide & Transition (launch) Max 23,000 lb Nominal 18,000 lb Glider Launch 11,390 lb Re-entry 11,150 lb Landing 10,830 lb	Pay load: Compartment capacity 75 cu ft and 1000 lb Glider acceleration rocket: Solid Propellant . . . 2215 lb

NOTES

- Performance Basis:
 - Estimated data
 - Boeing document D2-8080-1, "Glider Performance Characteristics Report".
 - Atmosphere during glide = 1959 ARDC Model
- Drone recovery and SHF & UHF Command receiver/decoders employed in unmanned launches.
- B-52C (AF53-399) will be modified for use as air launch vehicle and for ferry purposes.
- Not shown in Procurement Section: one(1) static Test Glider - FY65.
- Revision Basis: To reflect termination of program.