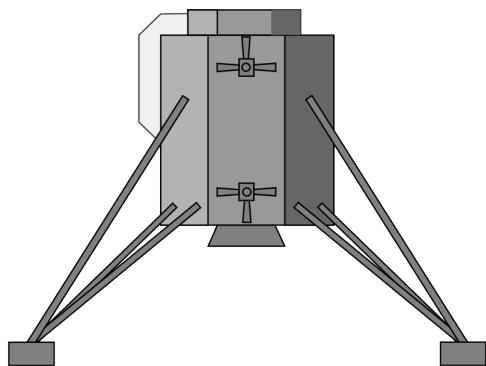




Sky Dart

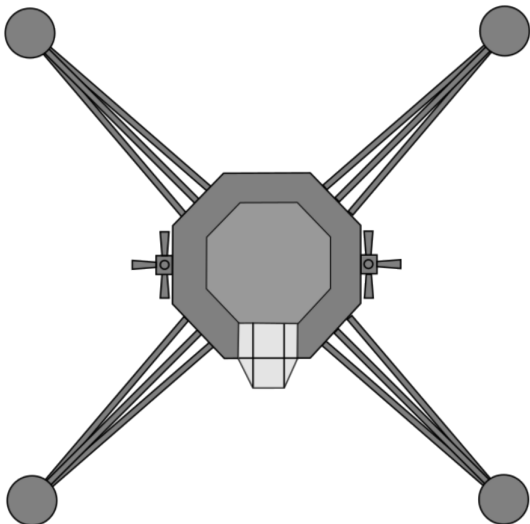


**AMC SKY DART
MODEL: SDART-03**

OPERATORS MANUAL

COPYRIGHT (C) 1988 AMC AEROSPACE

SYSTEM INF. (SYS)	- OVERVIEW (OVR) PERFORMANCE (PERF)
PILOT CONTROLS (CTRL)	- HOVER AUTOPILOT (AP HOVR)
SIMULATION (SIM)	- OVERVIEW (OVR) KEYBOARD (KBD) VIRTUAL REALITY (VR) XBOX (XBOX) PLAYSTATION (PS) STEAMDECK (STEAM)



AMC SKY DART

LIGHT-DUTY, SINGLE-SEAT,
SHORT DURATION LOGISTICS
SPACECRAFT FOR CIS-LUNAR
OPERATIONS.

MODEL NUMBER SDART-03

SPECIFICATIONS

EMPTY MASS 2500 KG
MAX TAKEOFF WT 6250 KG
FUEL/OXIDIZER 2500 KG
 (NOMINAL)
FUEL RESERVE 1100 KG
 (3600 KG MAX)

PROPULSION

ENGINE MAX THR 20 KN
ENGINE MIN THR 2 KN

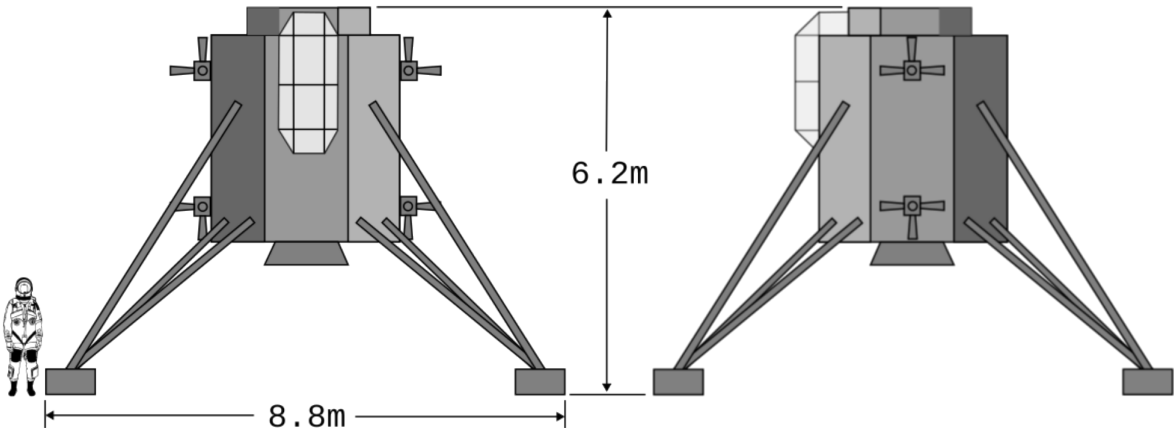
DIMENSIONS

WIDTH OVERALL 8.8 M
HEIGHT OVERALL 6.2 M

LANDING GEAR

MAX LANDING SPD (EMPTY) 4.7 M/S
MAX LANDING SPD (MTOW) 2.3 M/S

NOTE: MAX LANDING SPEEDS ASSUME
SIMULTANEOUS TOUCHDOWN OF ALL
FEET AND ZERO LATERAL OR
ROTATIONAL VELOCITY.





NOTES ON MASS ENVELOPE

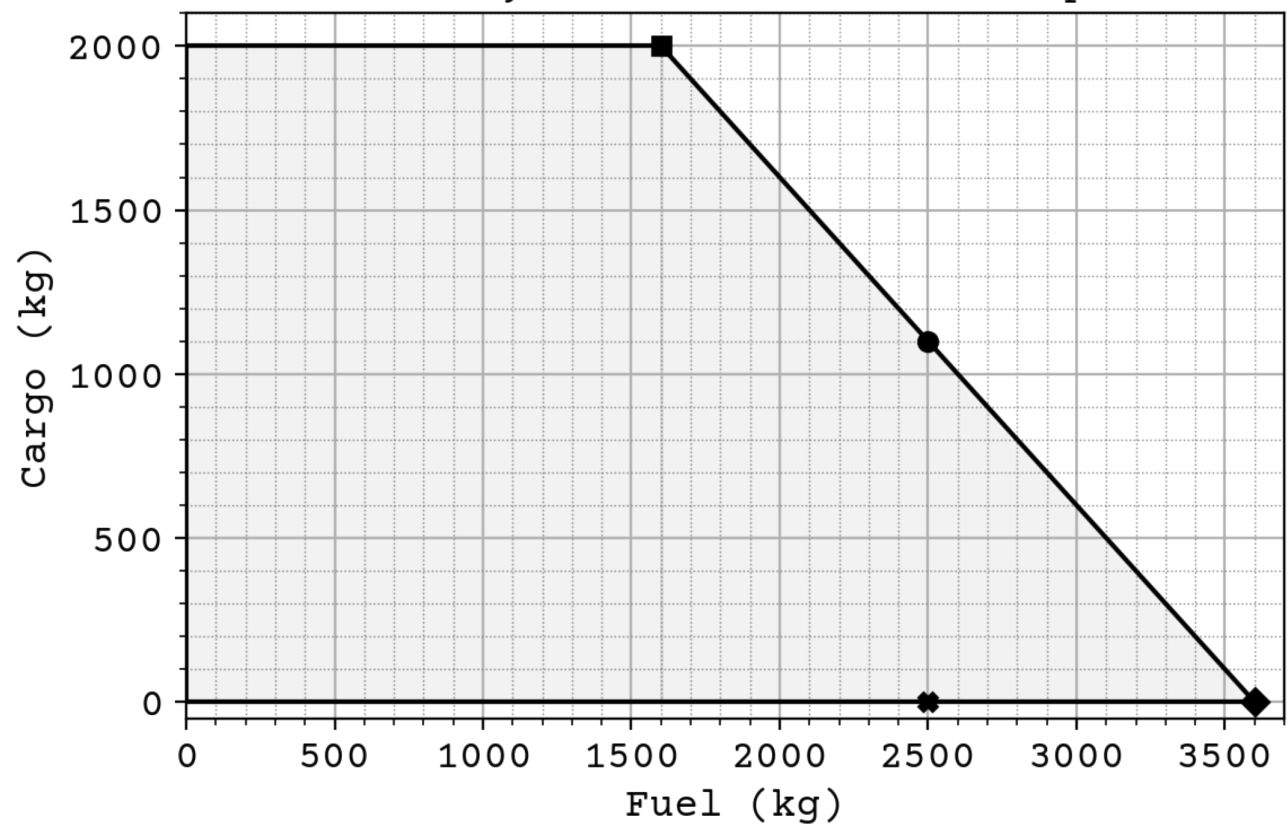
ORE CARGO IS HARD-LIMITED
TO 2000 KG

ABSOLUTE MAXIMUM FUEL
CAPACITY IS 3600 KG

NOMINAL MAXIMUM FUEL
CAPACITY IS 2500 KG

OPERATION OUTSIDE THE
SHADED REGION IS PHYSICALLY
POSSIBLE BUT STRONGLY
DISCOURAGED. RISKS OF
LANDING GEAR DAMAGE OR
AUTOPILOT CONTROL FAILURE
ARE SUBSTANTIAL AND MAY
RESULT IN LOSS OF
SPACECRAFT, PILOT DEATH,
AND EVEN INCUR A
**SIGNIFICANT RISK OF VOIDING
THE MANUFACTURER WARRANTY.**

AMC Sky Dart Safe Mass Envelope



- ◆ fuel 2500 kg, cargo 0 kg
- ◆ fuel 3600 kg, cargo 0 kg
- fuel 2500 kg, cargo 1100 kg
- fuel 1600 kg, cargo 2000 kg



SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
DELTA V FROM INITIAL MASS 02/13

NOTES ON DELTA V (VELOCITY)

ORE CARGO IS HARD-LIMITED
TO 2000 KG

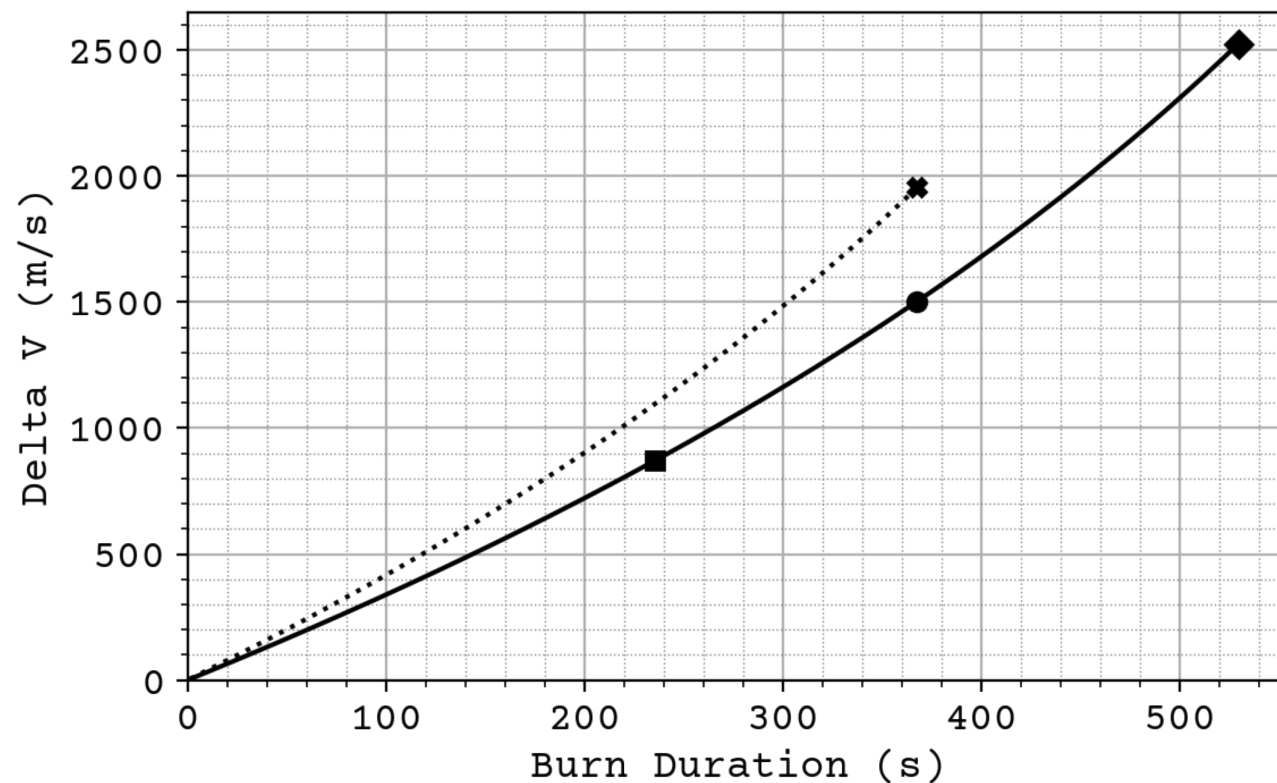
ABSOLUTE MAXIMUM FUEL
CAPACITY IS 3600 KG

NOMINAL MAXIMUM FUEL
CAPACITY IS 2500 KG

PLANNED OPERATION AT OR
NEAR THE MASS CAPACITIES
SHOWN MAY RESULT IN LOSS OF
SPACECRAFT, OR PILOT DEATH.

ALWAYS OPERATE WITH AMPLE
SAFETY MARGINS.

AMC Sky Dart
Total Delta V at Maximum Thrust



- fuel 2500 kg, cargo 0 kg
- fuel 3600 kg, cargo 0 kg
- fuel 2500 kg, cargo 1100 kg
- fuel 1600 kg, cargo 2000 kg



SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
HOVER DURATION BY INIT. MASS 03/13

NOTES ON HOVER DURATION

SHADED MARGIN BELOW EACH
CURVE REPRESENTS APPROX-
IMATE REDUCTION OF FUEL
RESERVE RESULTING FROM
USING AUTOMATIC HOVER AUTO-
PILOT

ORE CARGO IS HARD-LIMITED
TO 2000 KG

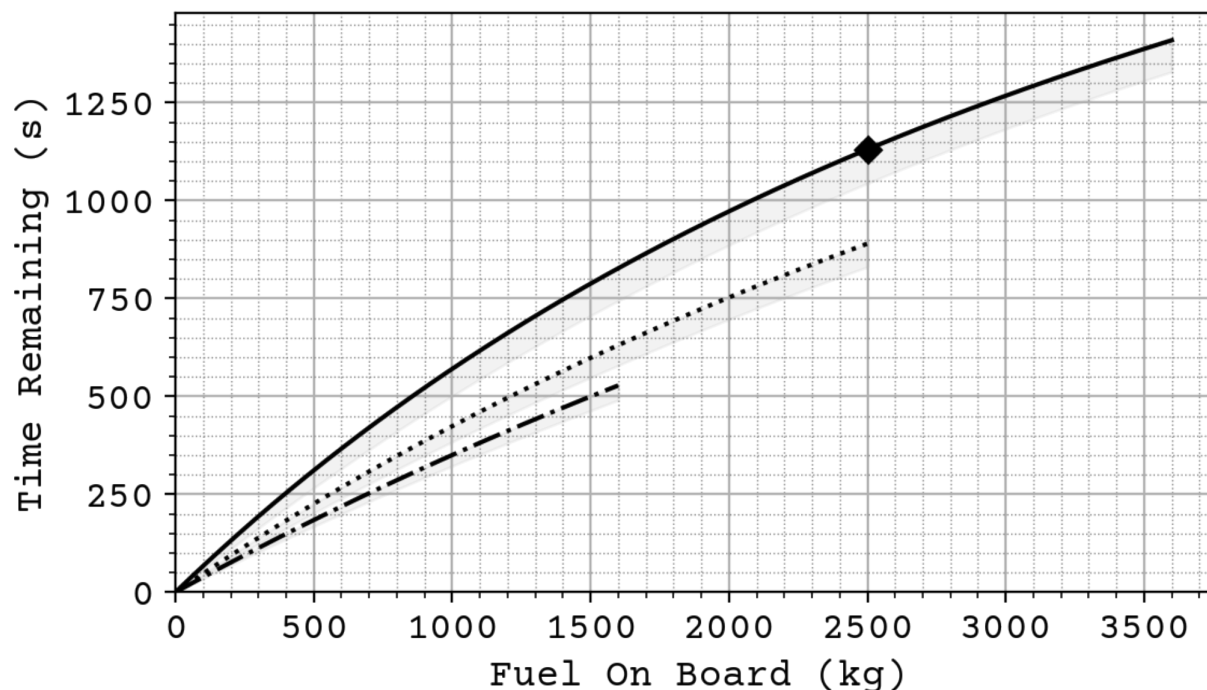
ABSOLUTE MAXIMUM FUEL
CAPACITY IS 3600 KG

NOMINAL MAXIMUM FUEL
CAPACITY IS 2500 KG

PLANNED OPERATION AT OR
NEAR THE MASS CAPACITIES
SHOWN MAY RESULT IN LOSS OF
SPACECRAFT, OR PILOT DEATH.

ALWAYS OPERATE WITH AMPLE
SAFETY MARGINS.

AMC Sky Dart
Hover Duration



- no cargo
- ◆— nominal fuel load
- 1100.0 kg cargo
- .- 2000.0 kg cargo
- RCS loss (est.)



SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
RANGE IN AUTOPILOT AT 10 M/S 04/13

NOTES ON RANGE PERFORMANCE

GRAPH SHOWS EXPECTED RANGE
IN AUTOPILOT MODE AT 10 M/S
LATERAL SPEED COMMAND.

ORE CARGO IS HARD-LIMITED
TO 2000 KG

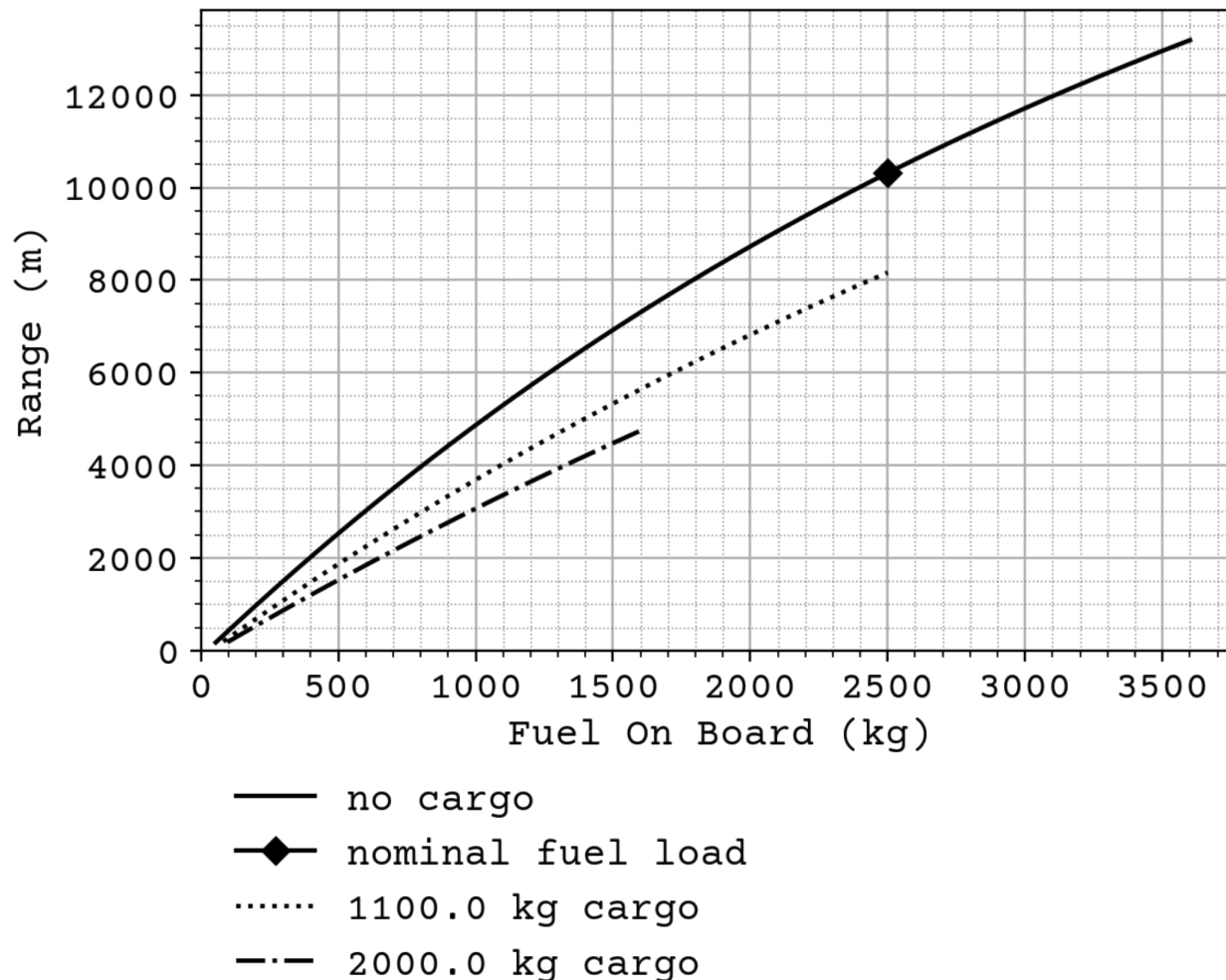
ABSOLUTE MAXIMUM FUEL
CAPACITY IS 3600 KG

NOMINAL MAXIMUM FUEL
CAPACITY IS 2500 KG

PLANNED OPERATION AT OR
NEAR THE MASS CAPACITIES
SHOWN MAY RESULT IN LOSS OF
SPACECRAFT, OR PILOT DEATH.

ALWAYS OPERATE WITH AMPLE
SAFETY MARGINS.

AMC Sky Dart
Range On Autopilot (10 m/s)





SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
RANGE IN AUTOPILOT AT 30 M/S 05/13

NOTES ON RANGE PERFORMANCE

GRAPH SHOWS EXPECTED RANGE
IN AUTOPILOT MODE AT 30 M/S
LATERAL SPEED COMMAND.

AVOID HIGH-SPEED TRAVEL AT
LOW ALTITUDE OVER UNEVEN
TERRAIN.

ORE CARGO IS HARD-LIMITED
TO 2000 KG

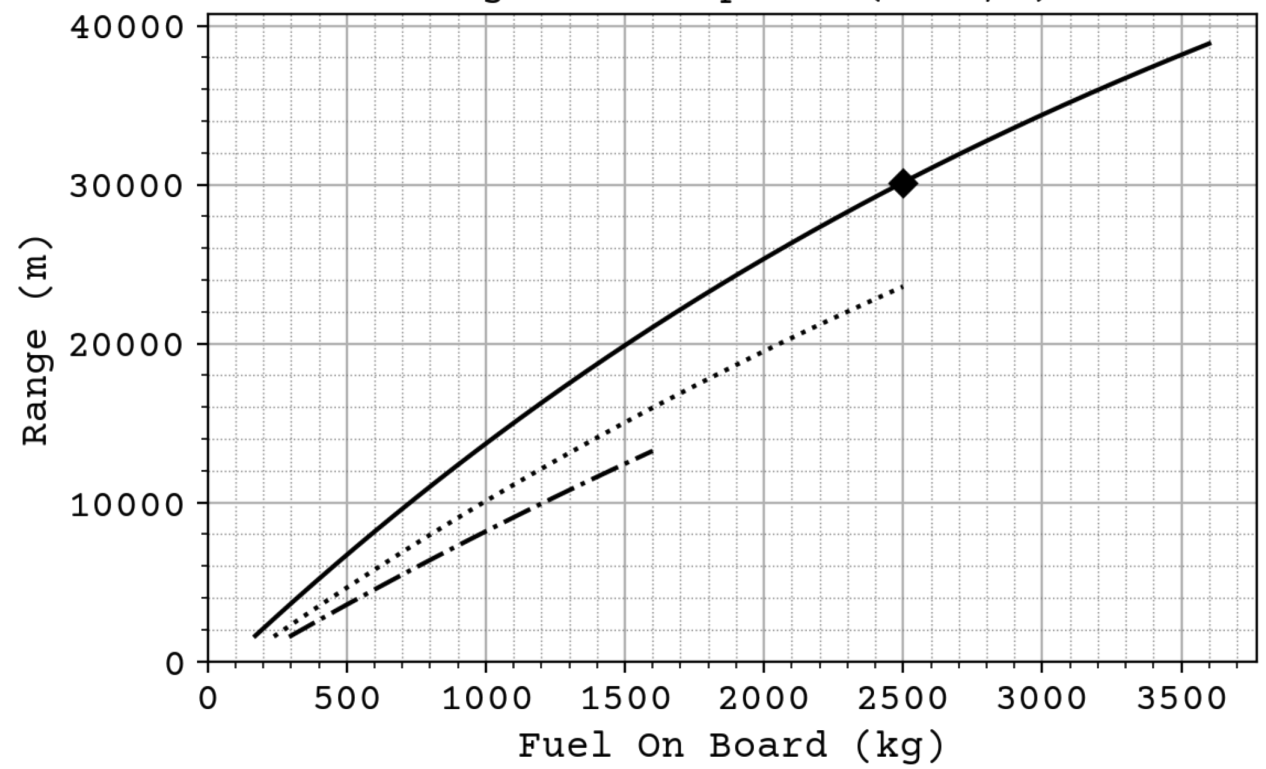
ABSOLUTE MAXIMUM FUEL
CAPACITY IS 3600 KG

NOMINAL MAXIMUM FUEL
CAPACITY IS 2500 KG

PLANNED OPERATION AT OR
NEAR THE MASS CAPACITIES
SHOWN MAY RESULT IN LOSS OF
SPACECRAFT, OR PILOT DEATH.

ALWAYS OPERATE WITH AMPLE
SAFETY MARGINS.

AMC Sky Dart
Range On Autopilot (30 m/s)



- no cargo
- ◆— nominal fuel load
- 1100.0 kg cargo
- .- 2000.0 kg cargo



NOTES ON RANGE PERFORMANCE

GRAPH SHOWS EXPECTED RANGE
IN AUTOPILOT MODE AT 50 M/S
LATERAL SPEED COMMAND.

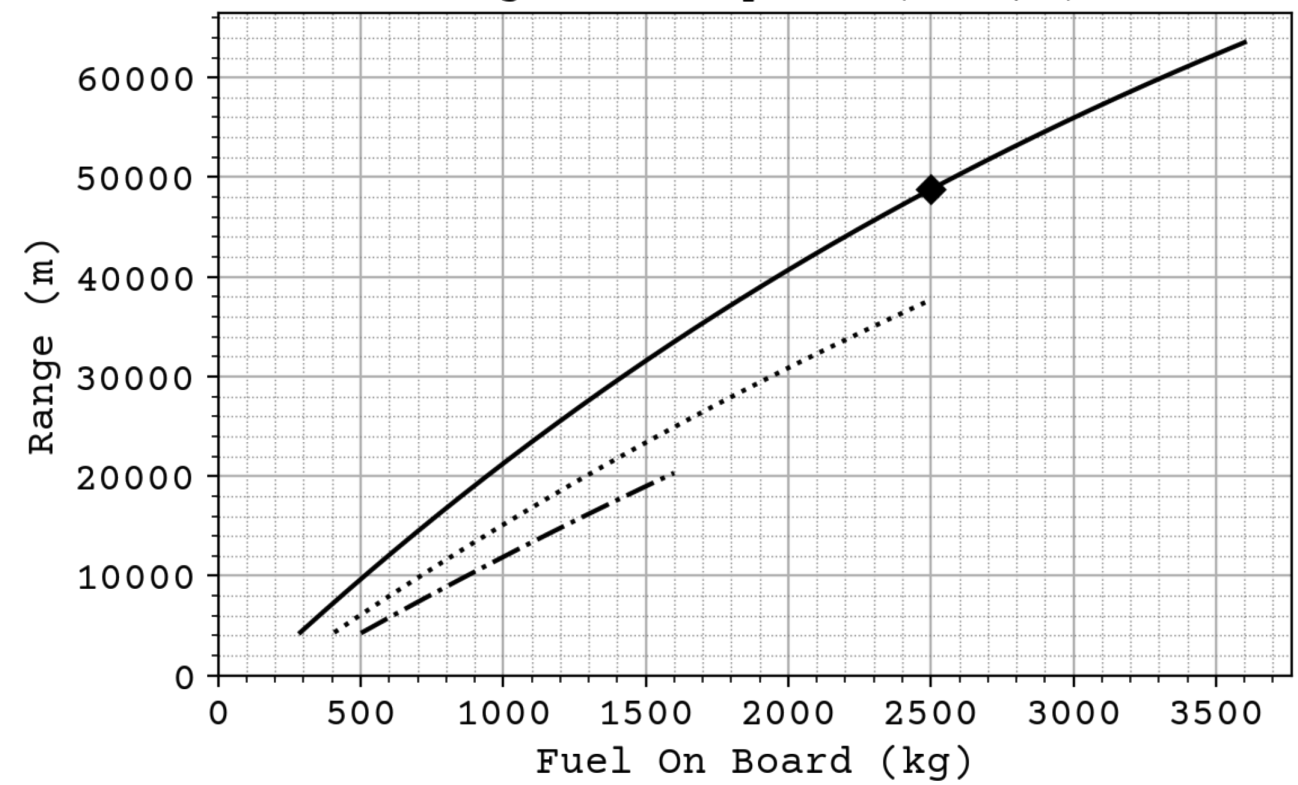
AVOID HIGH-SPEED TRAVEL AT
LOW ALTITUDE OVER UNEVEN
TERRAIN.

ALWAYS CONSIDER HEADING
ERRORS AND FAMILIARIZE
YOURSELF WITH DESTINATION
TERRAIN BEFORE EMBARKING.

PLANNED OPERATION AT OR
NEAR THE MASS CAPACITIES
SHOWN MAY RESULT IN LOSS OF
SPACECRAFT, OR PILOT DEATH.

ALWAYS OPERATE WITH AMPLE
SAFETY MARGINS.

AMC Sky Dart
Range On Autopilot (50 m/s)



- no cargo
- ◆— nominal fuel load
- 1100.0 kg cargo
- .- 2000.0 kg cargo



NOTES ON SUBORBITAL RANGE

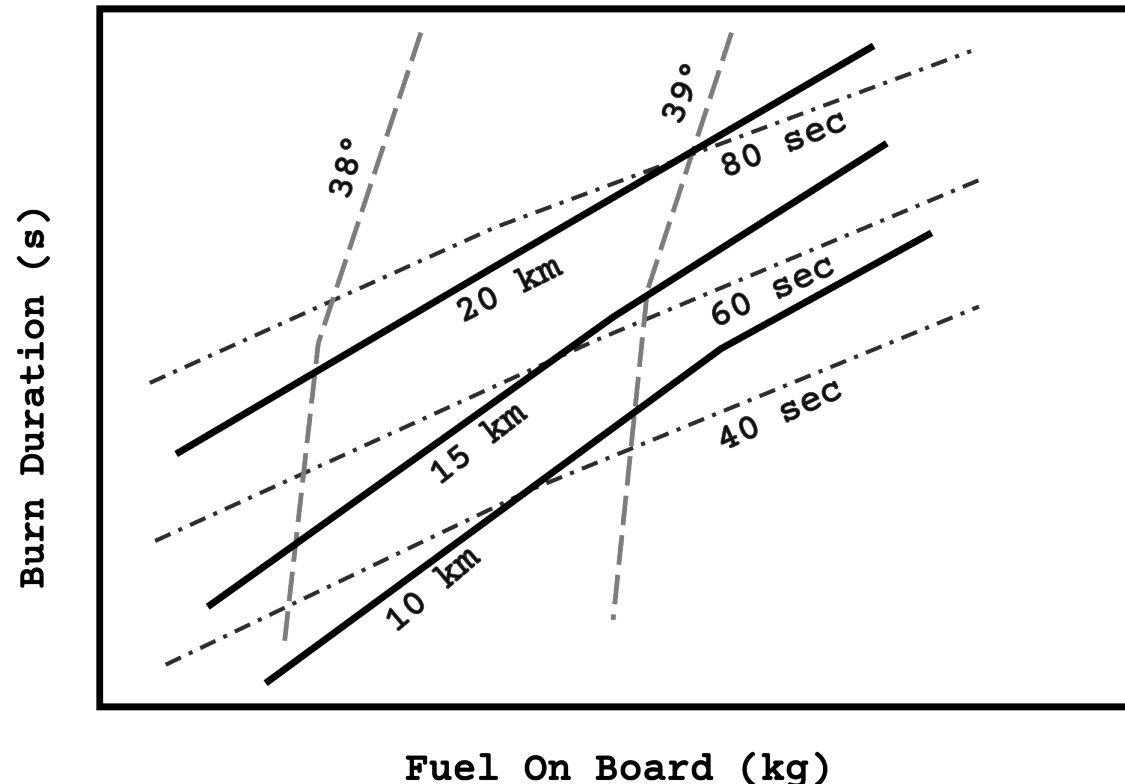
USE PERFORMANCE CHARTS ON FOLLOWING
PAGES TO ESTIMATE MAXIMUM THRUST
RANGE IN BALLISTIC FLIGHT.

1. FIND FUEL ON BOARD (HORIZ. AXIS)
(IN KG).
2. IDENTIFY SOLID CURVE MATCHING
DESIRED RANGE OF FLIGHT (KM).
3. READ CORRESPONDING BURN DURATION
AT MAXIMUM THRUST (VERT. AXIS)
(IN SECONDS).
4. ESTIMATE BEST BURN PITCH
(FORWARD) ANGLE USING DASHED
CURVES.
5. USE COAST TIME FROM DASH-DOT
CURVES (IN SECONDS) TO ESTIMATE
WHEN TO BEGIN BRAKING BURN.

CAUTION: ESTIMATES MAY BE
INACCURATE DUE TO DIFFERENCES IN
LAUNCH/LANDING TERRAIN ALTITUDE AND
TERRAIN MOTION (CORIOLIS). ALLOW
AMPLE FUEL RESERVES TO MAKE
CORRECTIONS AFTER BRAKING.

ALWAYS OPERATE WITH AMPLE SAFETY
MARGINS. YOUR LIFE DEPENDS ON IT.

Lunar Sub-Orbital Performance (XXX kg Payload)



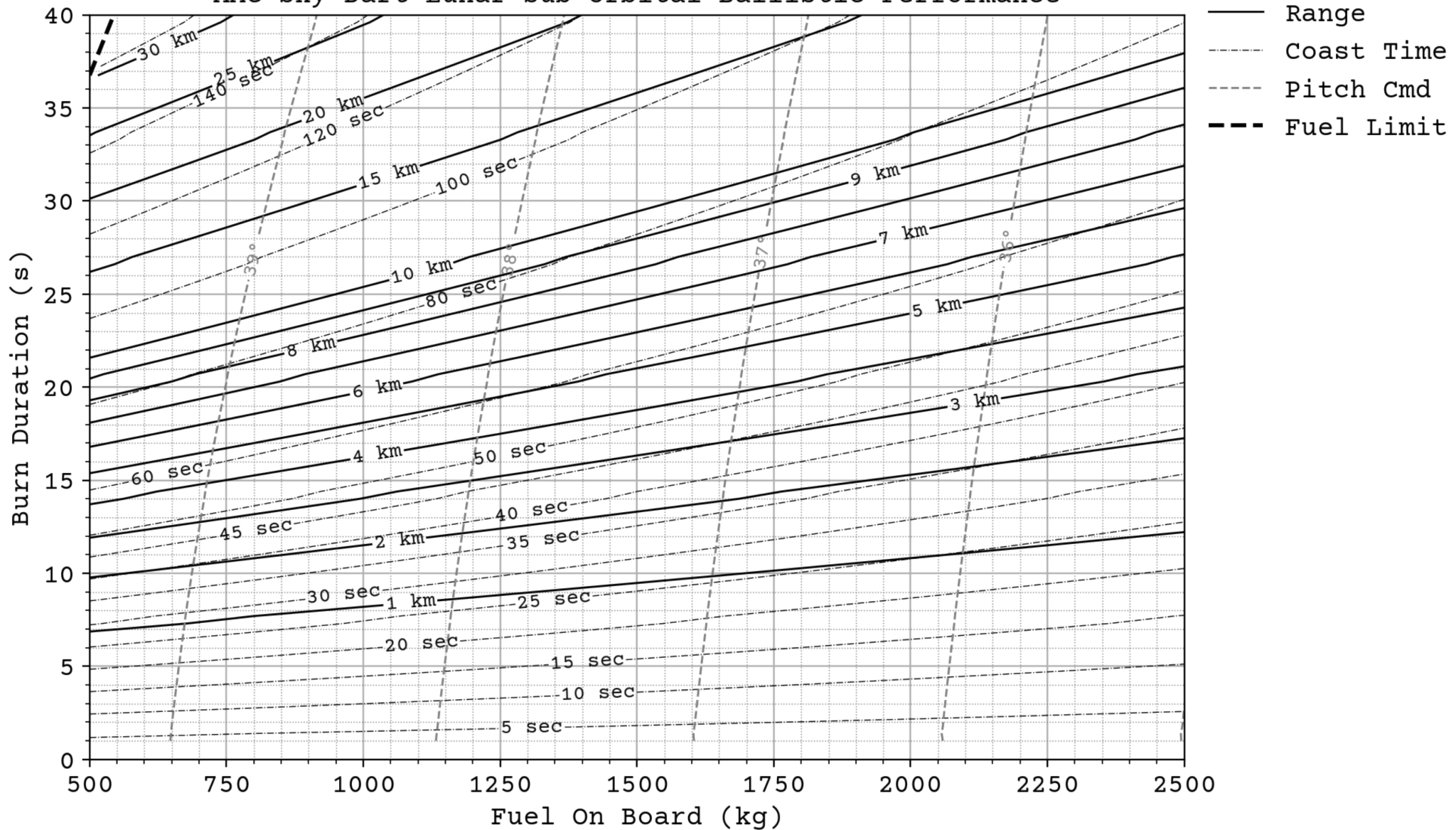


SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
SUBORBITAL AT 40S MAX, 0 KG 08/13

AMC Sky Dart Lunar Sub-Orbital Ballistic Performance

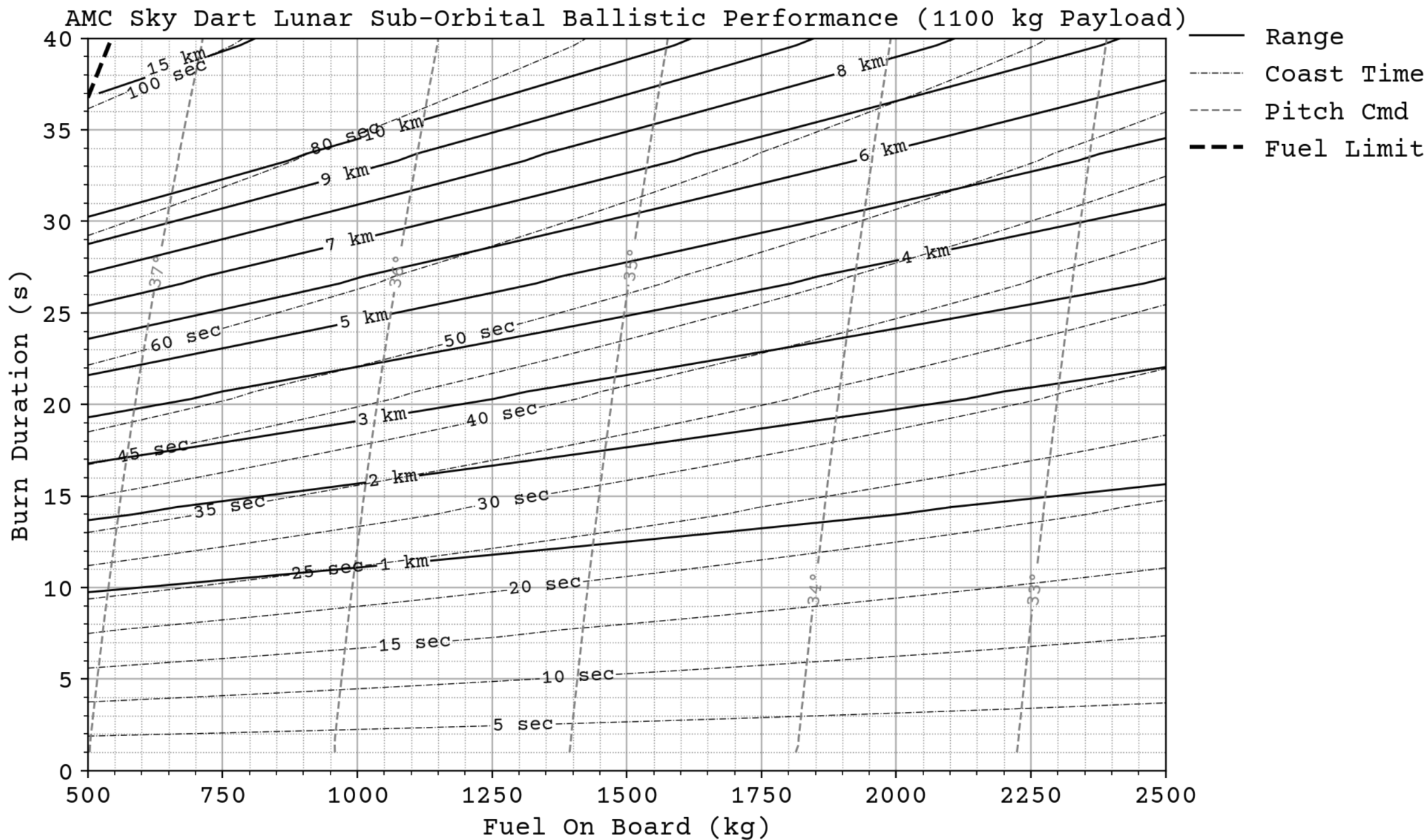




SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
SUBORBITAL 40S MAX, 1100 KG 09/13

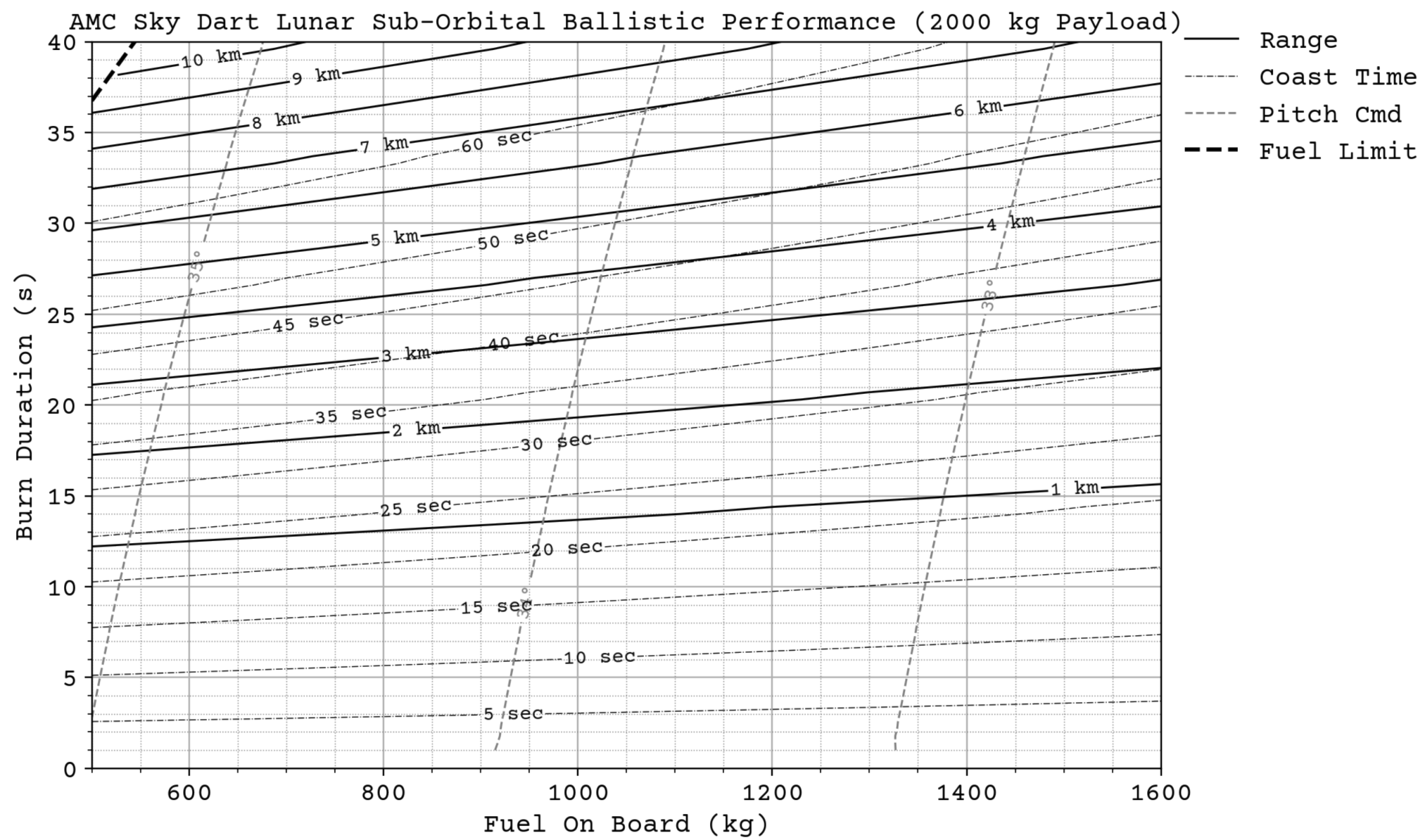




SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
SUBORBITAL 40S MAX, 2000 KG 10/13



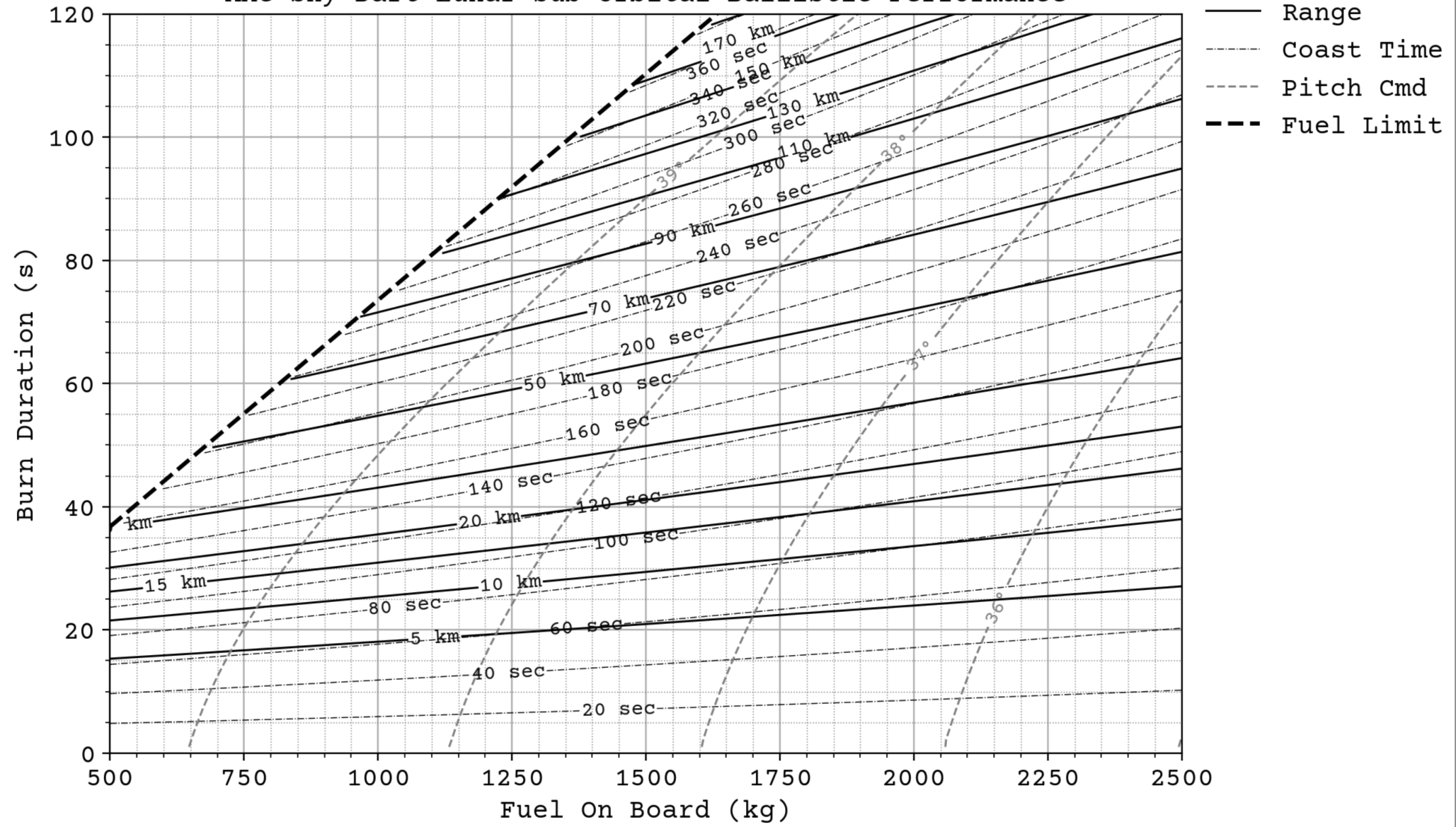


SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
SUBORBITAL AT 120S MAX, 0 KG 11/13

AMC Sky Dart Lunar Sub-Orbital Ballistic Performance

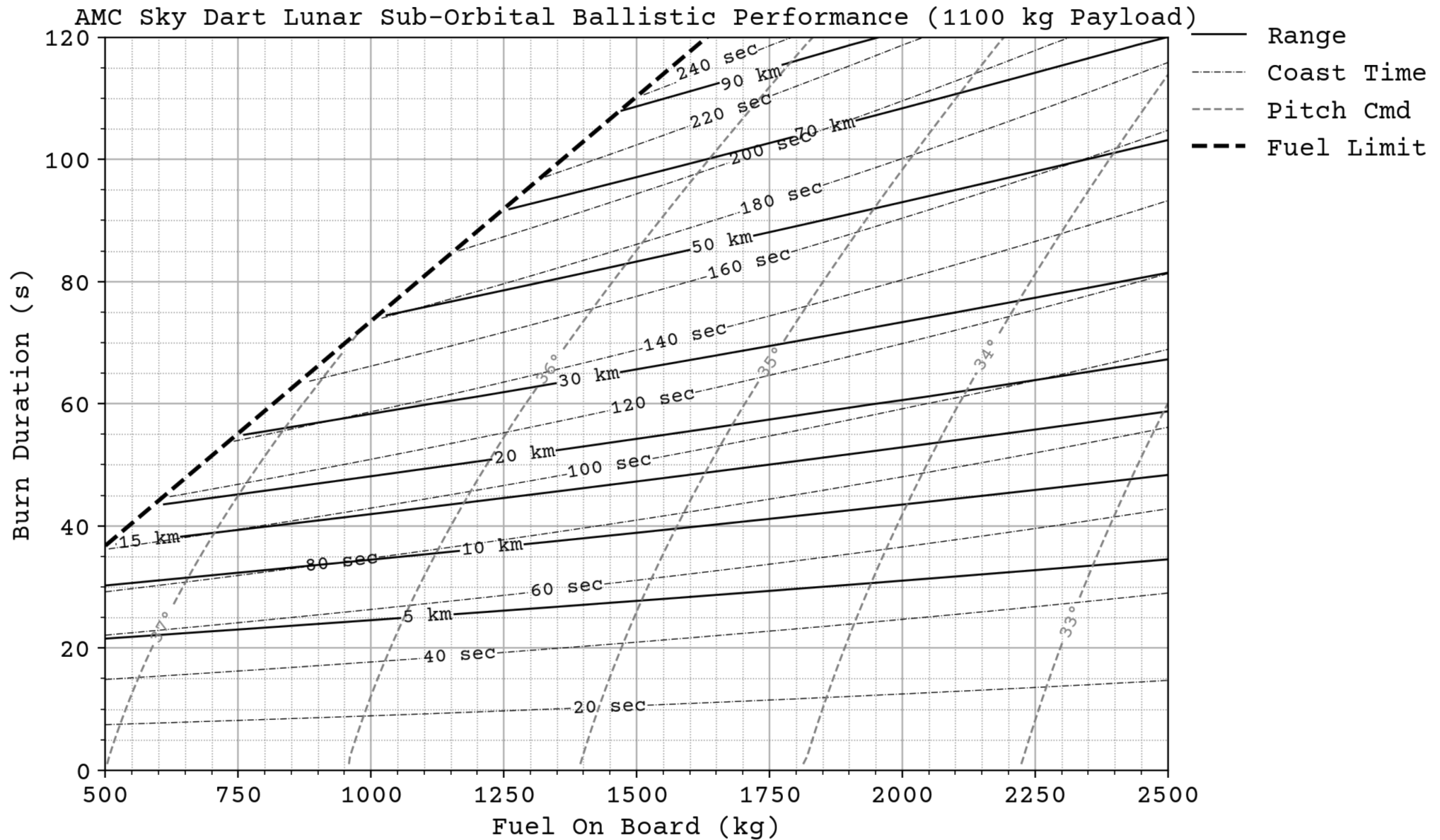




SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
SUBORBITAL 120S MAX, 1100 KG 12/13

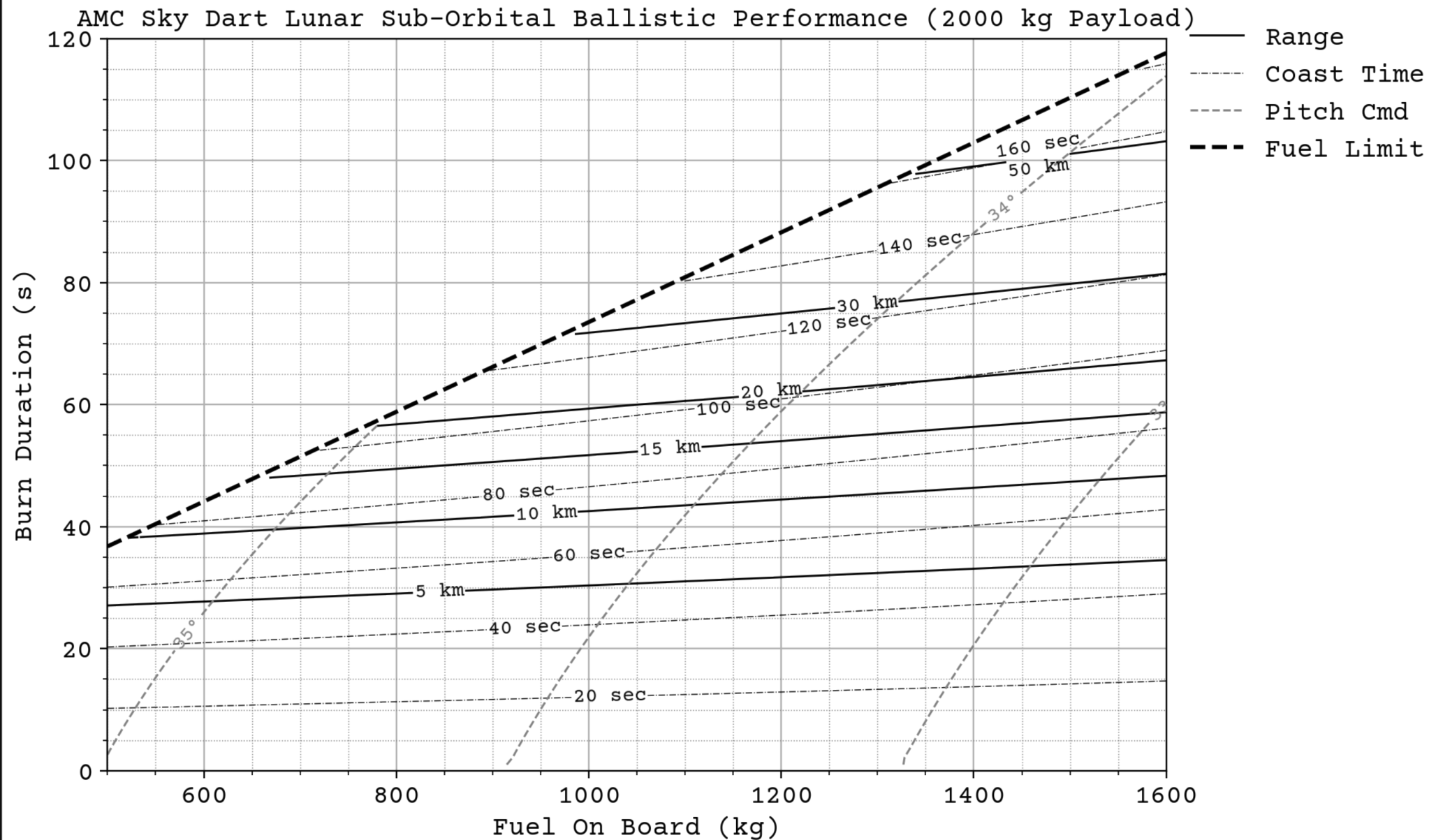




SYS
SYSTEM INF.

PERF
PERFORMANCE

SKY DART PERFORMANCE DATA
SUBORBITAL 120S MAX, 2000 KG 13/13



WARN

RATE
MODE

HOVR
MODE

xx.x

xxxx

VS
ALT

HSPD
MODE

PROP
CTRL

XPTR
AUTO

ALT
CTRL

AUTOPILOT WARNING INDICATOR

Red light illuminates and siren warns the pilot of EXTEME DANGER due to one of following:

- 1. Hull Breach or Loss of Atmosphere
- 2. Landing Gear Failure (See: DIAG/L-GEAR in FMS for details)
- 3. Uncommanded Autopilot Disconnect.

In the event of WARN activation you may silence the alarm/light by pressing the button then IMMEDIATELY ascertain the source of the problem.

AUTOPILOT ROTATIONAL MODE

CONTROL	STATE	SUMMARY OF FUNCTION
-----	-----	-----
RATE MODE	ACTIVE	Pilot joystick commands pitch/roll rate (see ALT CTRL).
	INACTIVE	Pilot joystick commands pitch/roll torque.

NOTES

- 1. RATE MODE is automatically ACTIVATED upon lifting off from the surface and DEACTIVATED when landing.
- 2. With RATE MODE active, centering the pilot joystick will stop all rotational motion.
- 3. RATE MODE MUST be ACTIVE before activating HOVR MODE.

WARN

RATE
MODE

HOVR
MODE

xx.x

xxxx

VS
ALT

HSPD
MODE

PROP
CTRL

XPTR
AUTO

ALT
CTRL

AUTOPILOT VERTICAL MODE

CONTROL	STATE	SUMMARY OF FUNCTION
-----	-----	-----
HOVR MODE	ACTIVE	Autopilot maintains commanded vertical rate. Pilot controls the rate using vernier knob. Move vernier forward to increase positive rate, backward to increase negative rate. Autopilot adjusts the main engine thrust to achieve desired rate. Moving the throttle t-stick with HOVR MODE active will cause an Uncommanded Autopilot Disconnect WARNING.
	INACTIVE	Pilot must use the MANUAL throttle t-stick control and/or the vernier knob to control main engine thrust while monitoring the radar vertical rate display.
DISPLAY		

VS		Displays commanded vertical rate in meters/sec. With HOVR MODE inactive, commanded vertical rate displays inactive/all dashes.
ALT		Displays commanded altitude in meters when VS=0. With a non-zero VS value set, commanded altitude displays inactive/all dashes.

NOTE: RATE MODE MUST be ACTIVE before activating HOVR MODE.

WARN

RATE
MODE

HOVR
MODE

xx.x

xxxx

VS
ALT

HSPD
MODE

PROP
CTRL

XPTR
AUTO

ALT
CTRL

AUTOPILOT HORIZONTAL MODE

CONTROL	STATE	SUMMARY OF FUNCTION
-----	-----	-----
HSPD MODE	ACTIVE	Autopilot maintains commanded horizontal rates. Pilot controls the rates using the joystick. The commanded rates are indicated by the green diamond bugs on the crosspointer display. Range buttons on the crosspointer X5 and X50 correspond to ±5 m/s and ±50 m/s.
	INACTIVE	Pilot must use the joystick to MANUALLY control the ship attitude while monitoring the radar horizontal rates and crosspointer needles.
PROP CTRL	ACTIVE	With HSPD MODE active, the green diamond bugs on the crosspointer display will match the joystick position. NOTE: Releasing or centering the joystick with PROP CTRL active will make the autopilot drive the horizontal speed to zero.
XPTR AUTO	ACTIVE	Radar crosspointer range is chosen automatically based on drift rate or drift command (green diamonds) (with HSPD MODE active).
	INACTIVE	Radar crosspointer range must be selected manually.

WARN

RATE
MODE

HOVR
MODE

xx.x
xxxx

VS
ALT

HSPD
MODE

PROP
CTRL

XPTR
AUTO

ALT
CTRL

AUTOPILOT ALTERNATE CONTROL MODE

CONTROL	STATE	SUMMARY OF FUNCTION
ALT CTRL	ACTIVE	Joystick left/right motion controls YAW rotation only.
	INACTIVE	HSPD INACTIVE: Joystick left/right motion controls ROLL rate. HSPD ACTIVE: Joystick left/right motion controls lateral rate.

AUTOPILOT RADAR SPECIFICATIONS OVERVIEW:

RADAR	DIRECTION	MAX RANGE	MAX DOPPLER	NOTES
OMNI	DOWN (1)	400 m	200 m/s	Altitude and vertical velocity
DIRECTIONAL	DOWN (1)	2000 m	N/A	Altitude only (low fidelity)
DIRECTIONAL	SIDE (4)	2000 m	200 m/s	Effective lateral range 500 m

AUTOPILOT LIMITATIONS

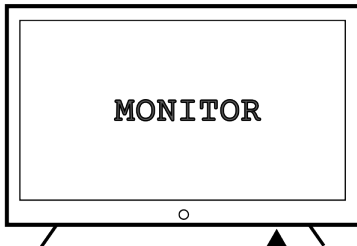
-
1. HOVR MODE is available between zero and 90% of the OMNI MAX RANGE or 360 m altitude.

2. Maximum pitch/roll in HSPD MODE is 20 degrees, derated to 5 degrees at 360 m altitude.

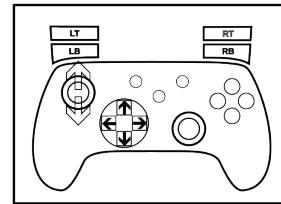
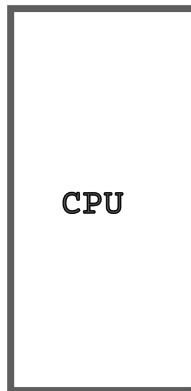
3. HOVR MODE will automatically limit vertical rate to stay in 0-360m altitude range.

4. Excursion outside of the autopilot operational limits will cause an automatic
Uncommanded Autopilot Disconnect and activate the AUTOPILOT WARNING INDICATOR.

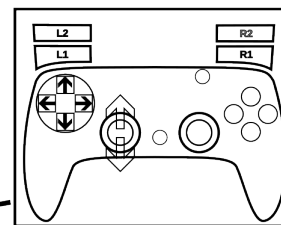
COLOR HI
RES
DISPLAY



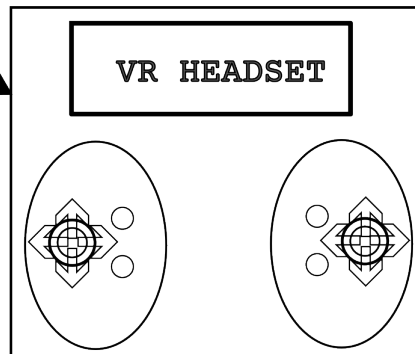
INTEL OR AMD BASED
WORK-STATION WITH
LINUX OR WINDOWS
10/11 OPERATING
SYSTEM AND
DISCRETE GPU SUB-
SYSTEM



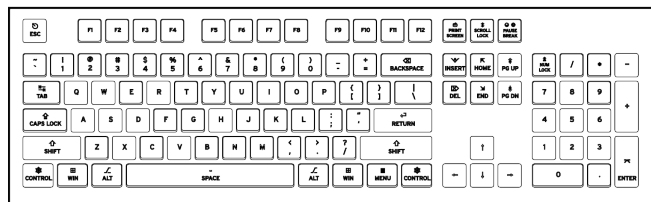
**XBOX CONTROL
SEE: SIM XBOX**



**PS CONTROL
SEE: SIM PS**

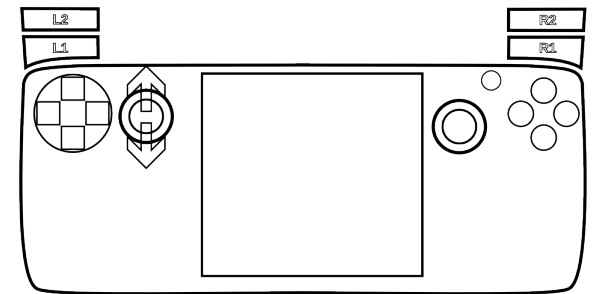


SEE: SIM VR



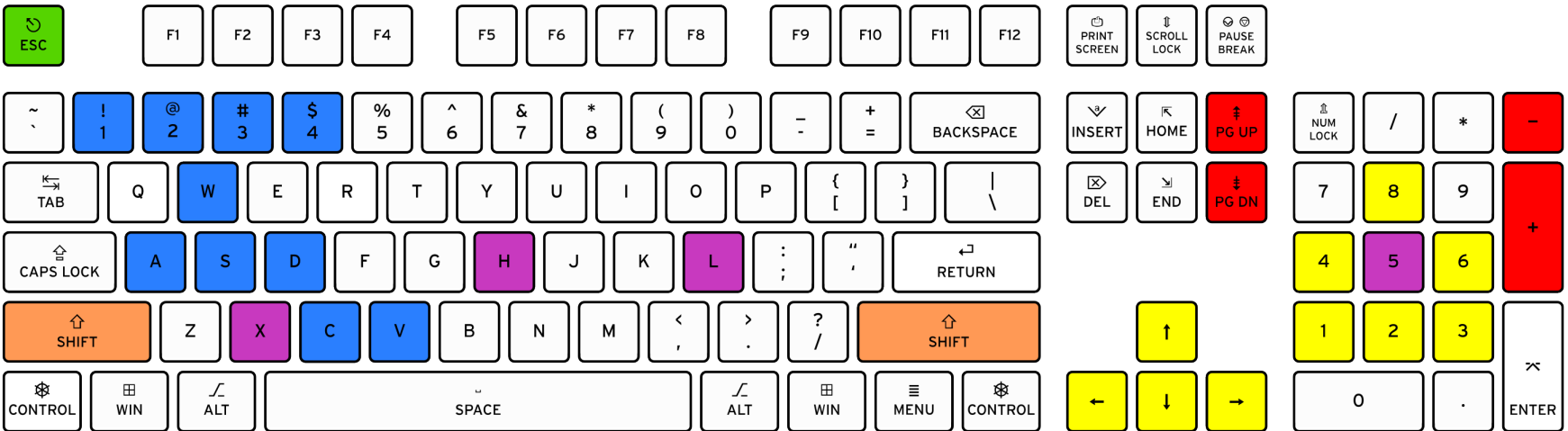
SEE: SIM KBD

**ALTERNATIVE HAND-HELD
SIMULATION CPU: STEAM-DECK
MANUF. BY VALVE**



SEE: SIM STEAM

DEFAULT KEYBOARD CONTROL MAP



Original keyboard template by: Tomiċo, CC BY-SA 4.0, via Wikimedia Commons

MOVE FORWARD

W PAN UP

A PAN

D PAN

S PAN DOWN

MOVE L

MOVE R

MOVE BACKWARD

V RESET PILOT VIEW

ESC GAME MENU

C TOGGLE CAMERA VIEWS

CAMERA PRESETS:

- 1 INTERIOR COCKPIT
- 2 EXTERIOR LOCK TO SHIP
- 3 EXTERIOR LOCK TO HORIZON
- 4 EXTERIOR LOCK TO GROUND

CAMERA VIEW

X or KP 5 TOGGLE ATTITUDE HOLD

H TOGGLE HOVER

L TOGGLE LANDING LIGHT

COCKPIT

SHIFT TOGGLE ALTERNATE CONTROLS

KP 8 PITCH FORWARD

KP 6 ROLL RIGHT + YAW RIGHT

KP 2 PITCH BACKWARD

KP 3 YAW RIGHT

KP 4 ROLL LEFT + YAW LEFT

KP 1 YAW LEFT

JOYSTICK

PG UP MAXIMUM THRUST

PG DN MINIMUM THRUST

PG UP THRUST VERNIER +

PG DN THRUST VERNIER -

MAIN ENGINE

DEFAULT MOUSE CONTROLS

1. USE MOUSE LEFT-CLICK TO PRESS BUTTONS OR GRAB THINGS.
2. HOLD MOUSE RIGHT-CLICK AND MOVE TO PAN COCKPIT VIEW.
3. HOLD MOUSE RIGHT-CLICK AND KEYBOARD WASD TO MOVE COCKPIT VIEW.
4. POSITION MOUSE POINTER OVER THROTTLE CONTROL AND USE SCROLL WHEEL TO ADJUST THE THROTTLE SETTING.

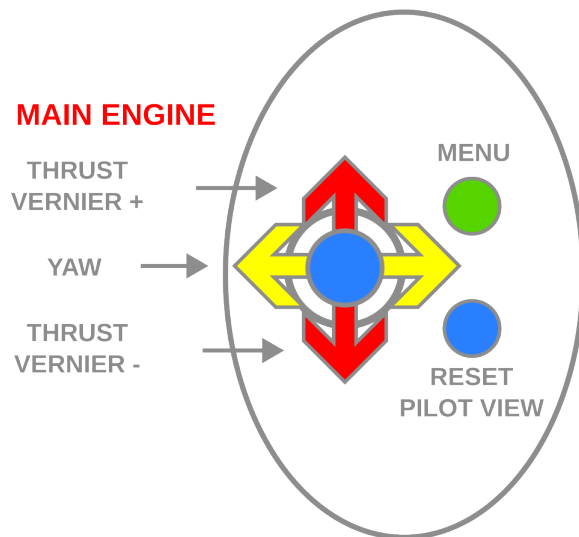


SIM
SIMULATION

VR
VR CONTROLLER

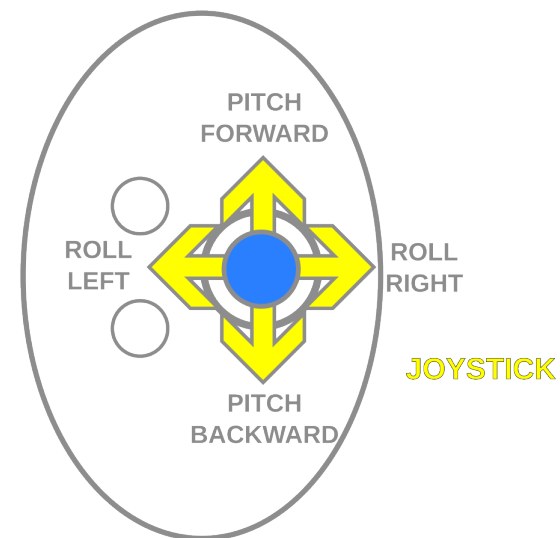
DEFAULT CONTROL MAP FOR
VIRTUAL REALITY CONTROLLERS

GENERIC VR CONTROLLER MAP

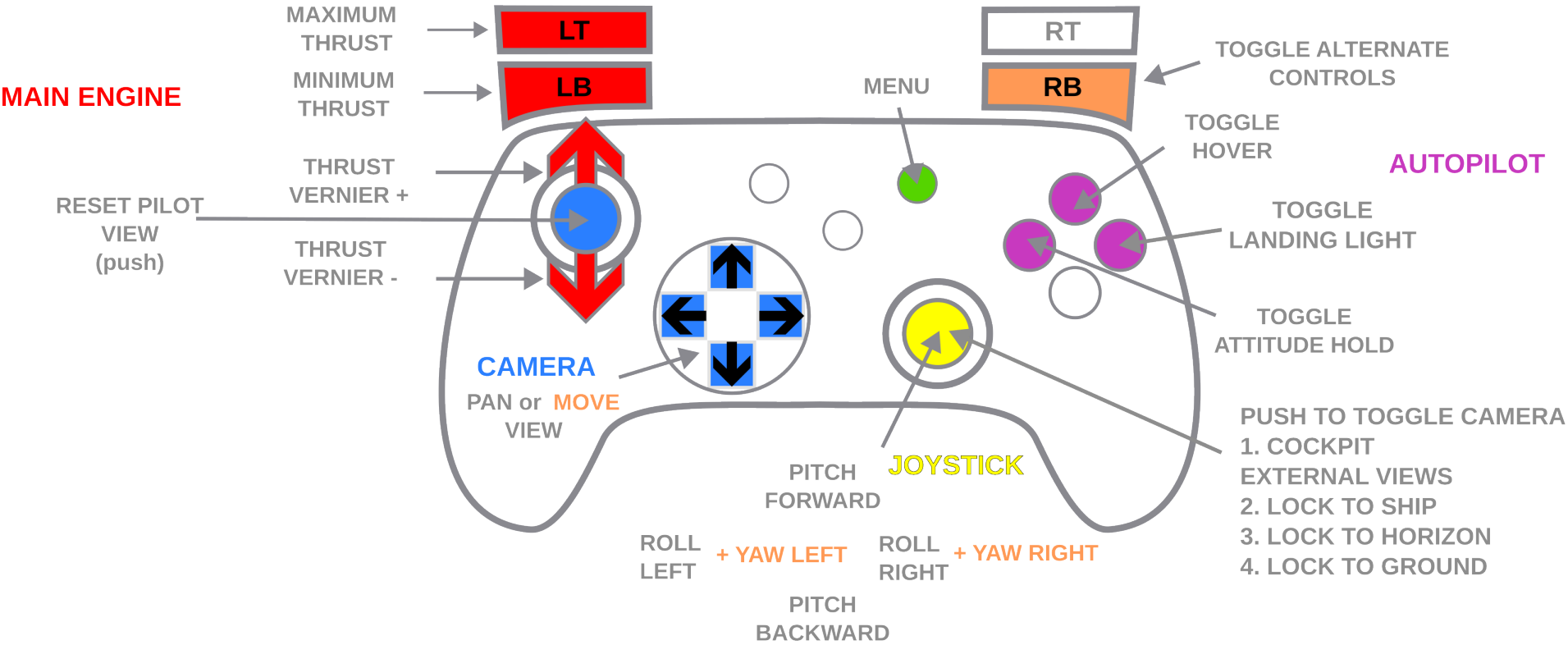


LEFT HAND

RIGHT HAND

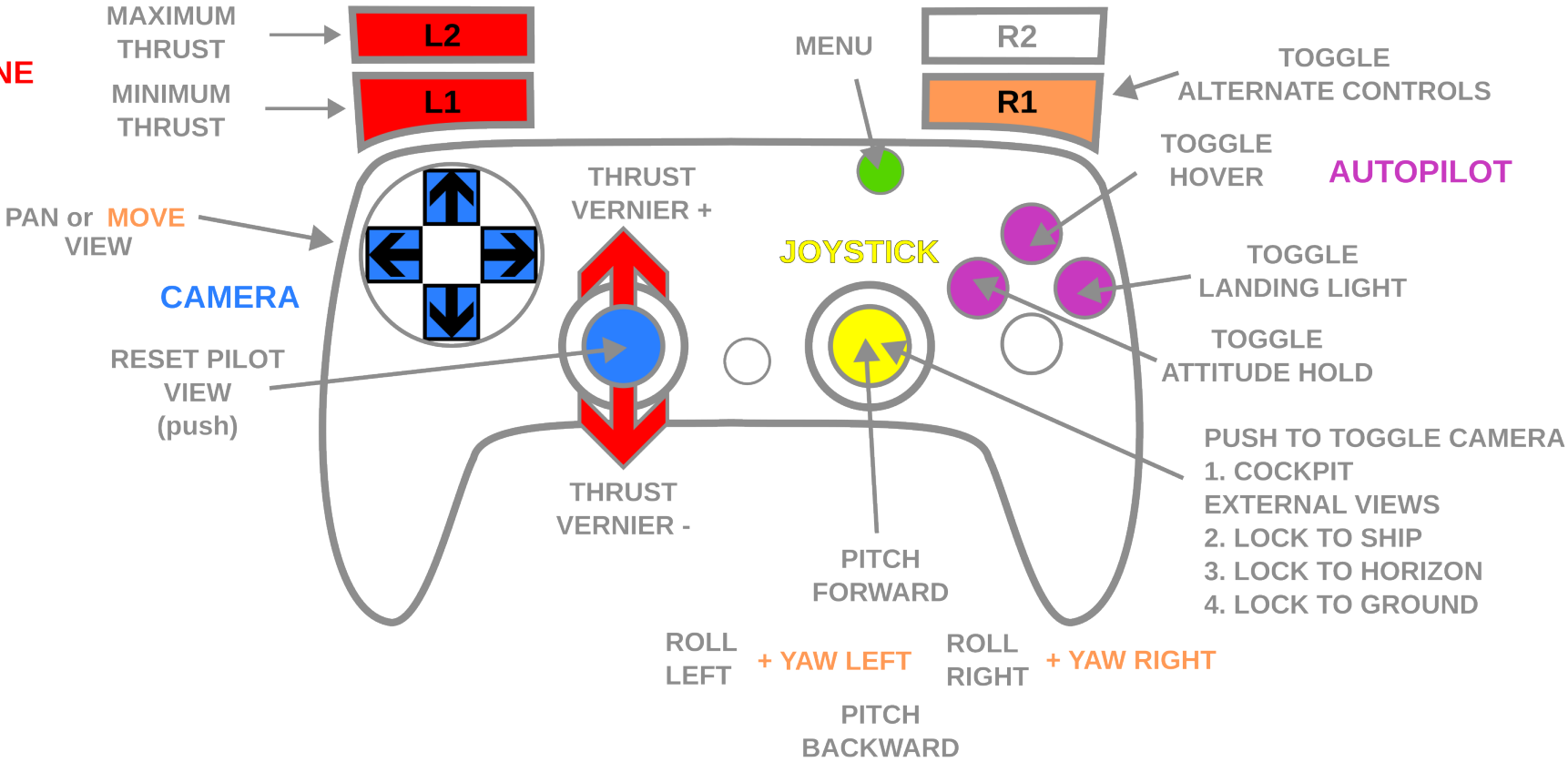


XBOX CONTROLLER MAP



PLAYSTATION CONTROLLER MAP

MAIN ENGINE



STEAM DECK CONTROLLER MAP

