

BLUEDOG.DESIGN.BUREAU

BDB

MANUAL

CIRCA 2016. made by DiscoSlelge with the precious help of CobaltWolf,JSO

~~CONFIDENTIAL~~

Section 1. PAYLOADS

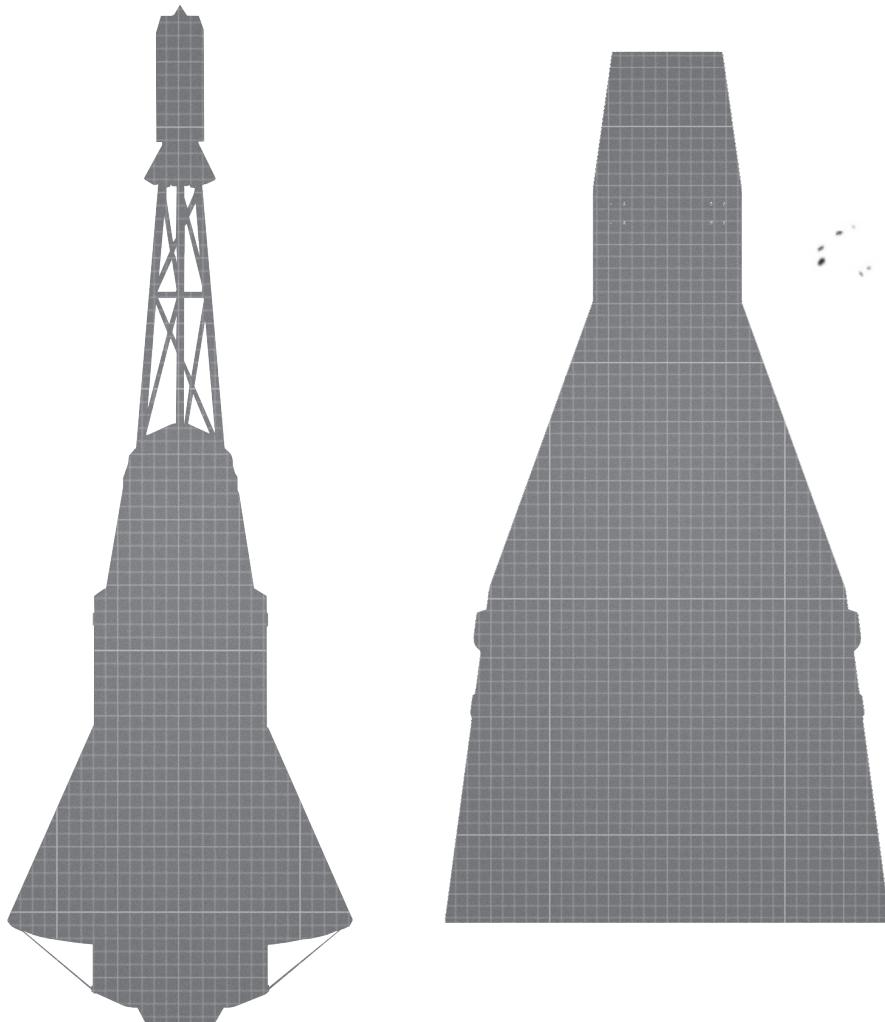
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~~D-SECRET~~ SPECIAL HANDLING

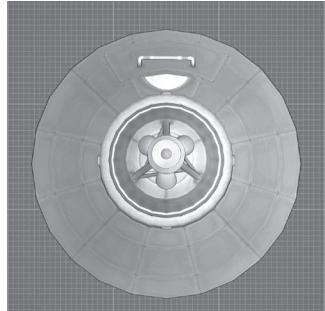
SECTION 1. PAYLOADS



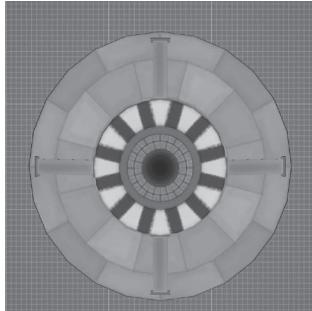
1.1 HERMES SPACECRAFT

-from top to bottom-

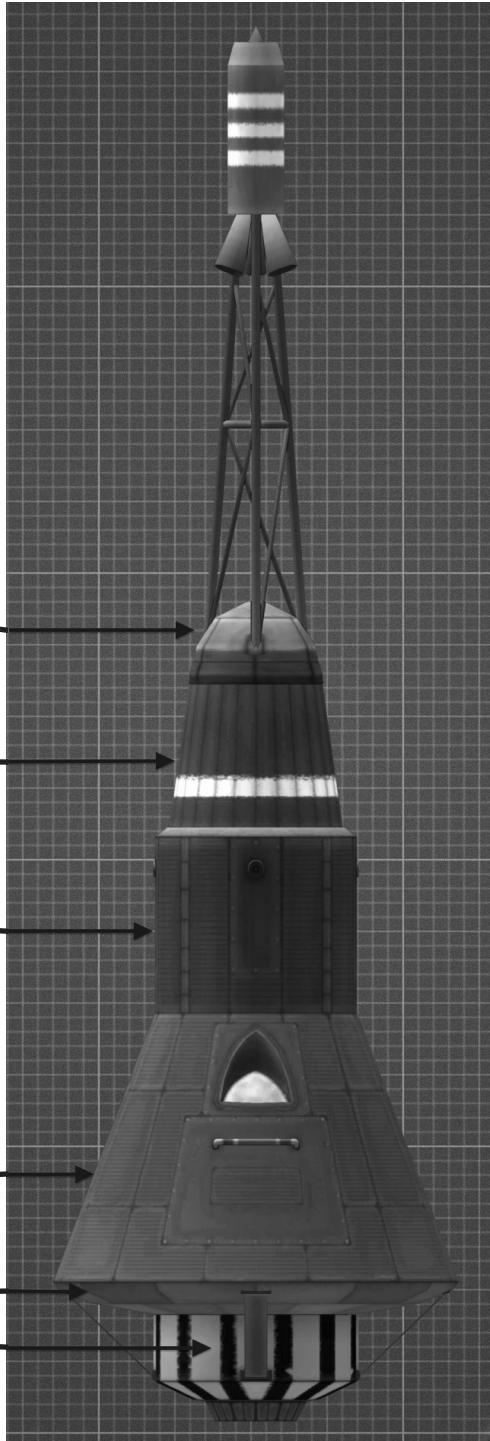
The HERMES capsule is the result of a crash program by Bloeting Aerospace to develop a manned pod as a competitor for the Krussian space program. The design was later sold to BDB for a price of 'free'. It doesn't have much scientific potential, but can be used to develop the skills your space program will need for more complex missions down the line.



Top view



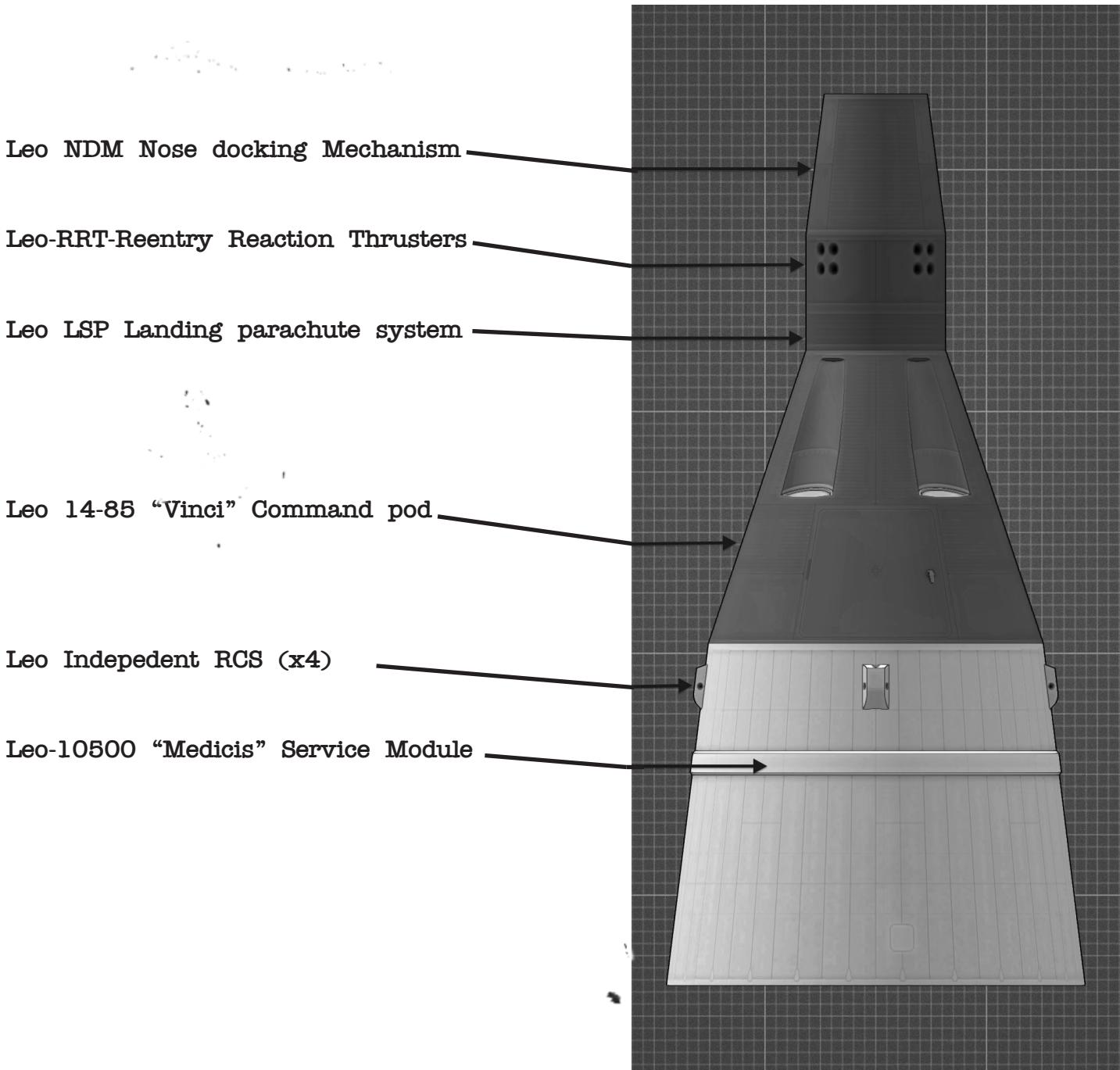
View from below



1.2 VINCI SPACECRAFT

-from top to bottom-

Leo is the first pod designed to allow you to send two Kerbals into orbit. It was developed by Tantares as a contract for BDB. It includes a docking port in the nose for docking with Belle Target Vehicles or even small stations. Its capabilities can be increased by replacing the service module with an expanded crew cabin.



1.2 VINCI SPACECRAFT DETAILS

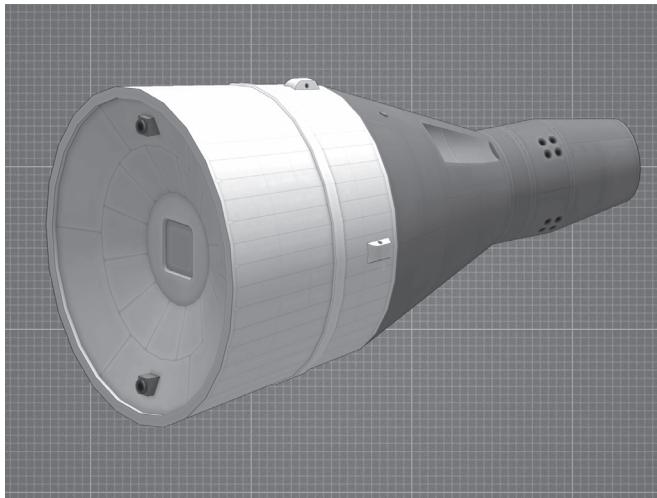


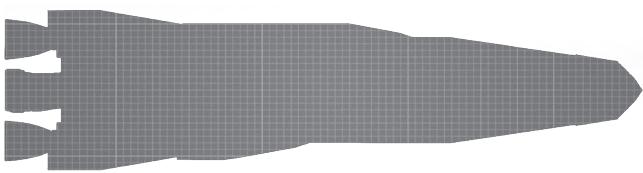
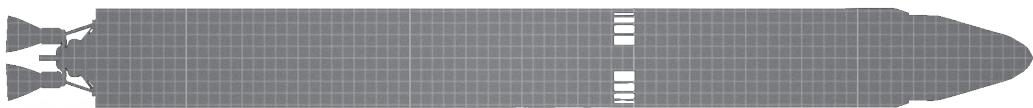
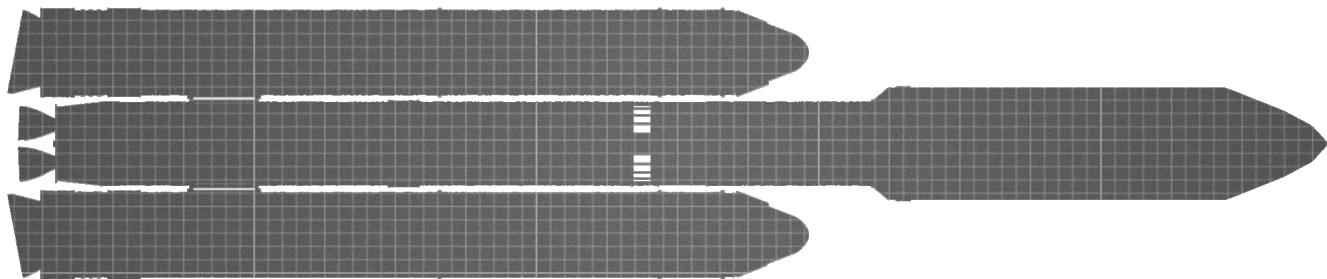
figure.1 View of Leo "Medicis" service module

**WARNING : LEO SERVICE MODULE HAS 500 UNITS OF MONOPROPELLANT WHICH
DELEVER APPROX. 8MIN OF THRUST**

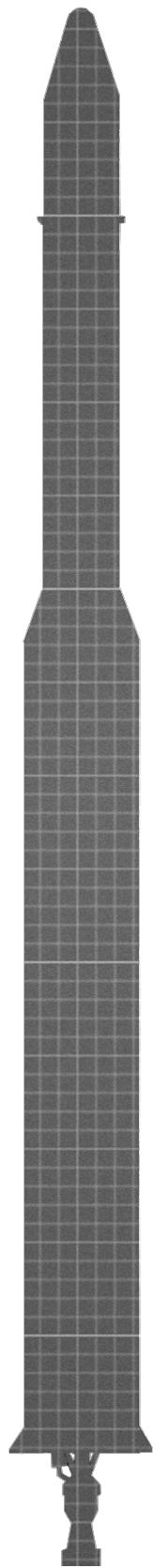
REMINDER : The heatshield is directly with the capsule.

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SECTION 2. LAUNCH VEHICLES



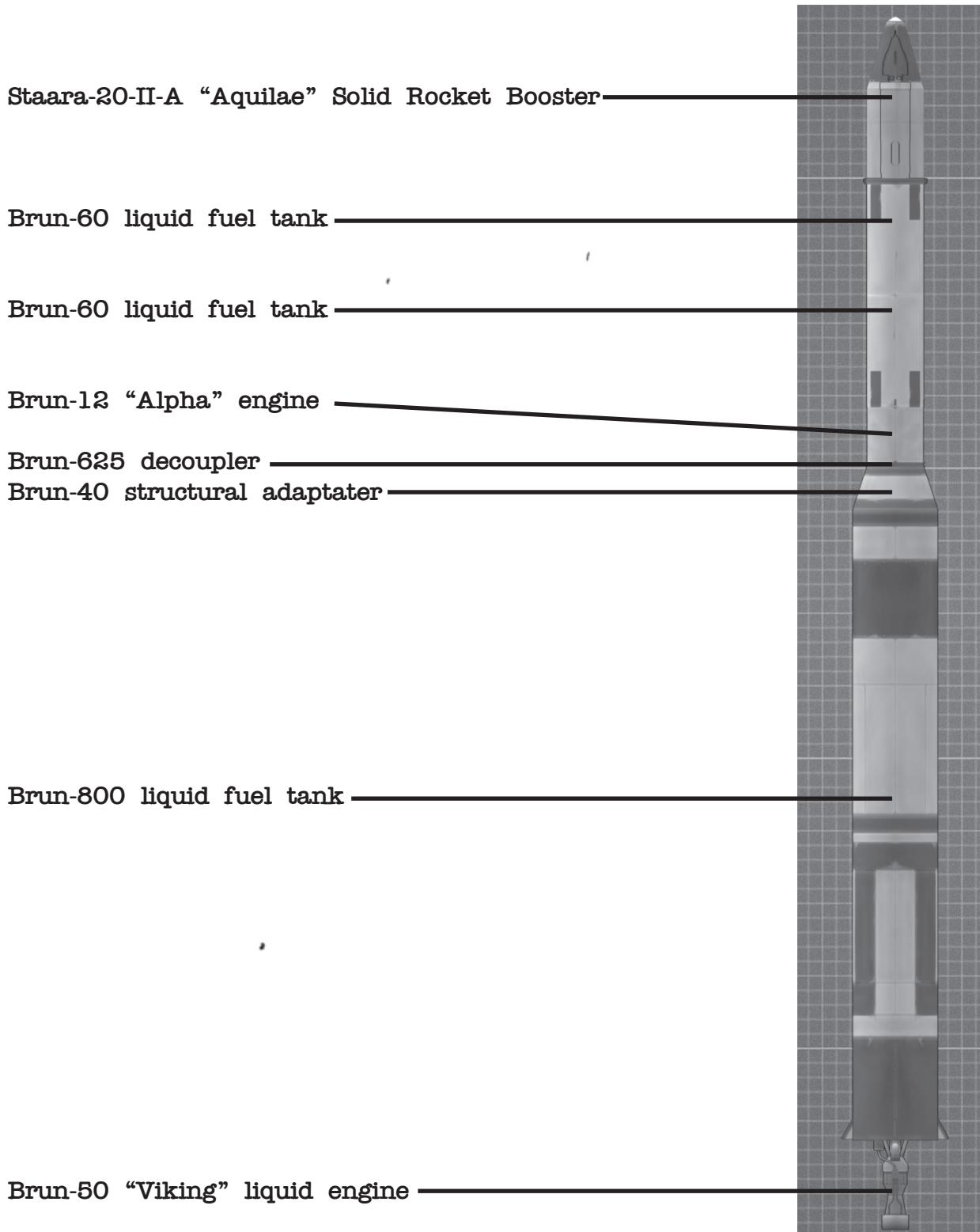
VIKLUN LAUNCH VEHICLE



2.1 VIKLUN LAUNCH VEHICLE

-from top to bottom-

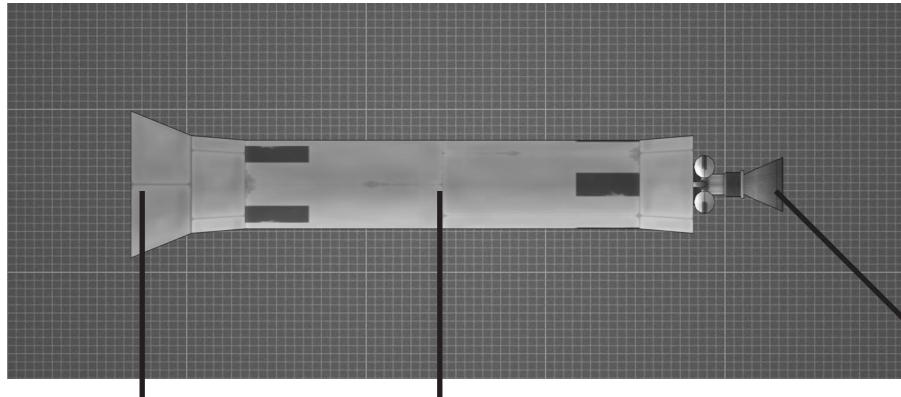
Viklun launch vehicle is the very first rocket provided by BDB, a small and cheap launcher able to loft only the lightest of payloads. Viklun consists of a Viking-50 powered first stage and an Alpha second stage, which is optimized for vacuum use only.



2.1 ALPHA UPPER STAGE

-from top to bottom-

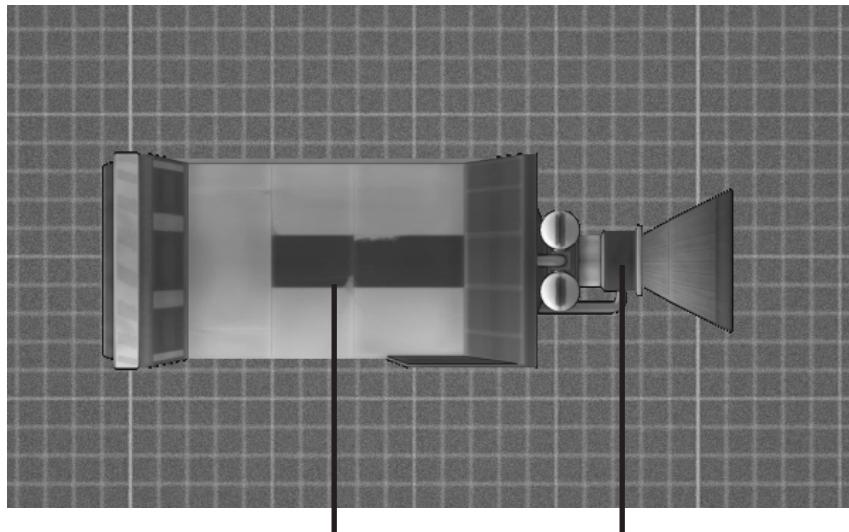
The Alpha upper stage is the first real upper stage created by BDB aiming to provide better range and efficiency to launch probes. Alpha upper stage uses same "Alpha" engine as the second stage of the original Viklun rocket.



Brun-4688 fairing base Brun-120 liquid fuel tank Brun-12 "Alpha" liquid engine

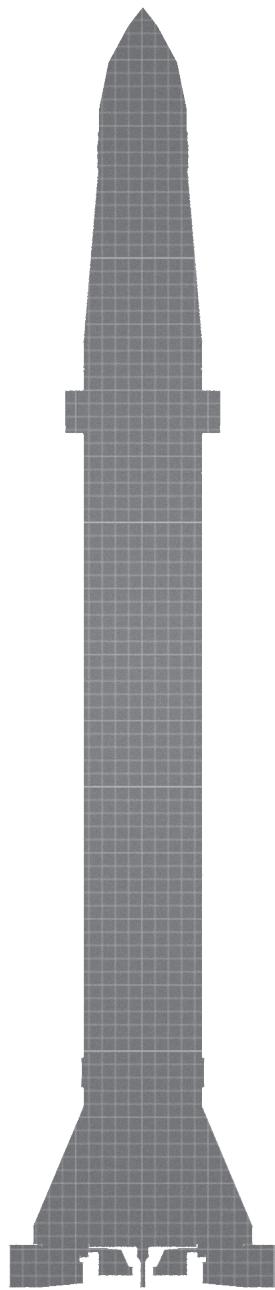
2.1 ALPHASTAR UPPER STAGE

-from top to bottom-



Fenris-200 liquid fuel tank Fenris-18 "Alphastar" liquid engine

ETOH LAUNCH VEHICLE



2.2 ETOH LAUNCH VEHICLE

-from top to bottom-

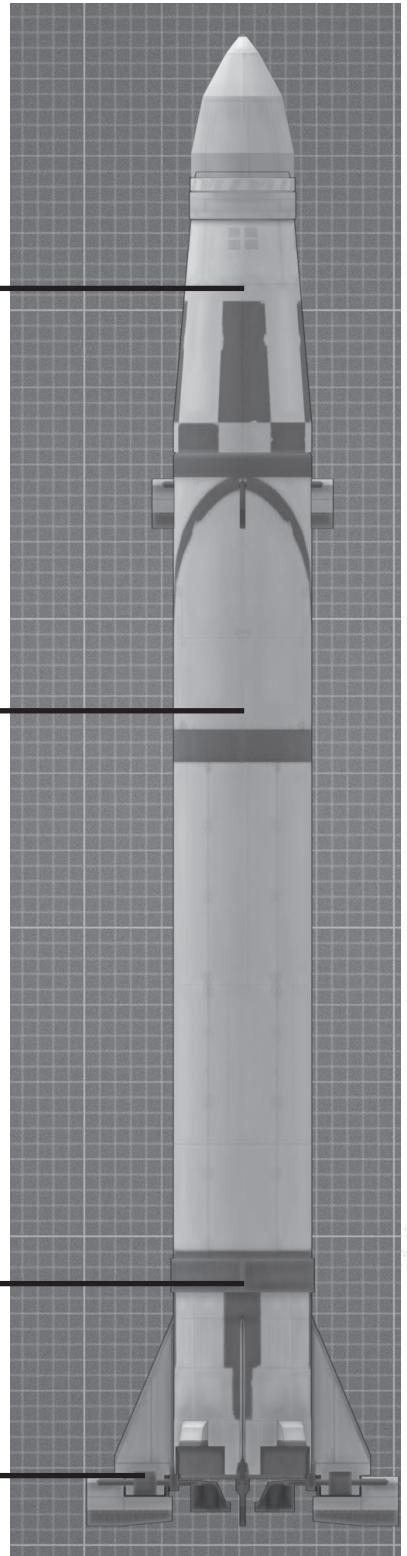
One of the earliest missiles developed, the SANDSTONE, known as ETOH in its civilian variants, runs on an exciting mix of oxygen and alcohol. While fairly underpowered in terms of thrust and ISP, which limits it's possibilities for expansion, it is fairly cheap and available in large supply.

CHRYSLUS-320 Fuel Tank

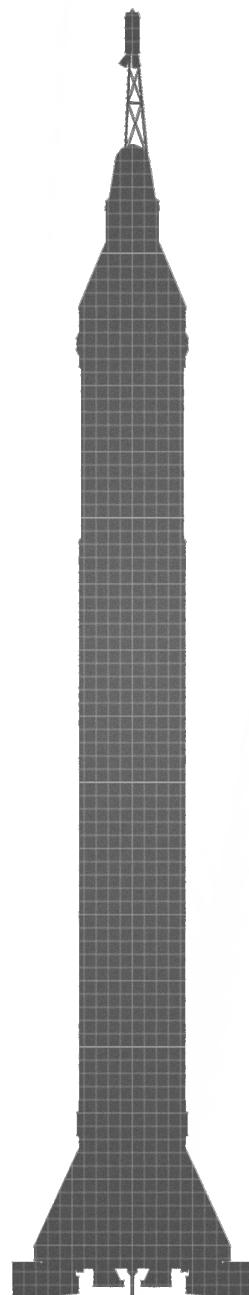
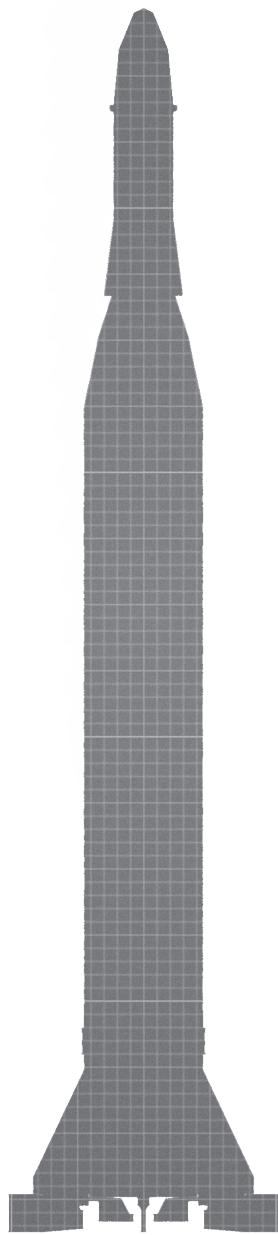
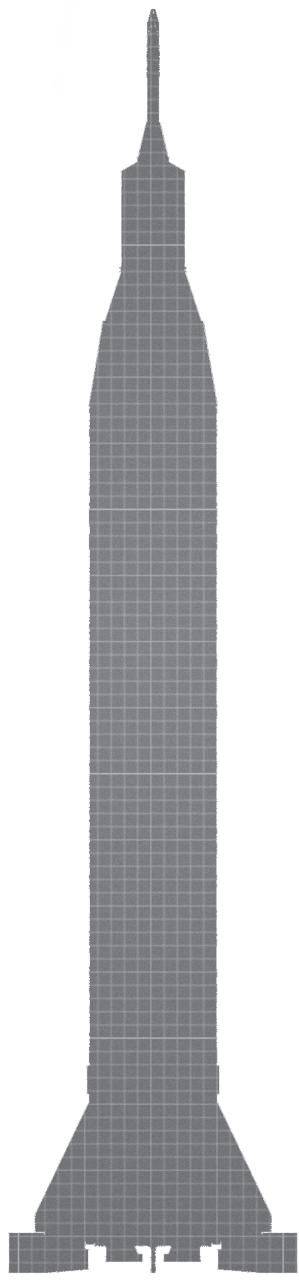
ETOH-1400 Fuel Tank

ETOH-140 "Sandstone" engine

ETOH Control-System



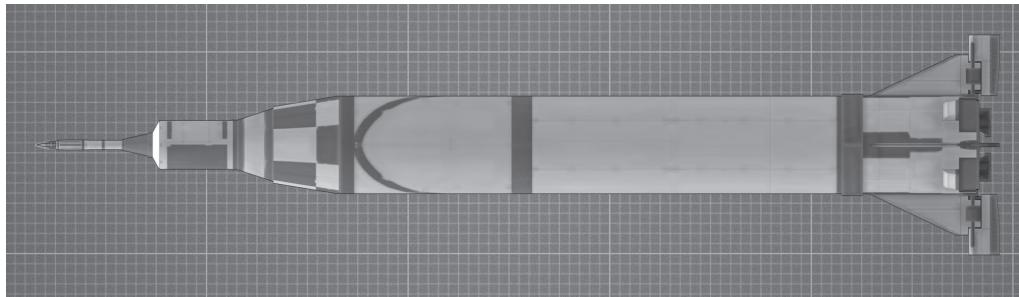
ETOH VARIANTS



2.2 ETOH VICENZA

-from top to bottom-

BDB's first satellite design, SIENNO, was orbited using an ETOH rocket using VICENZA upper stages, following issues with the development of the BRUN rocket (pg9). While we hope that your space program finds earlier success, we have elected to include detailed descriptions of the design for historical purposes.

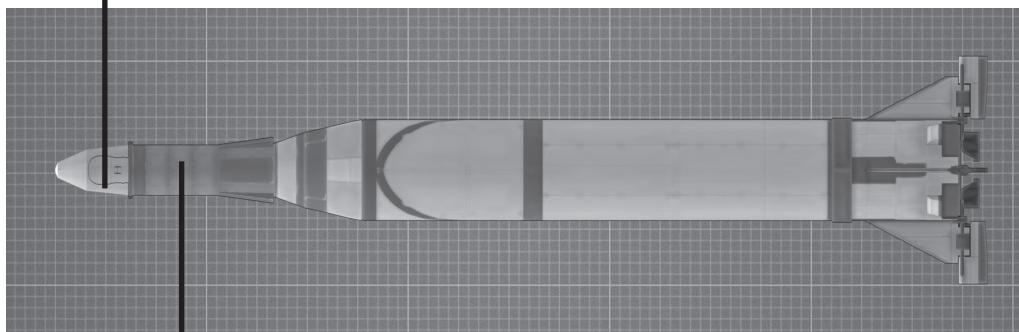


2.2 ETOH SATEVIS

-from top to bottom-

Though the ETOH is now considered a rarely used relic, there were still many examples sitting in storage. BDB decided to use them for engineering tests of reentry vehicles, after fixing two small solid upper stages to the top. A leftover rocket of this variant was later used to give a small backwater country their first satellite.

Staara-10-LYC "Aethra" Solid rocket booster

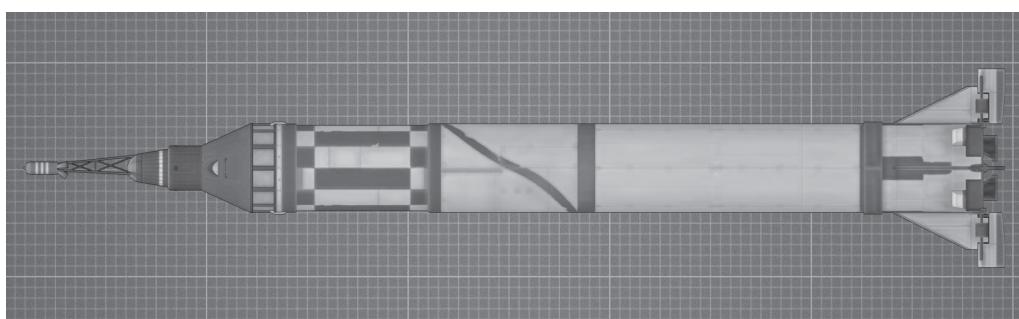


Staara-31-III- "Satevis" Solid rocket booster

2.2 ETOH HERMES

-from top to bottom-

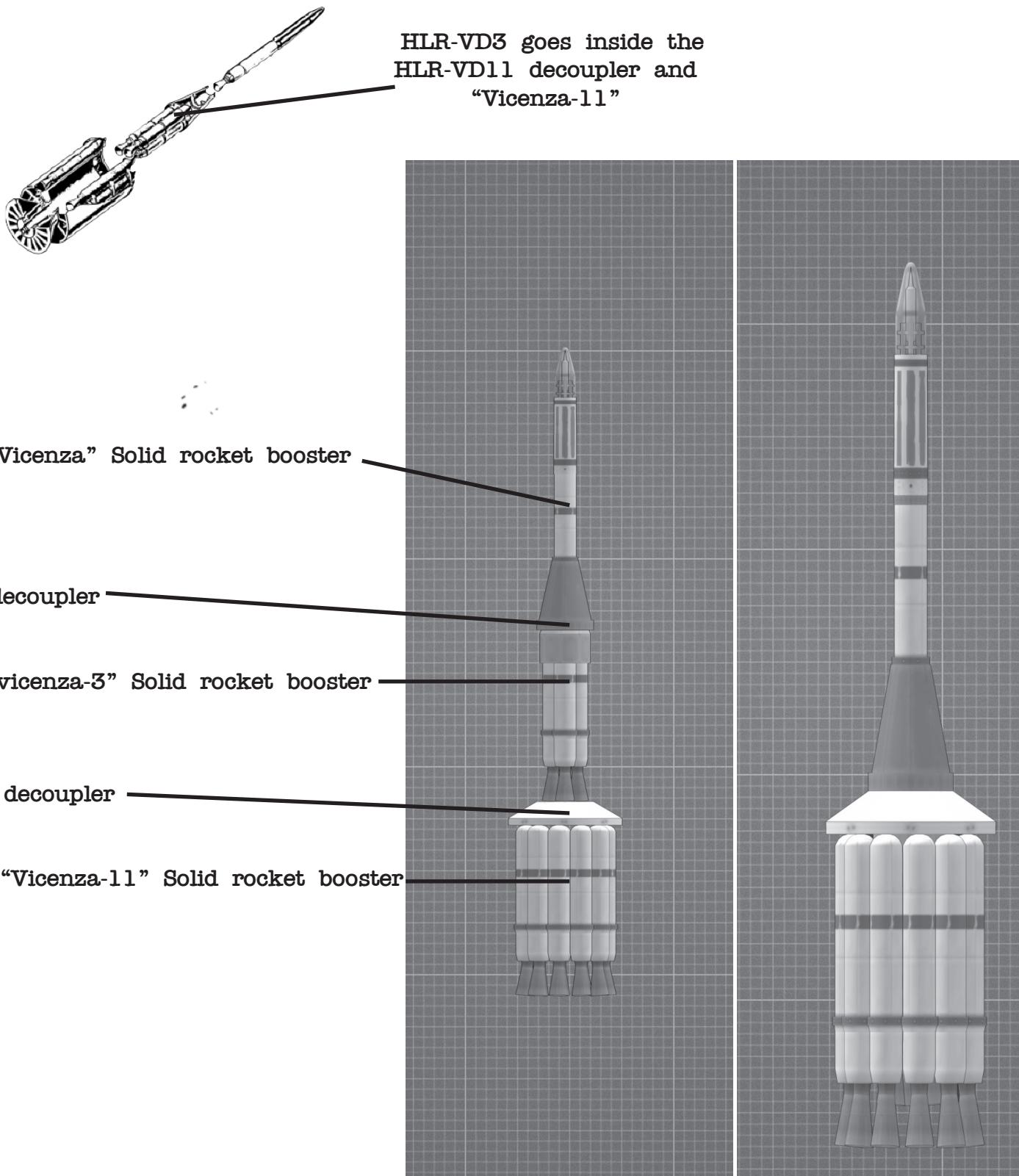
While the ETOH is not capable of bringing a HERMES capsule to orbital velocity, the unknowns inherent of the great void of space needed to be explored in a controlled manner. Specifically, engineers were unsure whether or not the HERMES heatshield would actually work. The rocket was later used to launch HERMES on several suborbital flights.



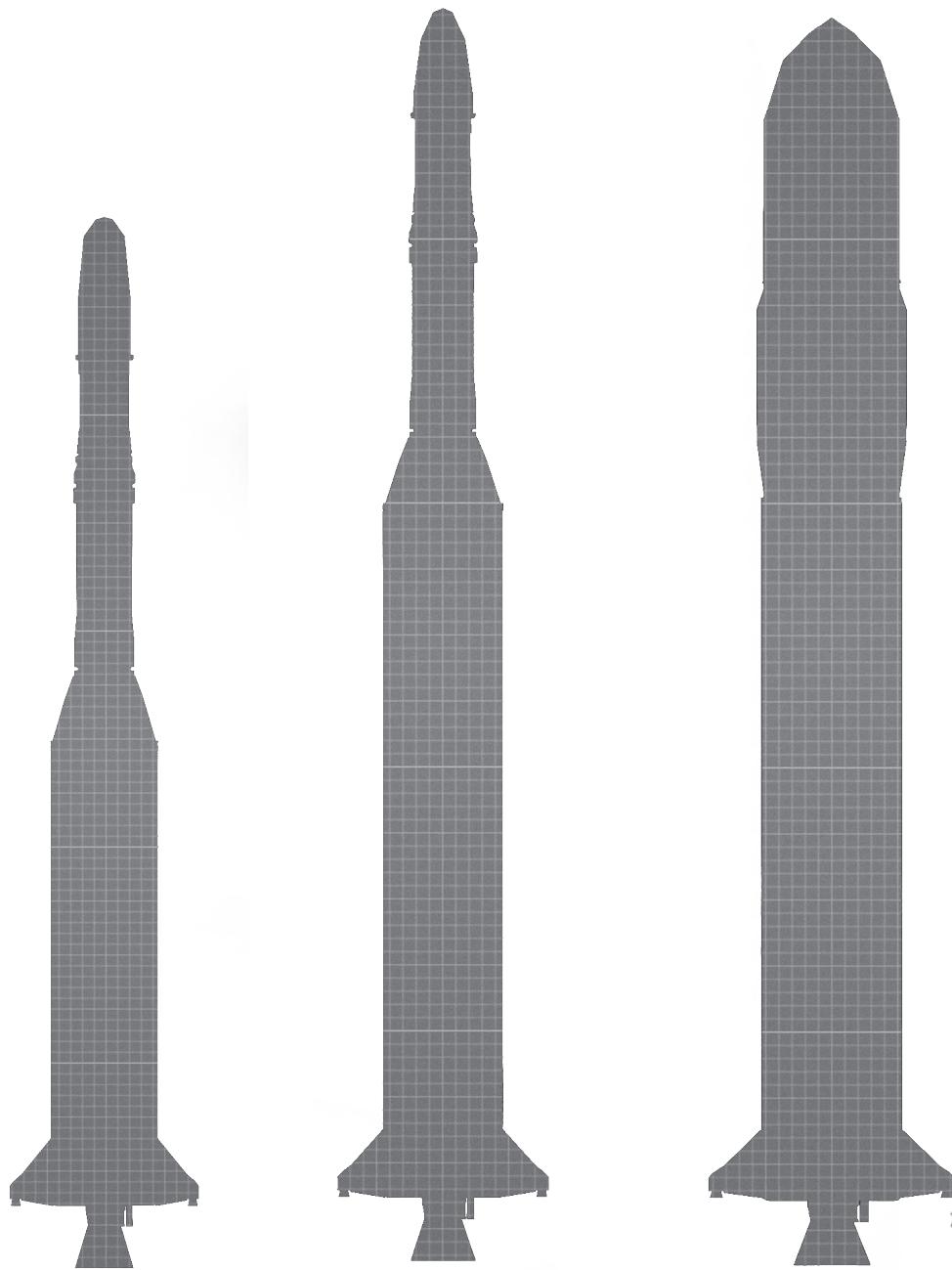
2.2 VICENZA ROCKET DETAIL

-from top to bottom-

When searching for a cheap solution for helping small probes reach orbital velocity and beyond, BDB engineers came up with a solution that used clusters of VICENZA solid rocket boosters in an 11-3-1 configuration. The design was later encased in a fairing for the CHRYSLUS II rocket (pg21). Refer to diagrams for staging information.



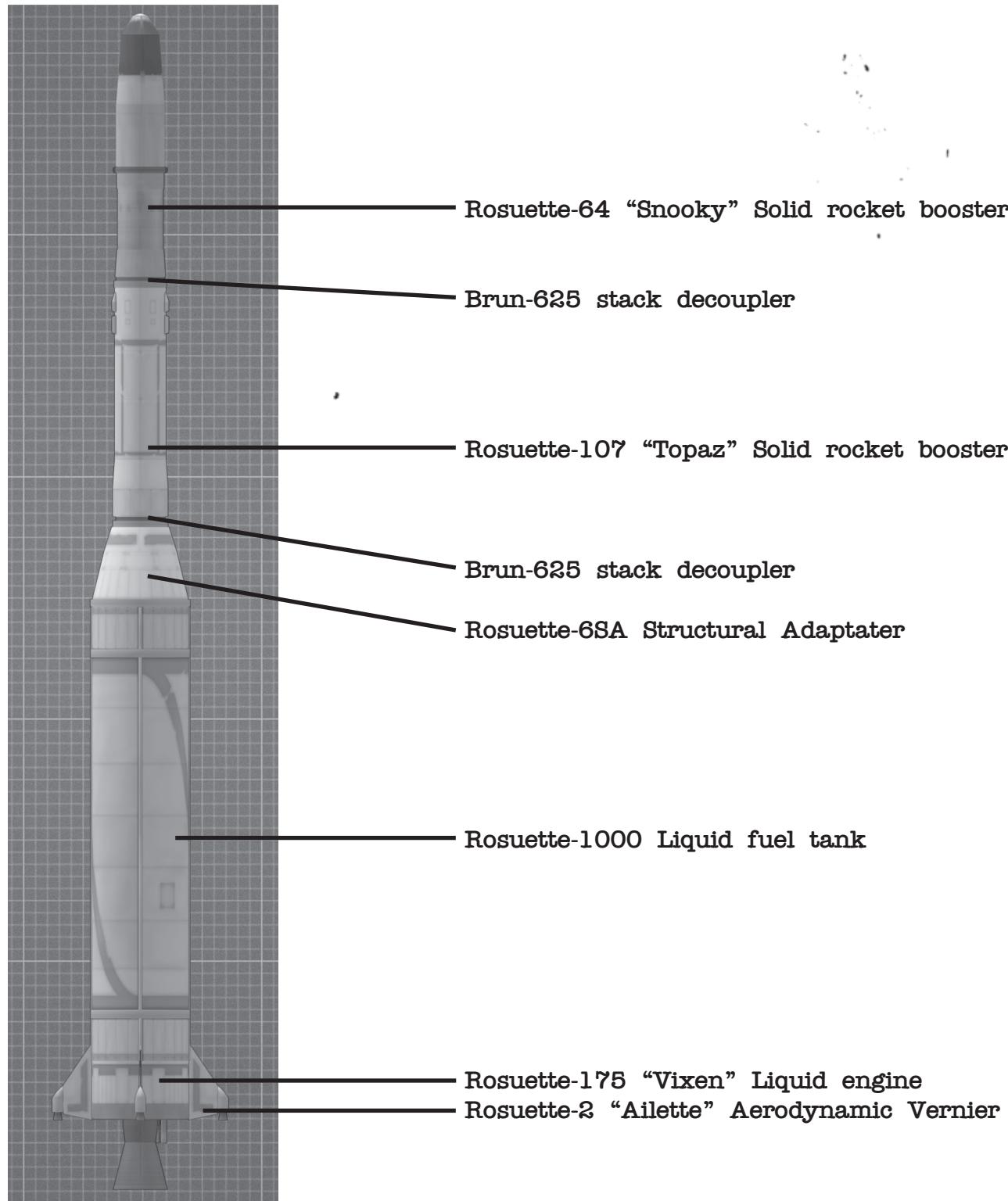
ROSUETTE ROCKET



2.3 ROSUETTE A ROCKET

-from top to bottom-

ROSUETTE is a small launcher designed and manufactured by BDB's overseas affiliates. It combines a liquid first stage with two solid upper stages. Like other BDB upper stage solid motors, they include SAFESOLID™ technology to allow more precise burns. For details about Topaz go page 18.

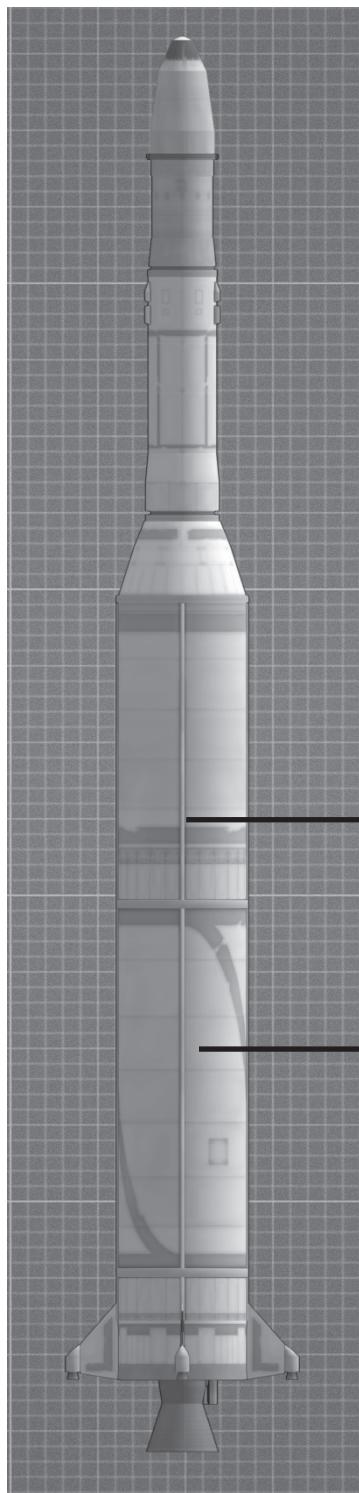


2.3 ROSUETTE B ROCKET

-from top to bottom-

When trying to increase the capabilities of the ROSUETTE A, engineers decided to take the obvious route: Extending the first stage tanks. Thus, the ROSUETTE B was born.

(Topaz description : TOPAZ upper stage, which features four nozzles directing the thrust from a single solid rocket motor.)



Rosquette-500 L.Q.F

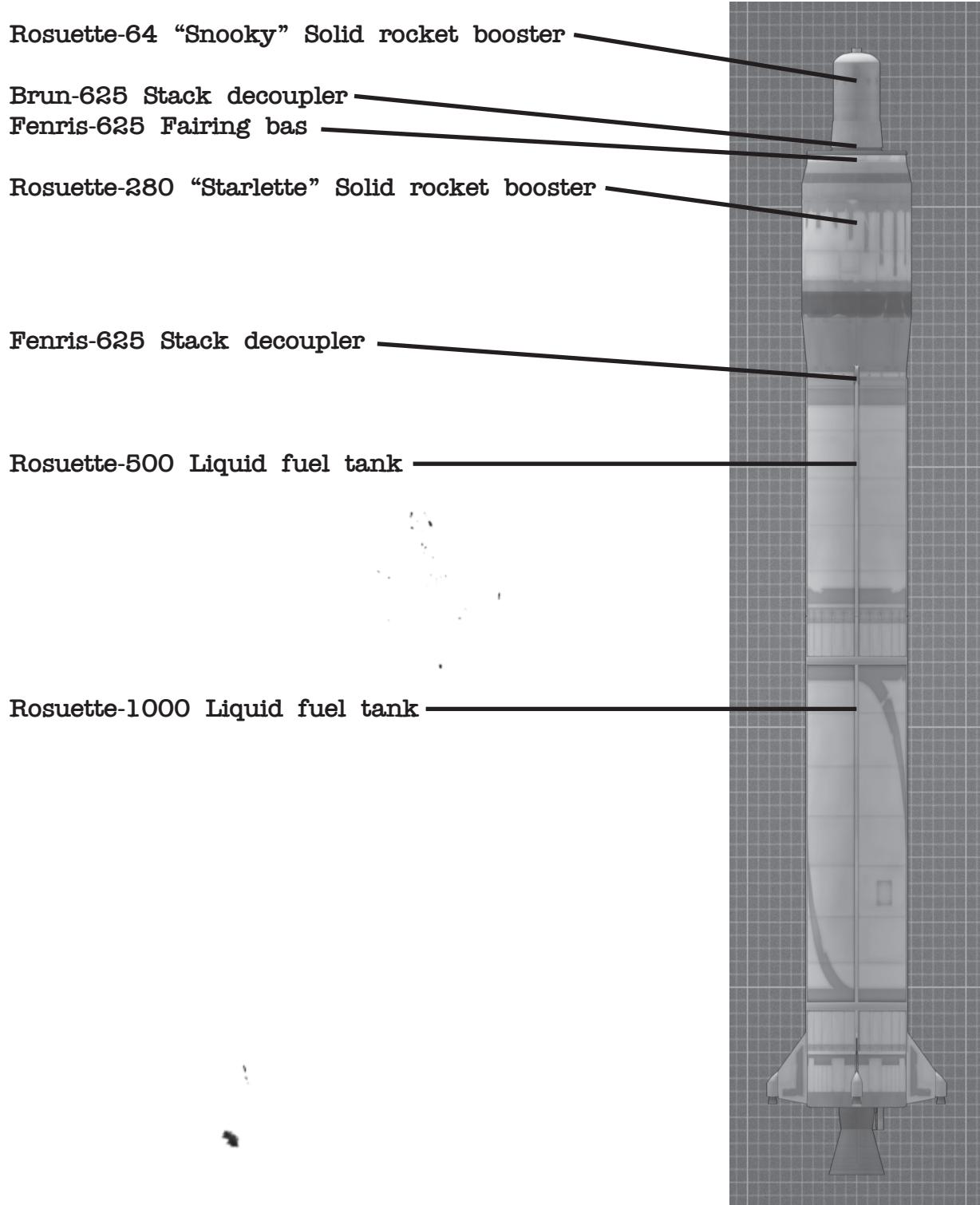
Topaz upperstage with
4 combustion chambers

Rosquette-1000 Liquid fuel tank

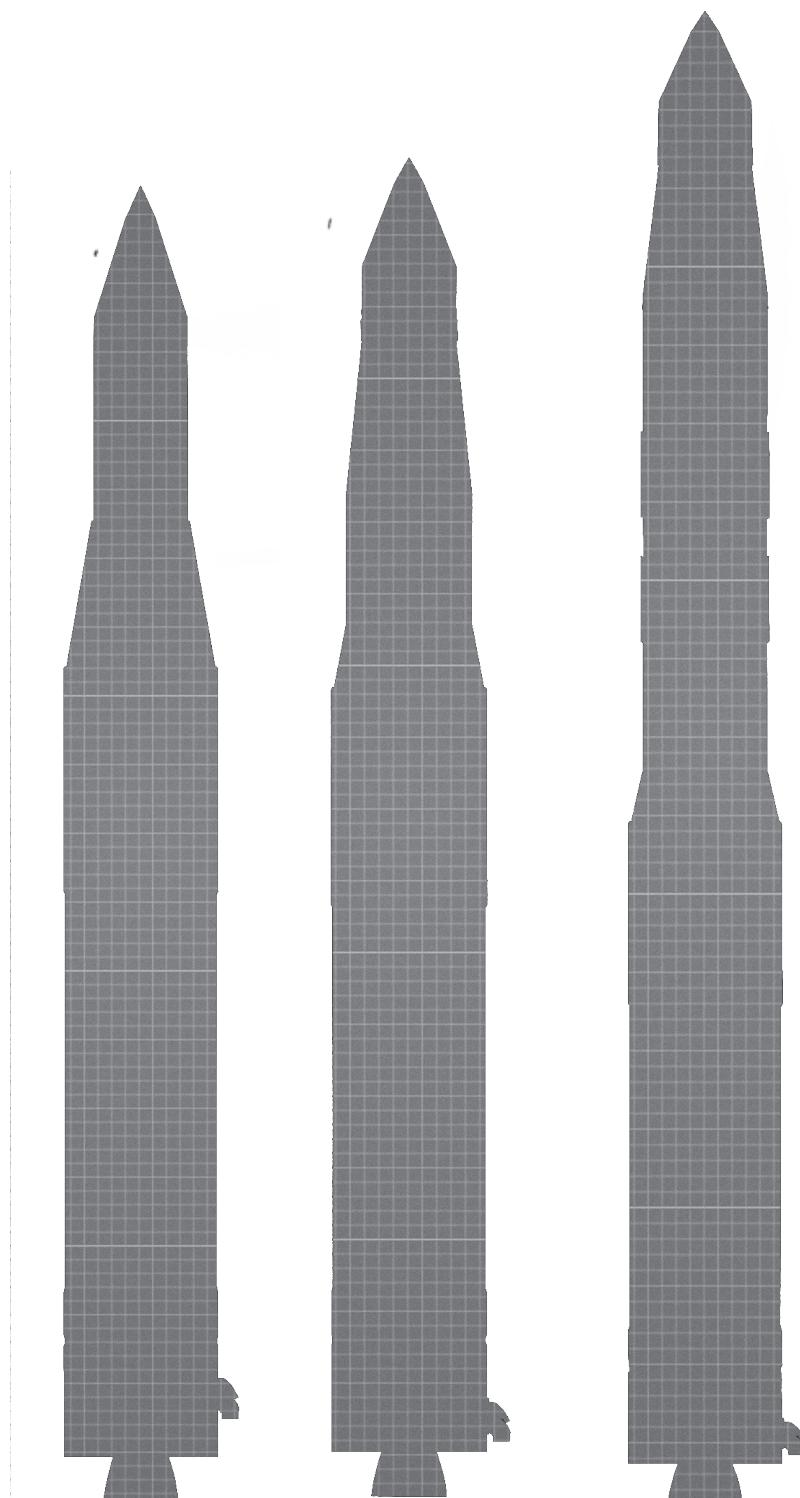
2.3 ROSUETTE BP4

-from top to bottom-

The ROSUETTE BP4 is the most powerful version of the ROSUETTE family, replacing the TOPAZ with an all-new 1.25m solid rocket.



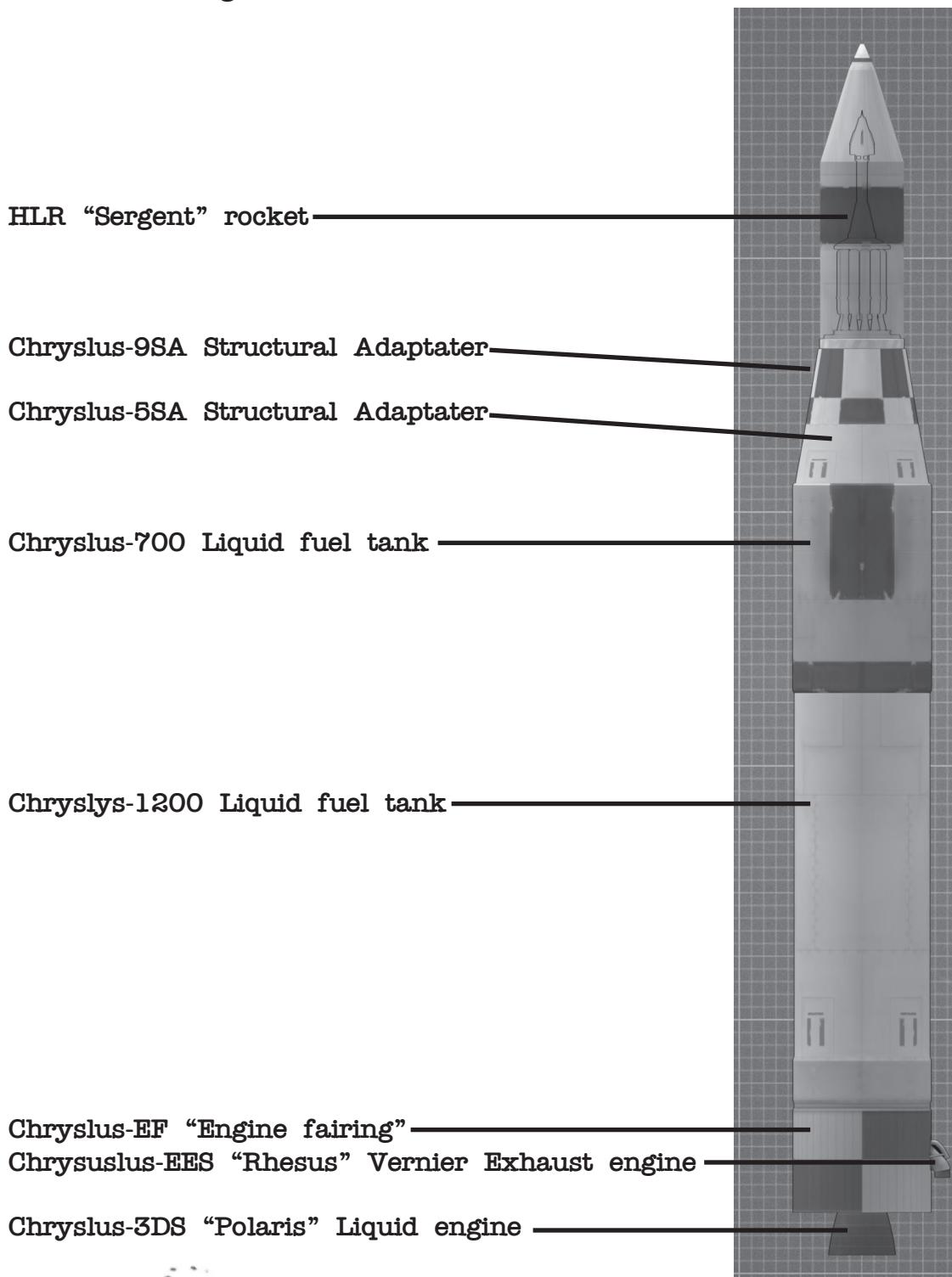
CHRYSLUS LAUNCH VEHICLE



2.4 CHRYSLUS II LAUNCH VEHICLE

-from top to bottom-

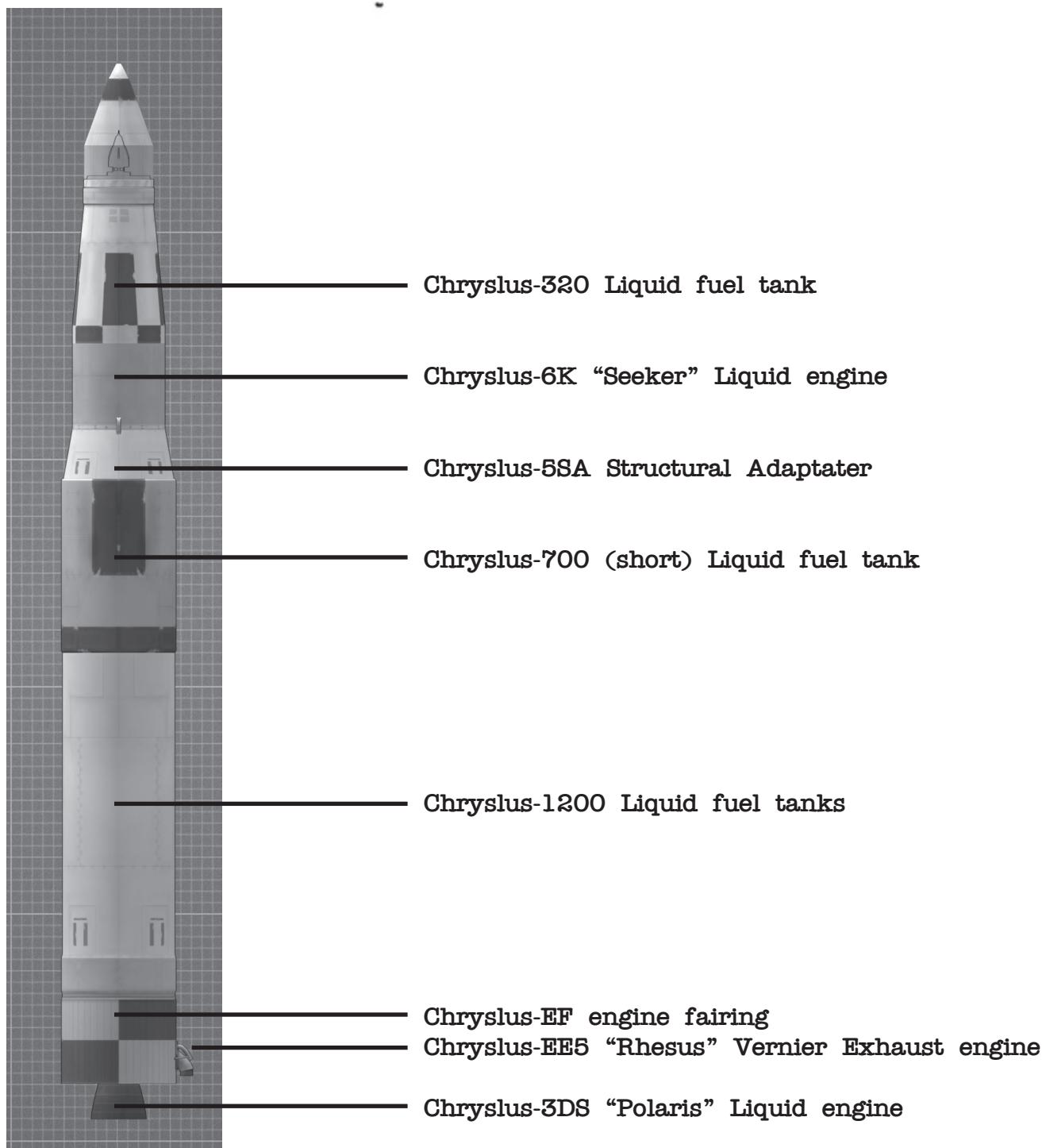
The CHRYSLUS rocket was designed to fill the same role as the FENRIS (pg30), and as a result they have very similar performance. During the early days of BDB, a number of CHRYSLUS rockets were acquired, and frugality demanded that they be put to use. The rockets were fitted with the VICENZA upper stage, encased in a 0.9375m fairing.



2.4 CHRYSLUS IVA LAUNCH VEHICLE

-from top to bottom-

Proponents of the CHRYSLUS rockets, specifically those paid to manufacture it, proposed upgrading the rocket to use a liquid upper stage engine, rather than diminutive solid boosters. The CHRYSLUS IV, while not a particularly well received rocket, is still available in our catalog for special order. The families of those workers ask that you take the design into consideration.



2.4 CHRYSLUS IVB LAUNCHE VEHICLE

-from top to bottom-

Further upgrades to the CHRYSLUS were proposed, specifically the addition of a more powerful storable propellant stage between the two stages of the IVA. This combination proved too much for the POLARIS engine to lift once mated to a payload, and as a result BDB recommends the addition of strap on DIOSURI boosters in order to get the rocket off the ground.

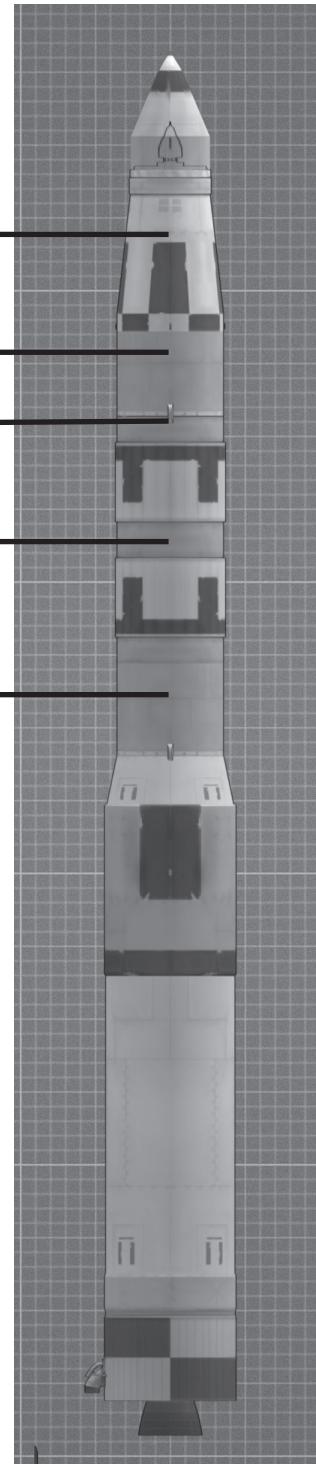
Chryslus-320 Liquid fuel tank

Chryslus-6K "Seeker" Liquid engine

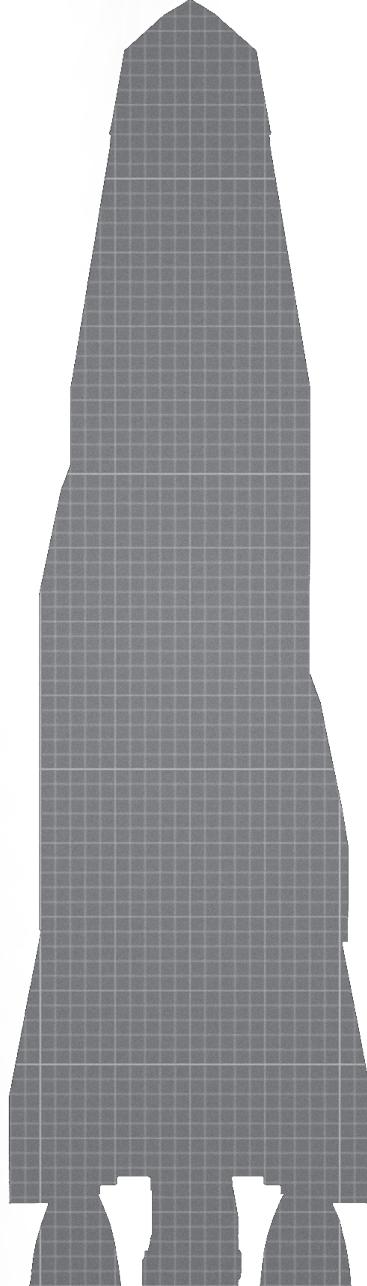
Fenris-625 Stack decoupler

Chryslus-700 (long) Liquid fuel tank

Chryslus-45K "Hunter" liquid engine



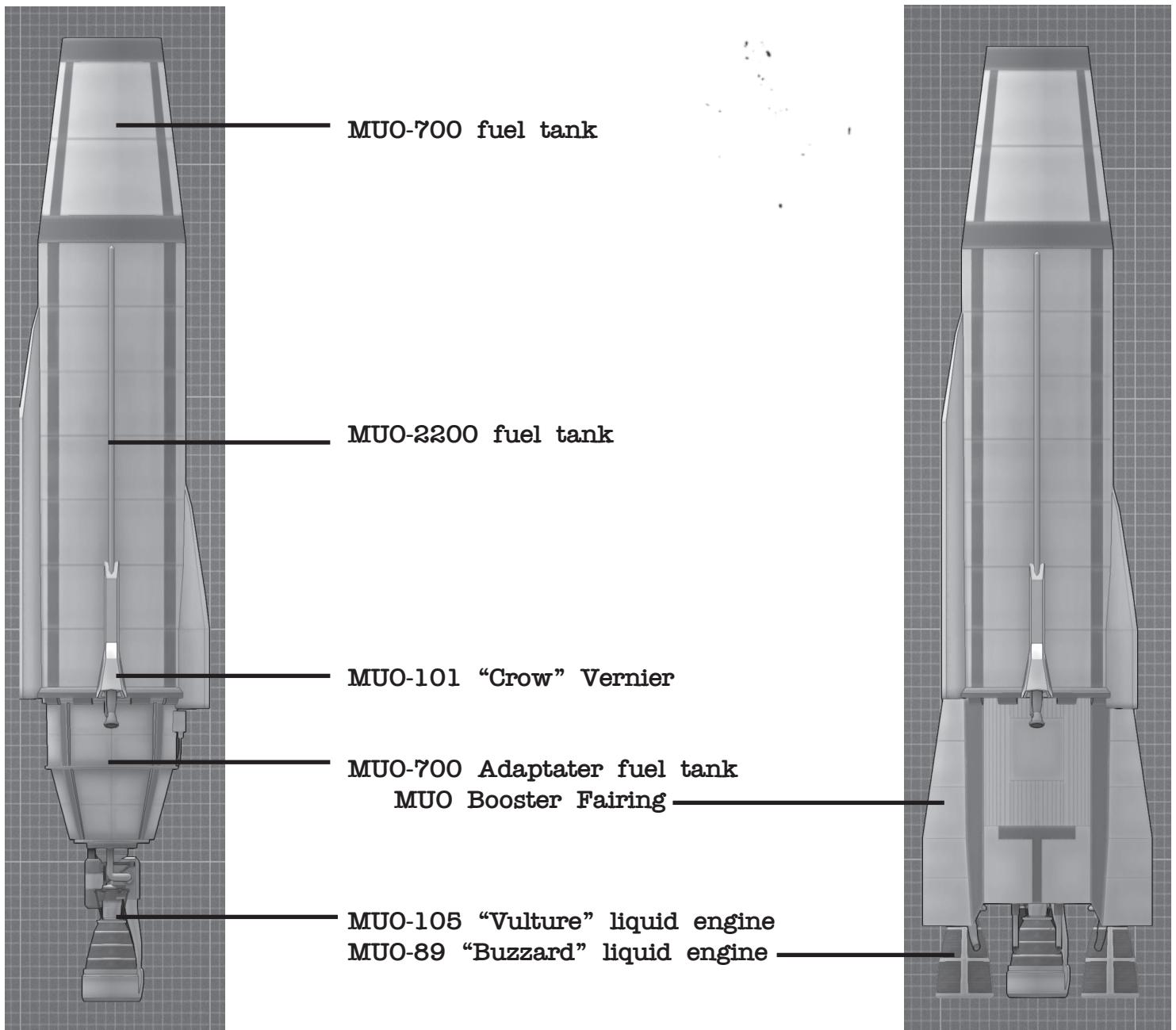
MUO LAUNCH VEHICLE



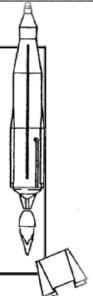
2.5 MUO LAUNCH VEHICLE

-from top to bottom-

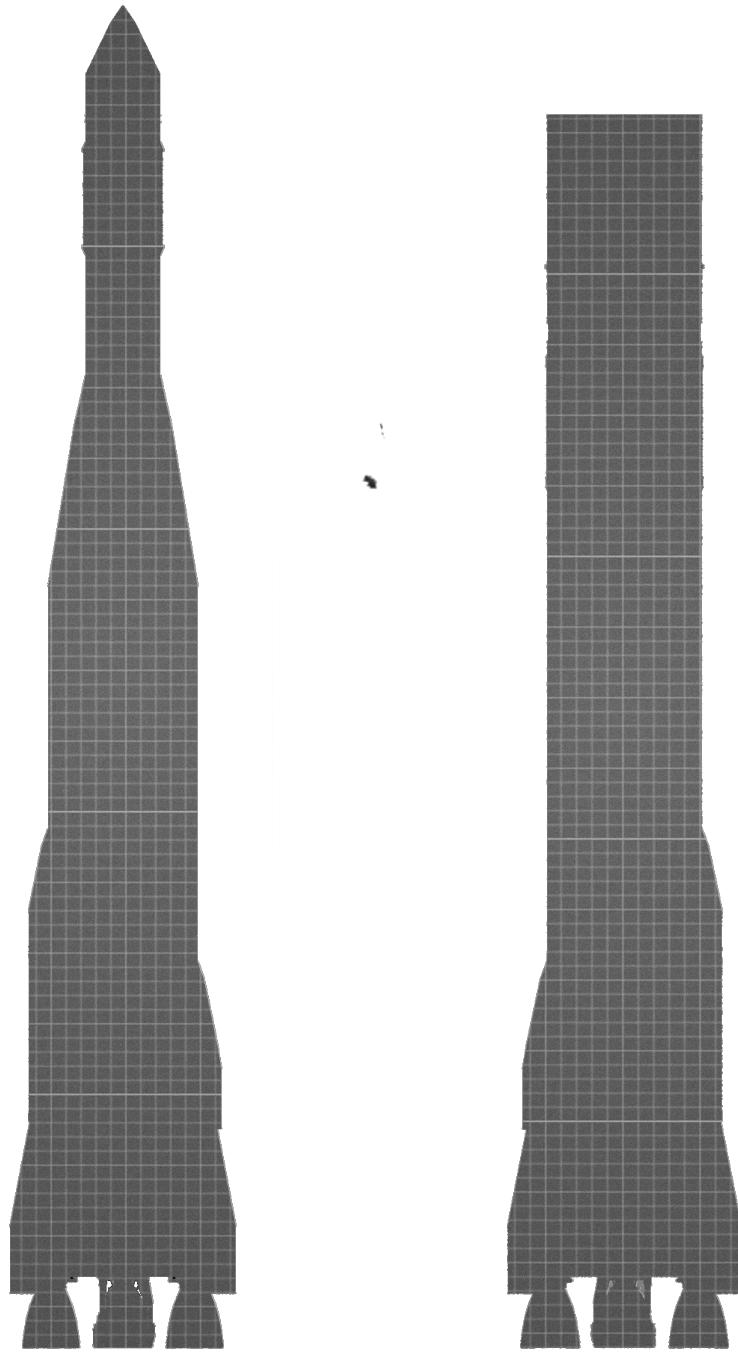
The MUO missile was one of the first long range missiles developed, when rocket design was in its infancy. Engineers were afraid to base a design on igniting large liquid engines in flight. As a result, it uses a unique stage-and-a-half design, where the vacuum-optimized sustainer engine is lit on the ground with the boosters. The booster engines are dropped in flight once the sustainer's TWR is high enough. The MUO family is one of the longest living rocket designs, having been adapted to carry HERMES manned capsules, as well as BELLE and INON upper stages.



WARNING THE BOOSTER FAIRING SHOULD BE STAGED BETWEEN 20.000 AND 25.000 KM



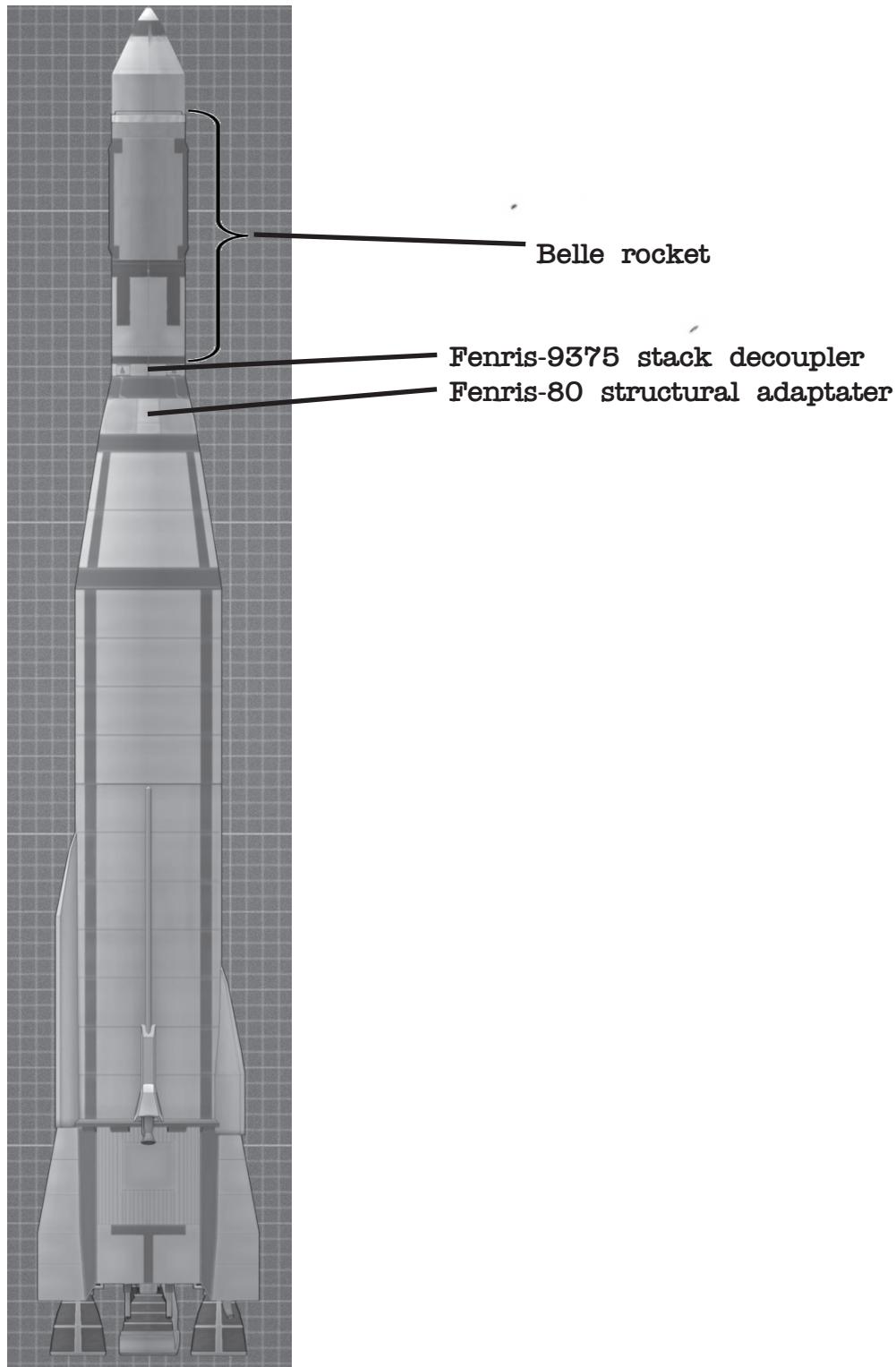
MUO LAUNCH VEHICLE VARIANTS



2.5 MUO-BELLE

-from top to bottom-

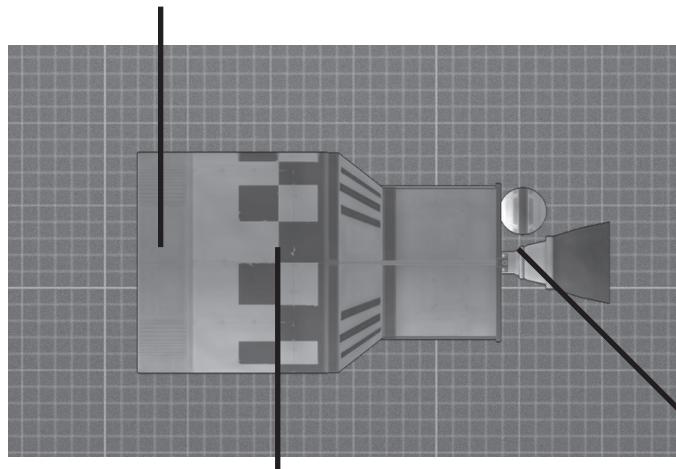
The BELLE upper stage was originally a secret project run by the military. It is only recently that the designs have been made available to BDB. An advanced upper stage, it includes full three axis control, an internal probe core, and a vacuum engine. Its capabilities have been expanded several times.



2.5 BELLE A

-from top to bottom-

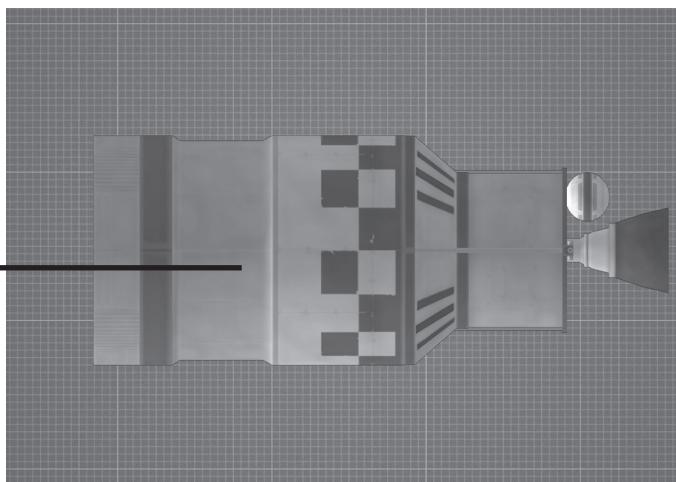
Belle TRU Telemetry Response Unit



Belle-160 liquid fuel tank Belle-A-25 "Hadar" liquid engine

2.5 BELLE B

-from top to bottom-

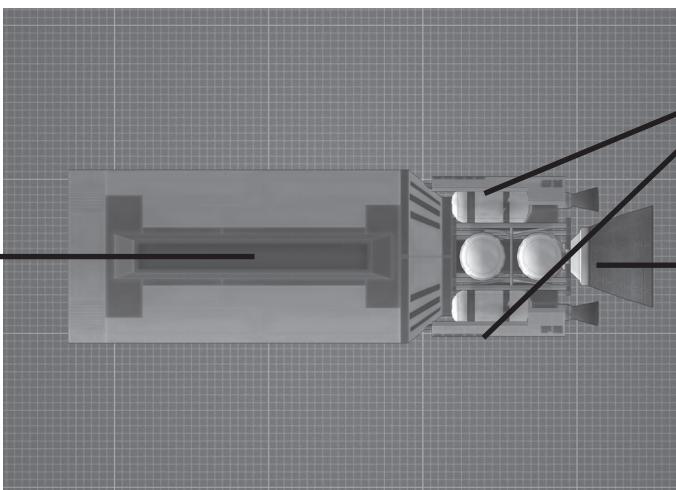


Belle-140 liquid fuel tank

2.5 BELLE D

-from top to bottom-

Belle-180 liquid fuel tank



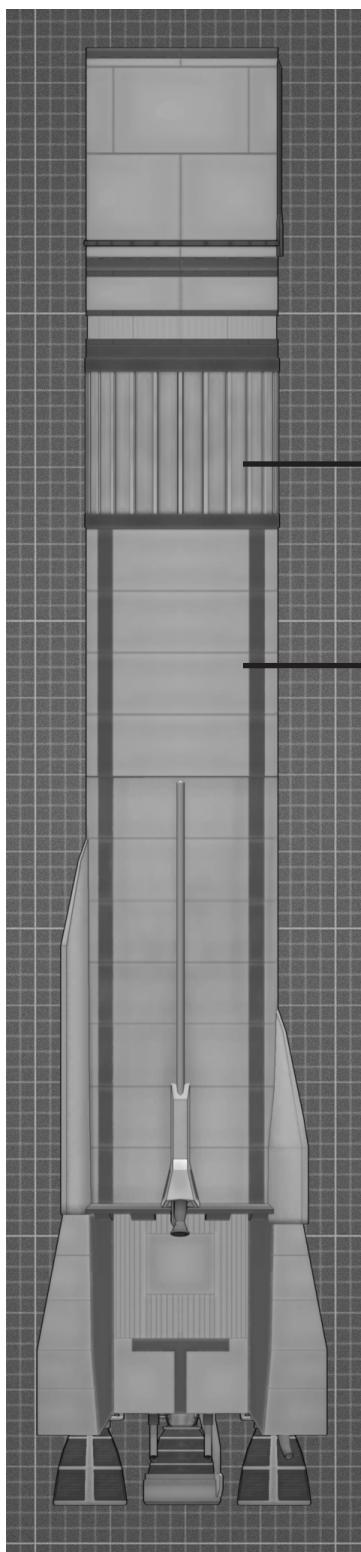
Belle-D4 "Nafuni"
liquid engine

Belle-D35 "Mafuni"
liquid engine

2.5 MUO INON

-from top to bottom-

INON is an advanced cryogenic upper stage, which has finally borne fruit after a long and laborious design process. When paired with the MUO booster it is capable of sending large probes and other hardware to the far reaches of space.



Inon-1100 Liquid fuel tank

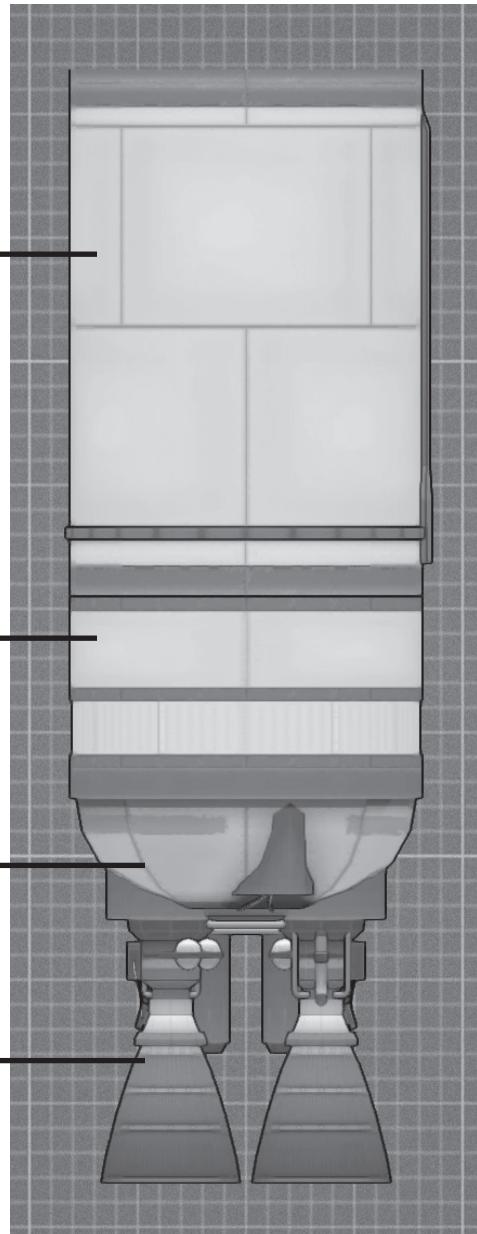
Inon Straight decoupler

Inon-400 Liquid fuel tank

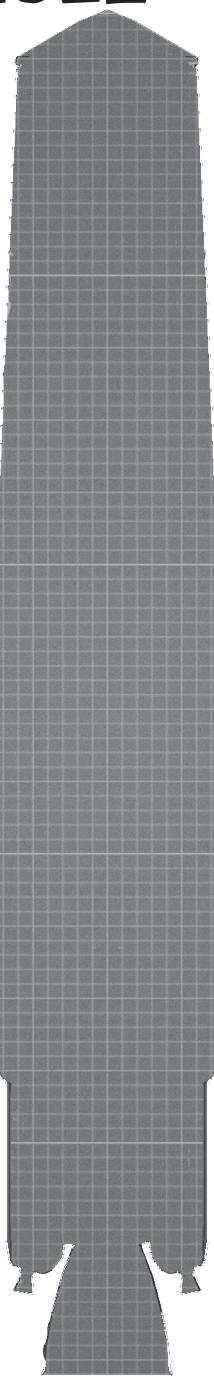
Muo-1200 fuel tank

Inon Engine monting plate

Inon-75 engines



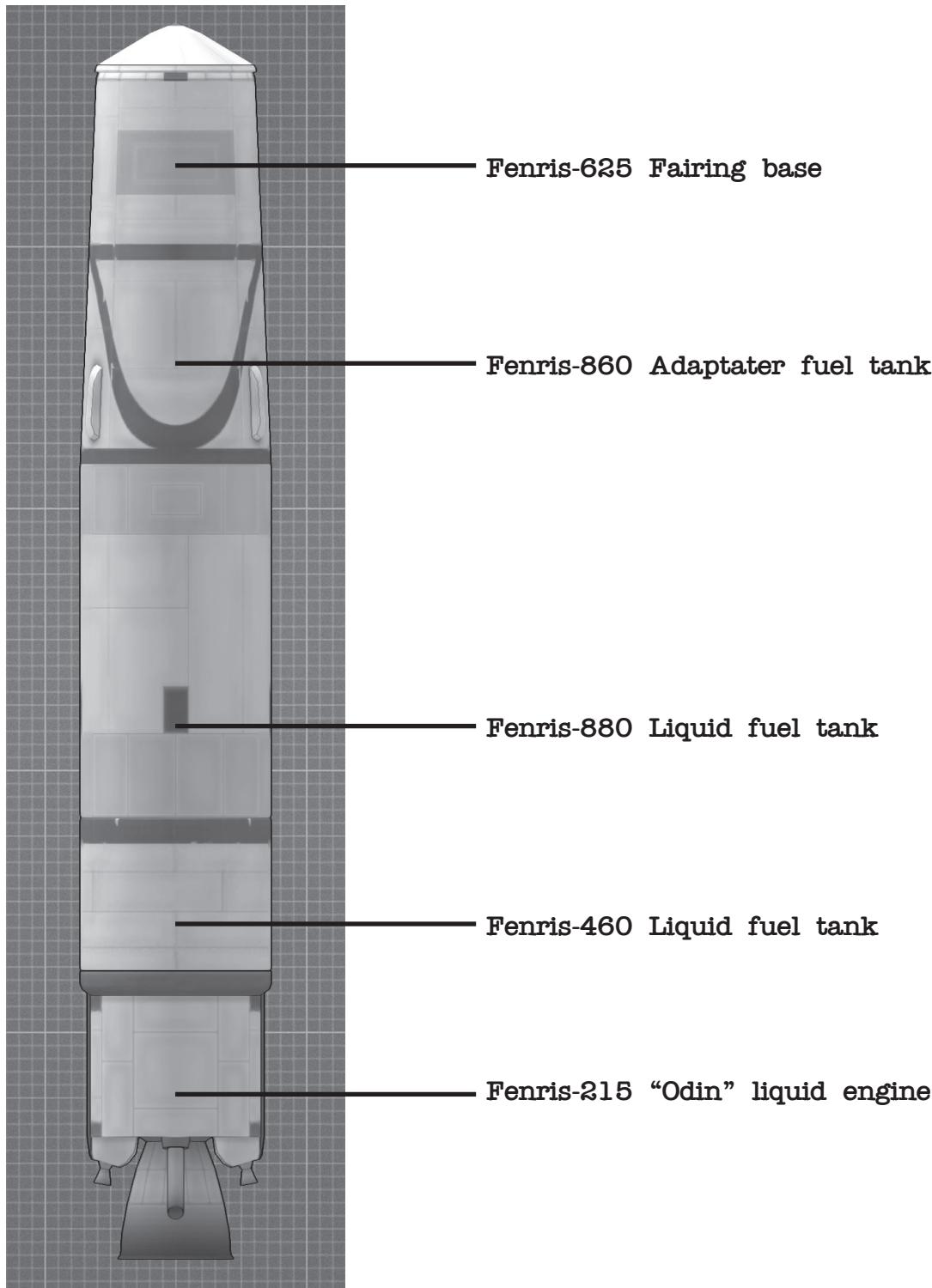
FENRIS LAUNCH VEHICLE



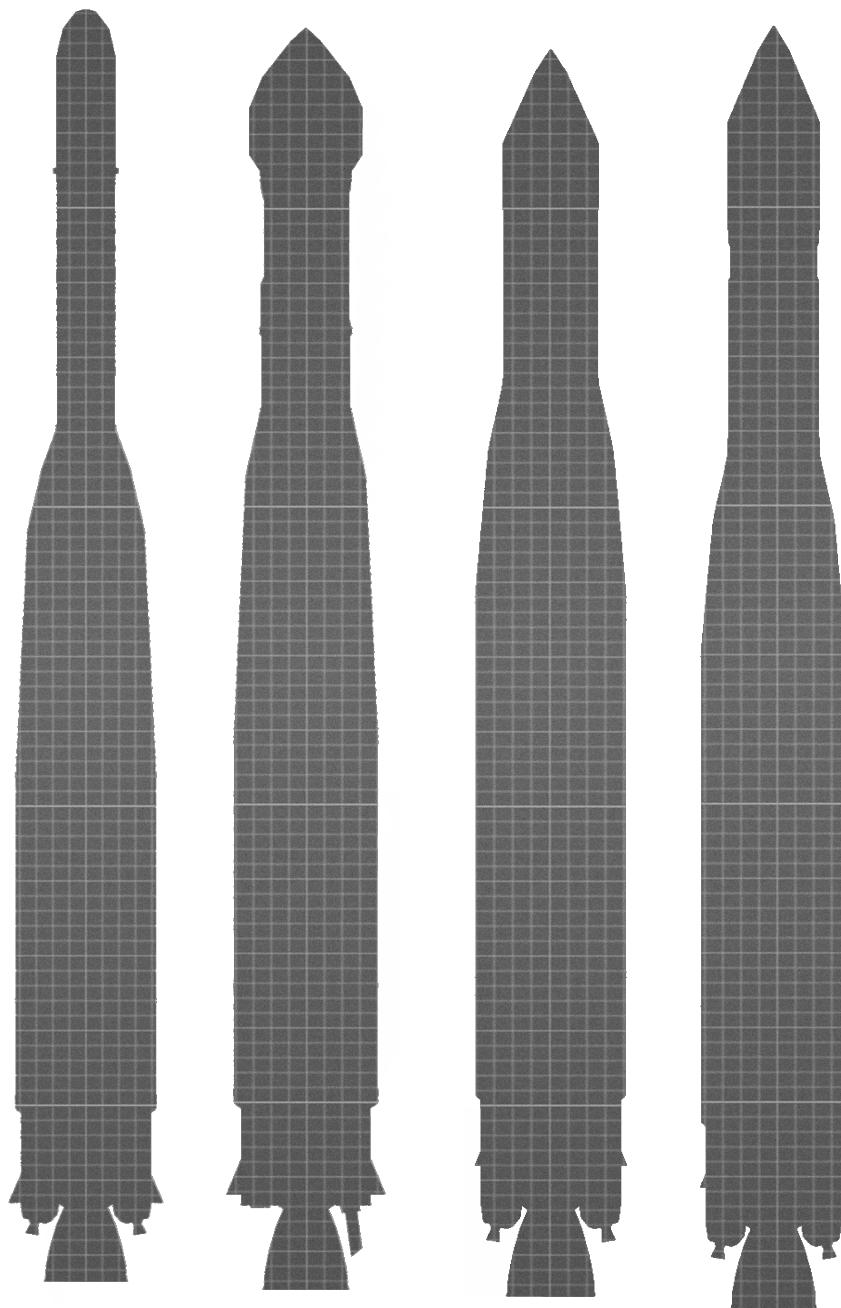
2.6 FENRIS VEHICLE

-from top to bottom-

Originally designed as an intermediate ballistic missile, the Fenris has been adapted for use as a light-medium launcher for probes and satellites. Forces inside BDB have vested interests in the continued use of the launcher, despite outside criticisms. As a result it has been continuously modified with numerous variants to meet the changing demands of our customers.



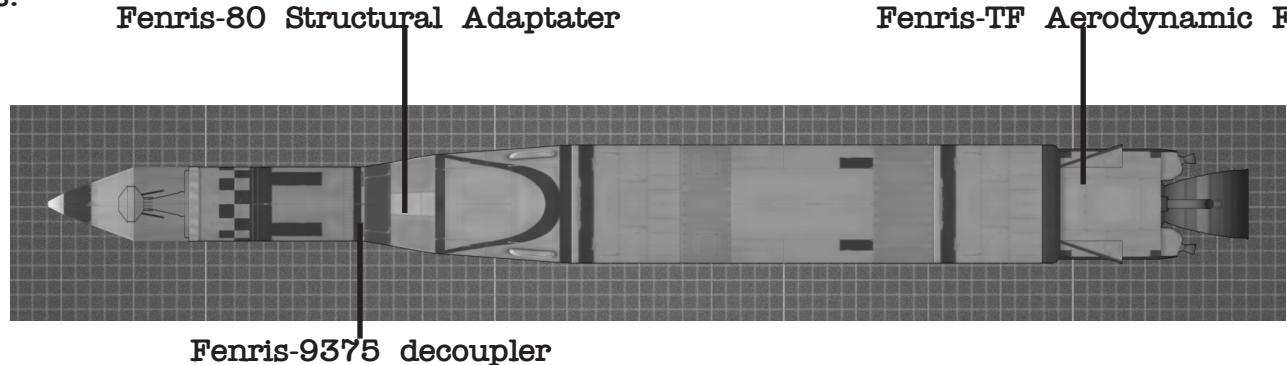
FENRIS LAUNCH VEHICLE VARIANTS



FENRIS BELLE A

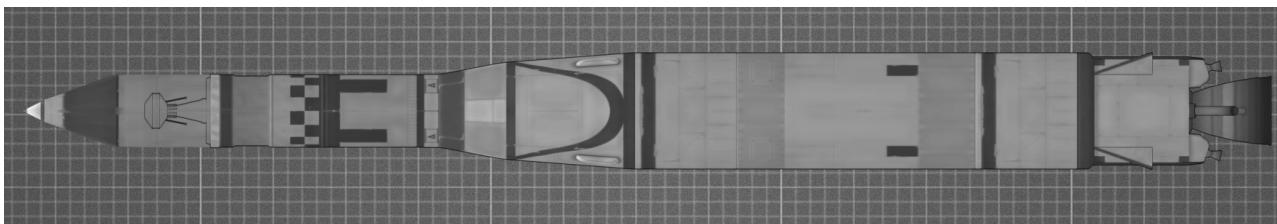
-from top to bottom-

One of the first uses of the BELLE upper stage was delivering photoreconnaissance satellites to orbit and back. BDB offers this variant of FENRIS launcher with the classified equipment removed from the fairing, leaving room for more peaceful payloads.



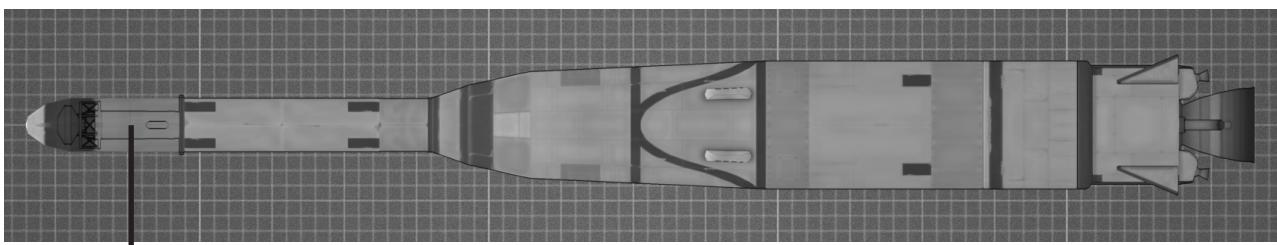
FENRIS BELLE B

-from top to bottom-



FENRIS ALPHA

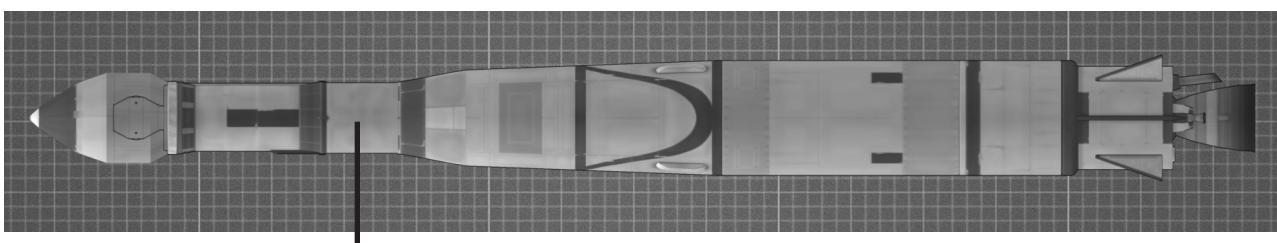
-from top to bottom-



Staraa-20-IIA "Aquilae" Solid rocket booster

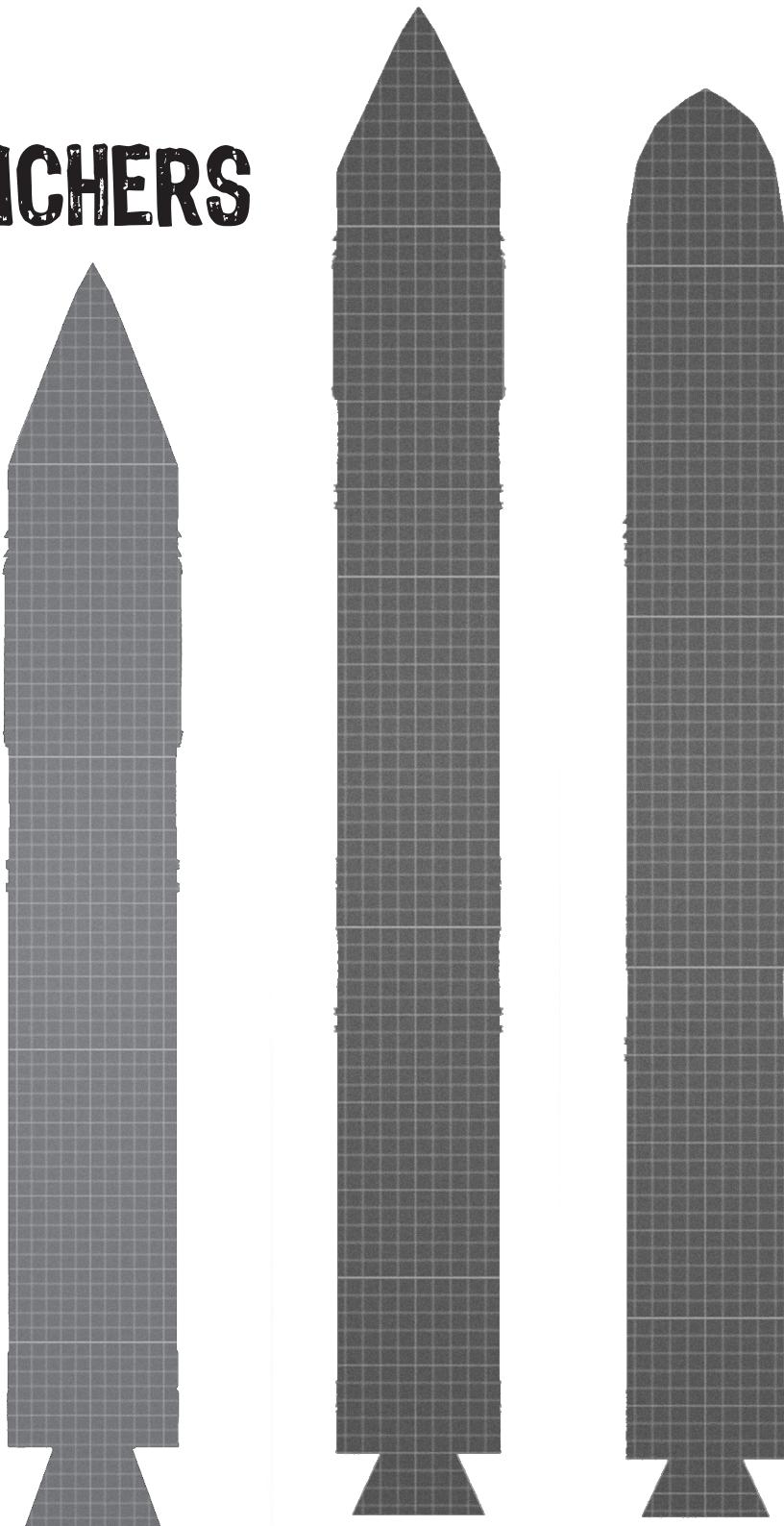
FENRIS ALPHASTAR

-from top to bottom-



Fenris-18 "Alphastar" liquid engine

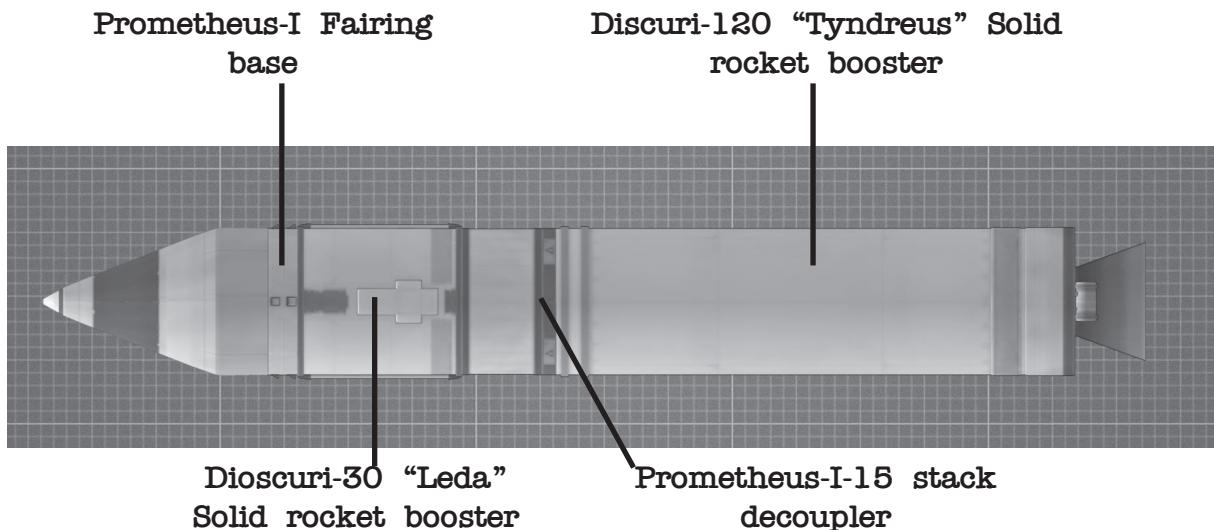
SOLID LAUNCHERS



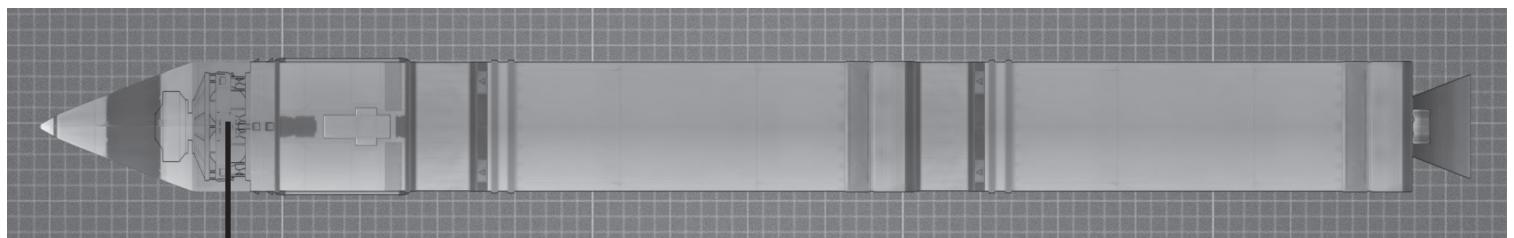
2.7 MINERVA I SOLID LAUNCHER

-from top to bottom-

Using mass produced solid rocket boosters derived from military ICBMs, Bluedog Design Bureau offers a number of low cost alternatives to satellite launches into orbit. However, the reduced price tag is offset by the fact that the booster stages cannot be throttled or shut off.

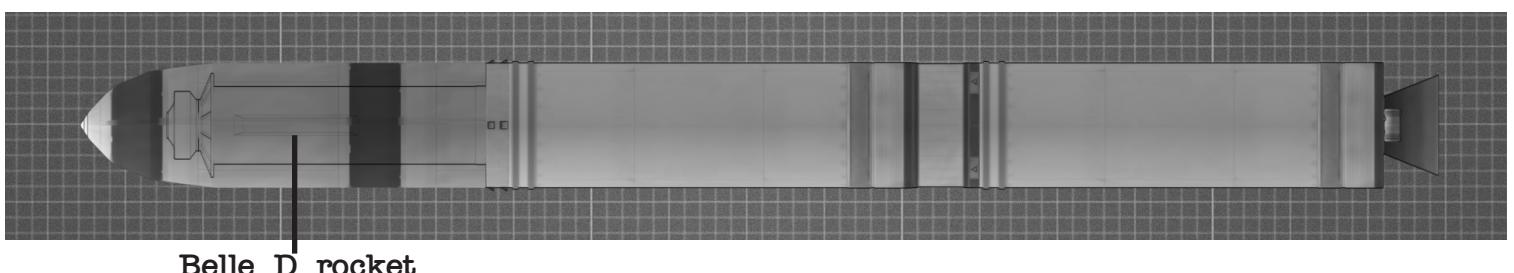


2.7 MINERVA II SOLID LAUNCHER

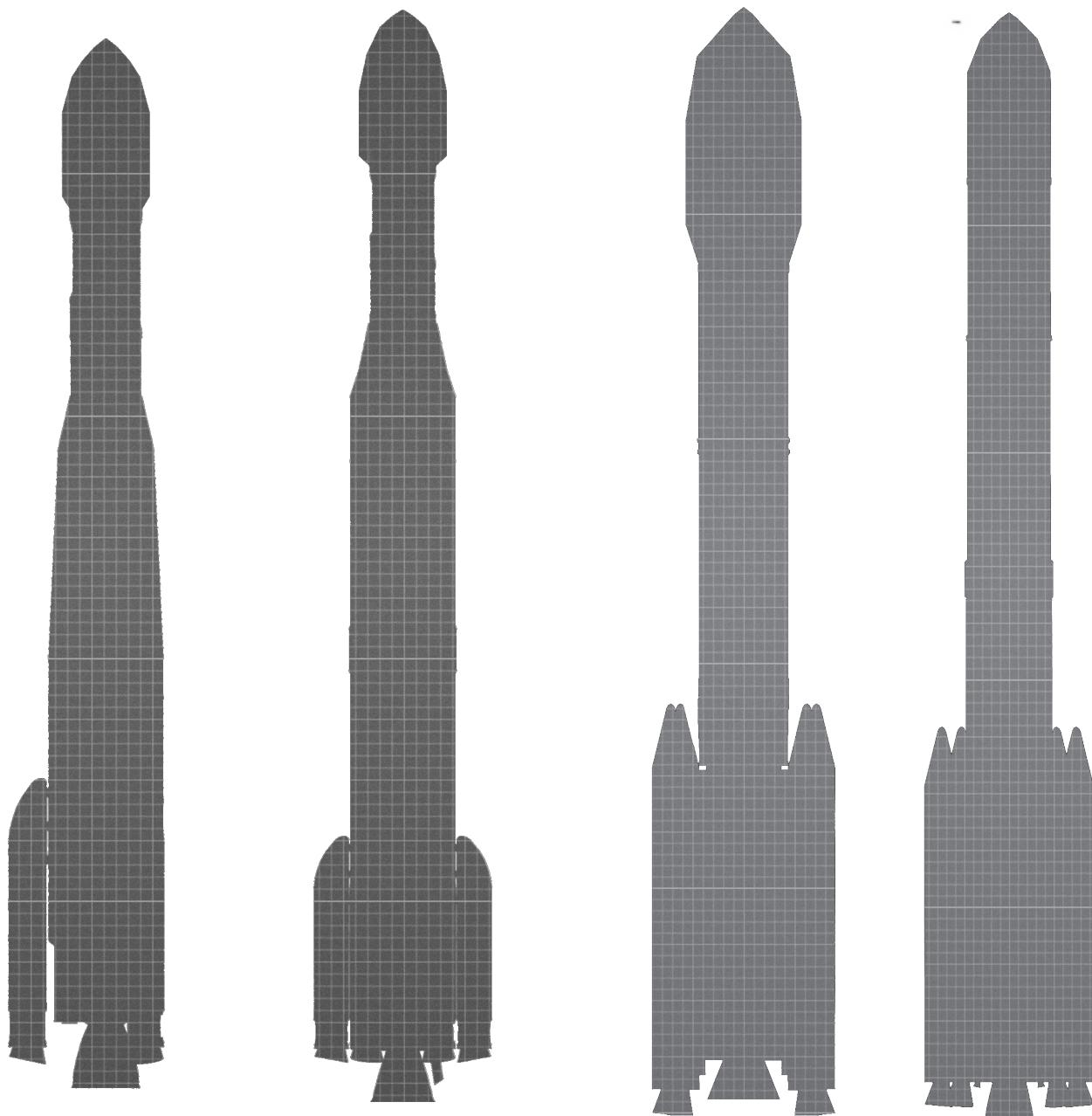


2.7 CARAVEL SOLID LAUNCHER

-from top to bottom-



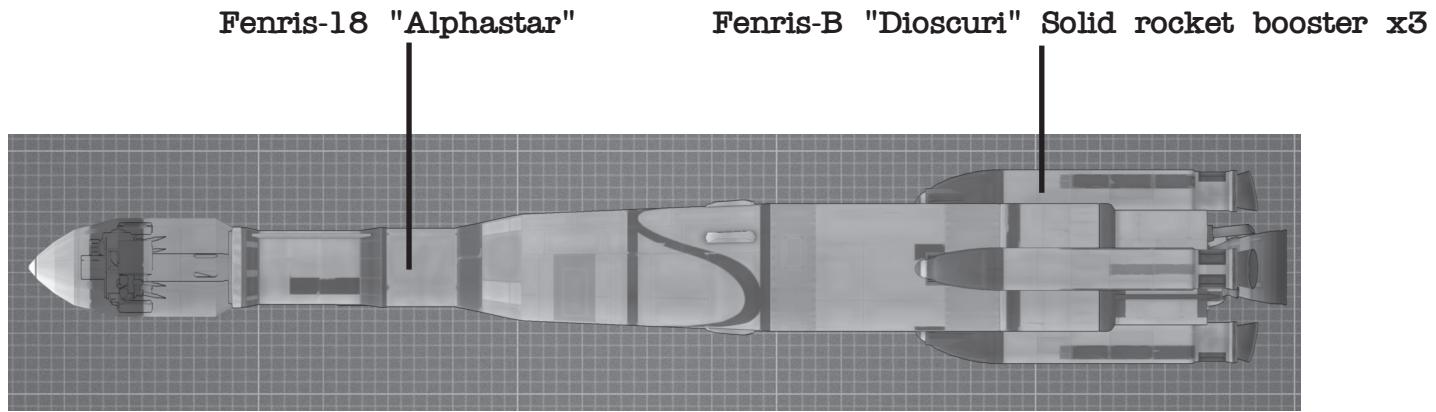
DALETH LAUNCH VEHICLE



2.8 DALETH-E

-from top to bottom-

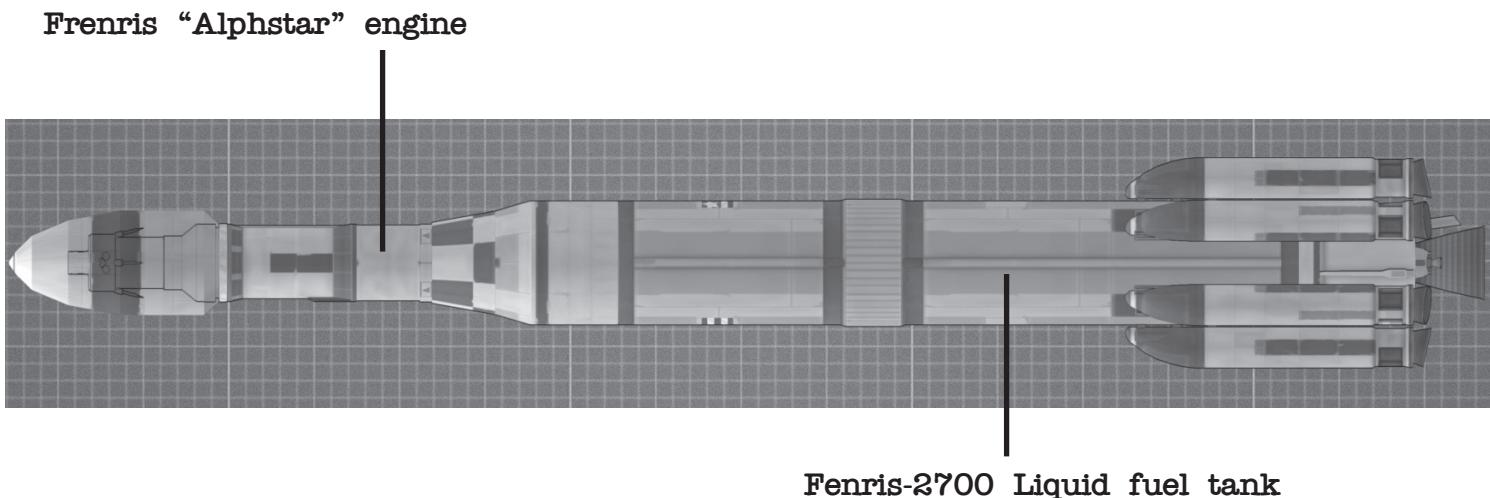
The DALETH is a development of the FENRIS-ALPHASTAR launcher. Using uprated versions of the ALPHASTAR upper stage, as well as a variety of solid kick stages and strap on boosters, it continued the heritage (and contracts) of the FENRIS booster.



2.8 DALETH-1000

-from top to bottom-

The DALETH-1000 uses an extended long tank FENRIS first stage, as well as an upgraded solid rocket kick stage. The number of solid rocket boosters has been increased from three to six.

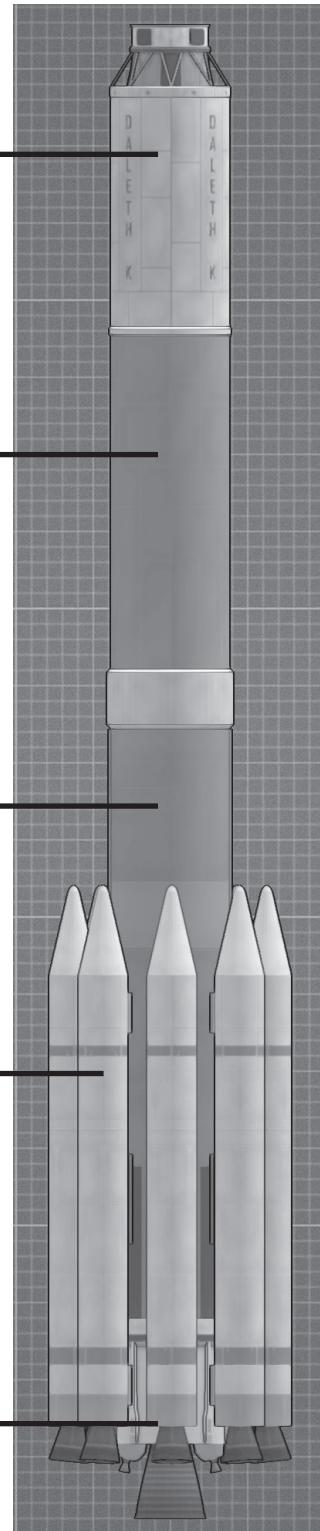


2.8 DALETH 2000

-from top to bottom-

DALETH 2000 is the final version of the DALETH rocket's evolution, using a new first stage, a new upper stage, and new solid rocket boosters. While all parts of this rocket can trace their lineage in some way to the original FENRIS, ALPHASTAR, and DALETH components, the actual hardware is completely new. It is the ultimate expression of the capabilities inherent in 1.5m launchers.

Daleth-K Interstage Decoupler



Daleth-2-1500 Liquified fuel tank

Daleth-2-2200 Liquid fuel tank

Daleth-CGR-40 "Ruby" Solid rocket booster (x8)
or : Daleth-CGR-46 "Emarld" Solid rocket booster
Daleth-CGR-60 "Sapphire" Solid rocket booster

Daleth-SSR-27a "Darkah" liquid engine

DALETH-K TRANSTAGE

-from top to bottom-

The DALETH-K TRANSTAGE is an advanced upper stage using storable propellants. While still using an engine descended from the venerable ALPHASTAR, it uses all new tankage and a unique fairing base.

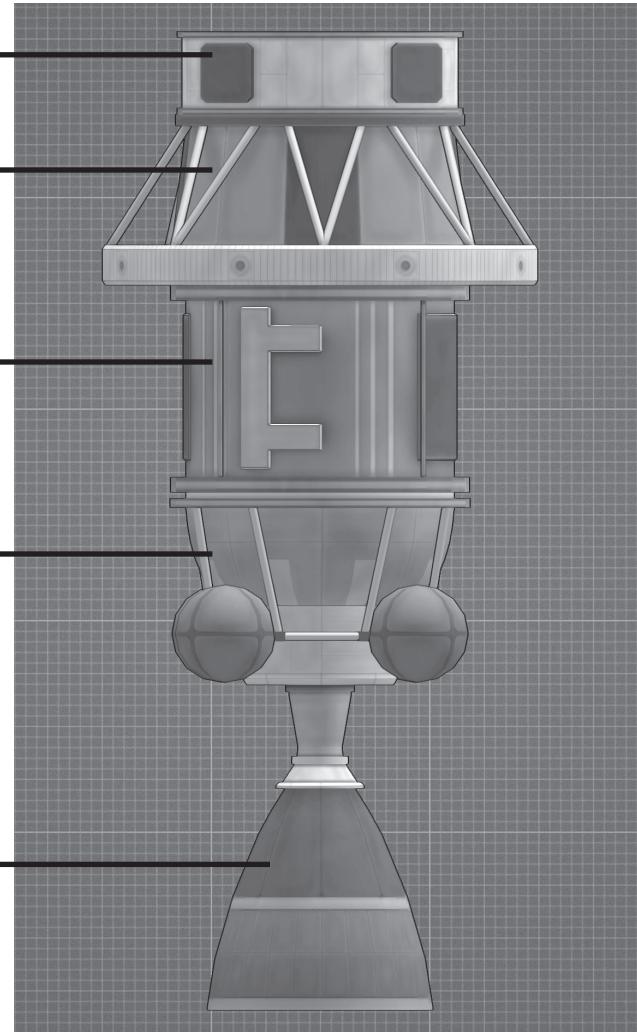
Daleth-K-30 Liquid fuel tank

Daleth-K-70 Fairing Adapter Tank

Daleth-K-90 Liquid fuel tank

Daleth-K-50 Liquid fuel tank

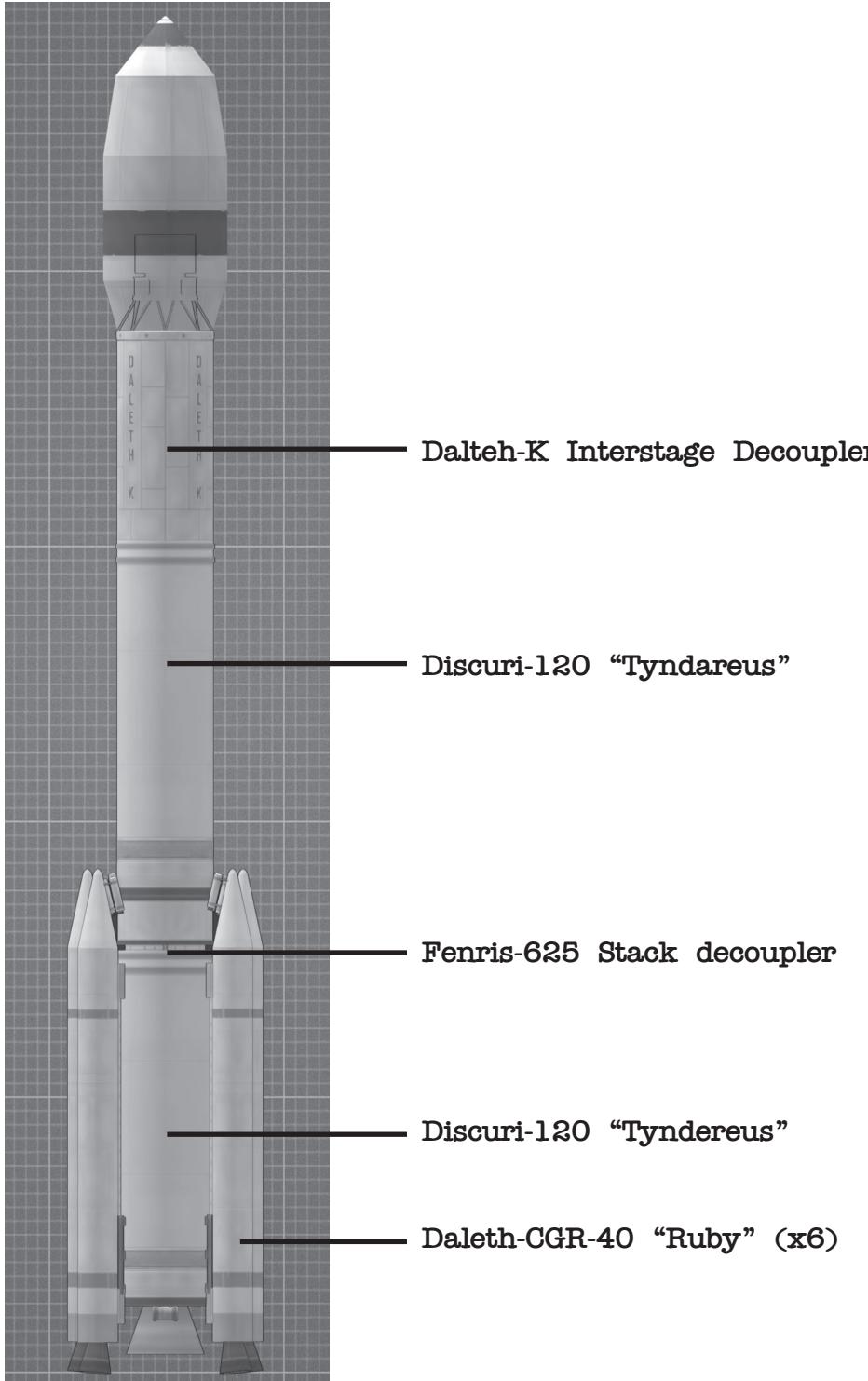
Daleth-K-75 "Bahdal" liquid engine



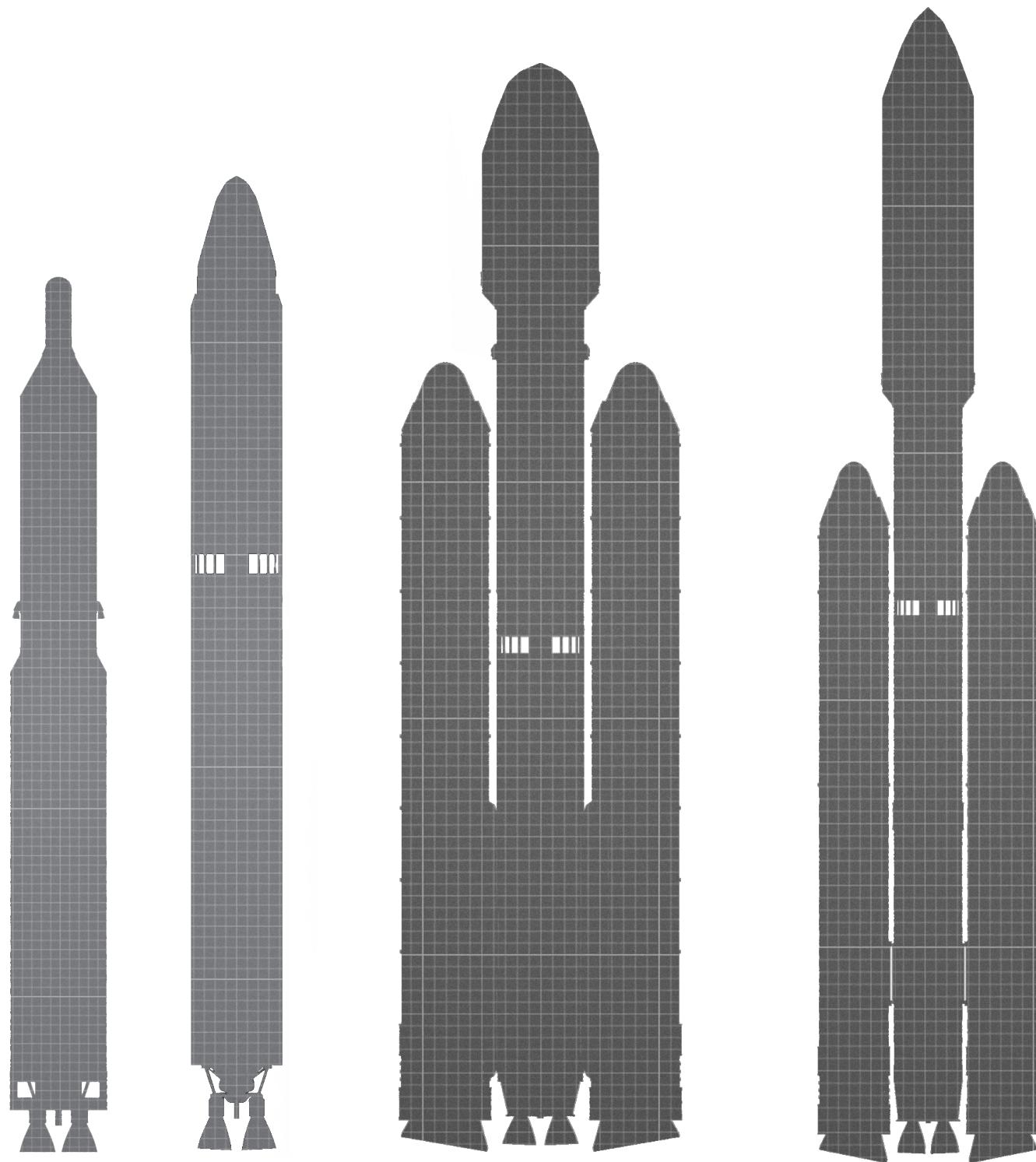
2.8 DALETH LITE

-from top to bottom-

DALETH-LITE is the most unconventional version of DALETH rocket. The DARKAH first stage has been replaced by two powerful TYNDAREUS solid rocket boosters, based on refurbished solid fuel based ballistic missiles.



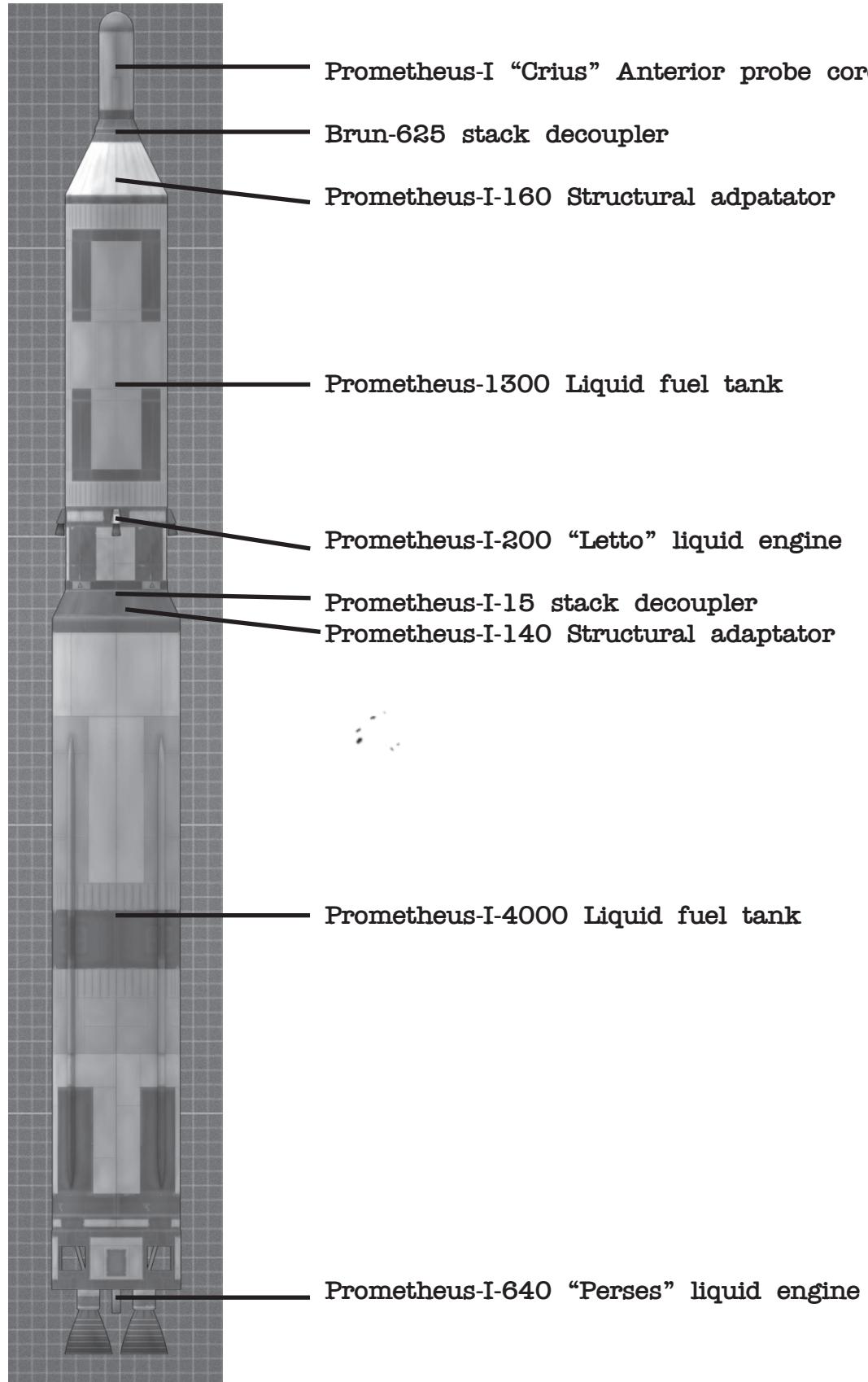
PROMETHEUS LAUNCH VEHICLES



2.9 PROMETHEUS I ICBM

-from top to bottom-

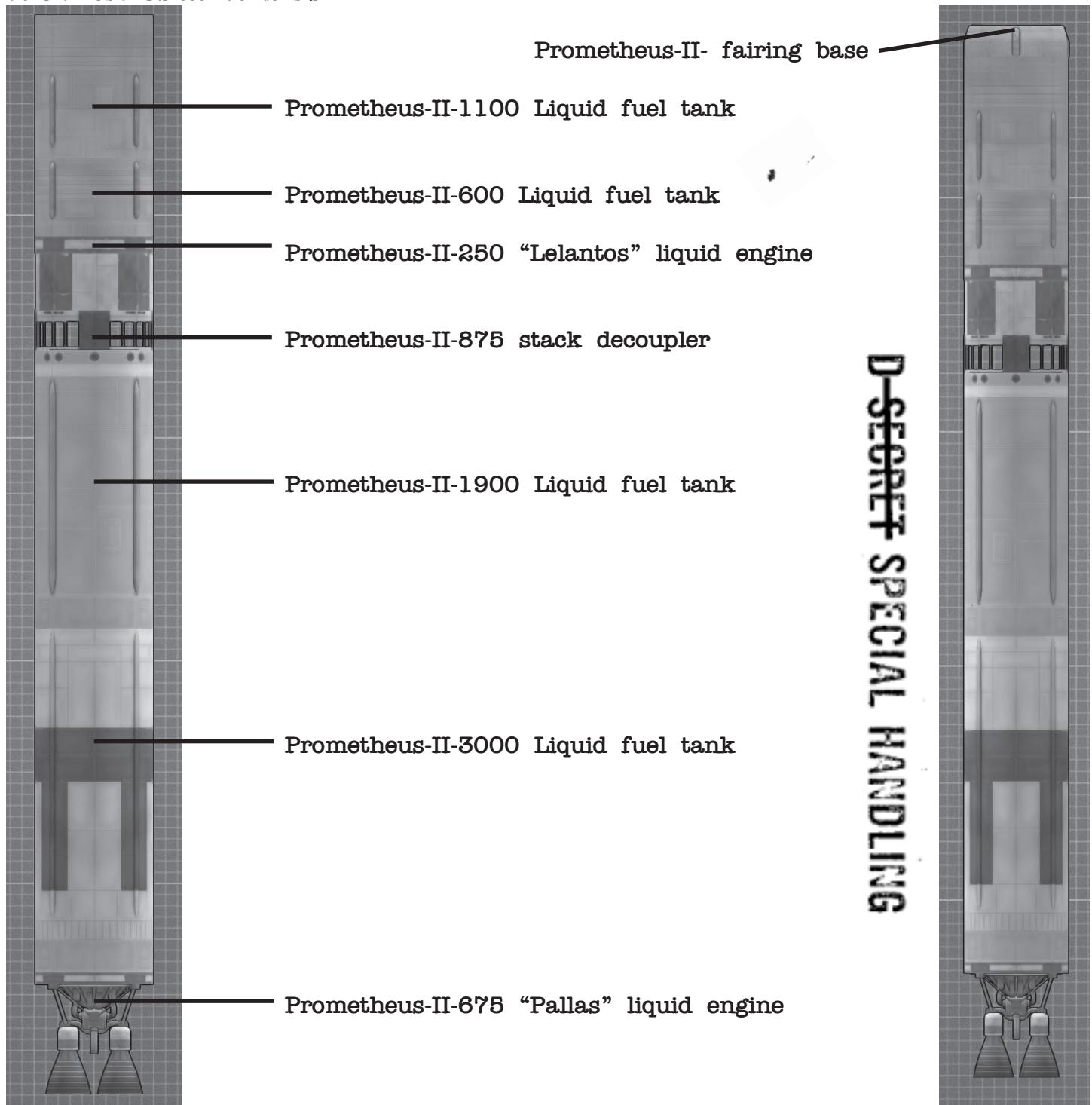
The PROMETHEUS-I ICBM was an early missile with a high throw weight. Its choice of fuels made it unsuitable for use as a ballistic missile, and they were quickly mothballed. BDB has purchased the stored missiles, and replaced the warhead with scientific instruments.



2.9 PROMETHEUS II LAUNCH VEHICLE

-from top to bottom-

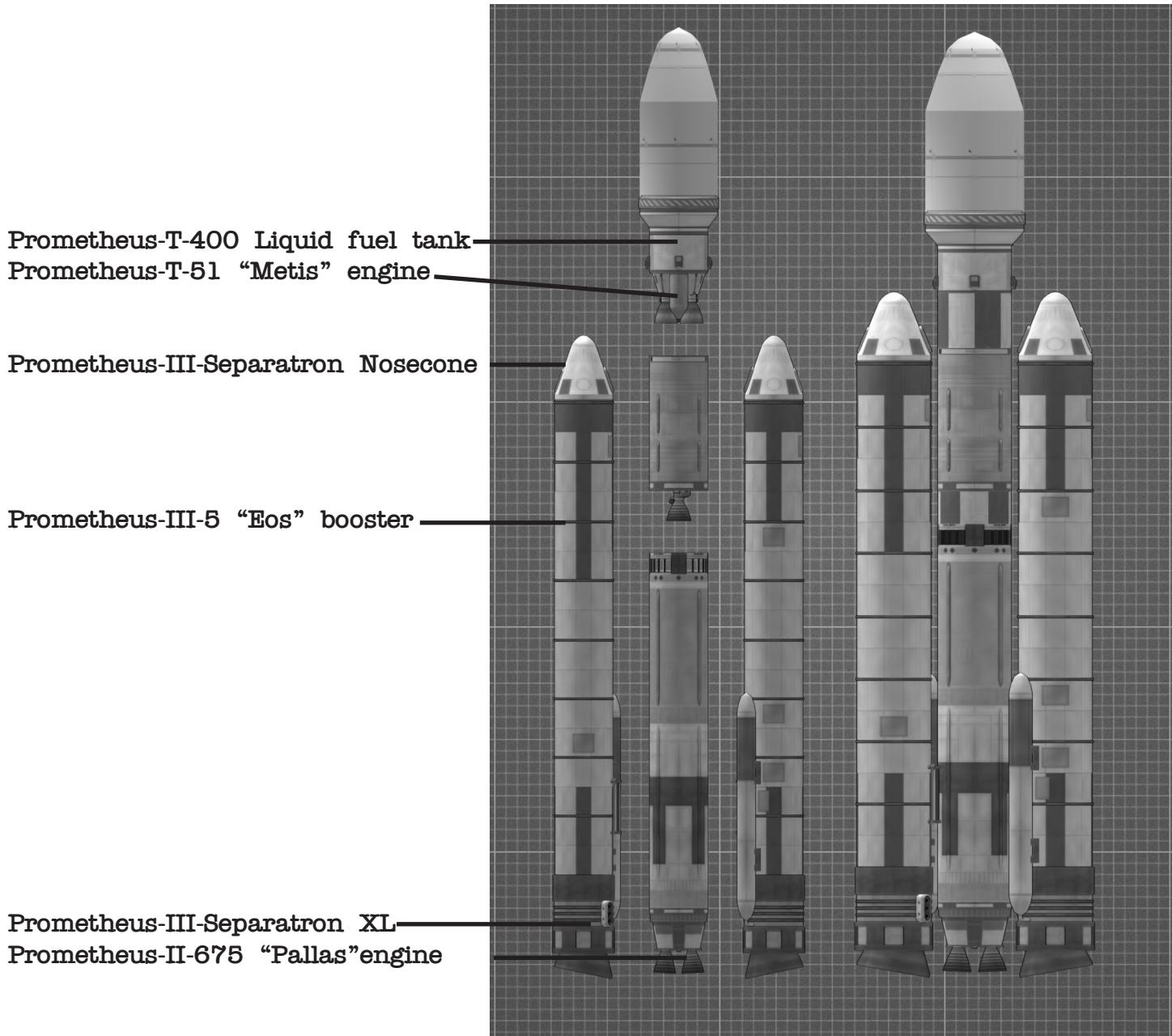
The PROMETHEUS-II ICBM replaced the PROMETHEUS-I. Using storable propellants, it could stay ready to launch indefinitely. It was so successful, in fact, they made too many. BDB has purchased the surplus and refurbished them for use as launchers for the SPICA program. The remaining launchers were later converted to the PROMETHEUS-III variants.



2.9 PROMETHEUS III LAUNCH VEHICLE

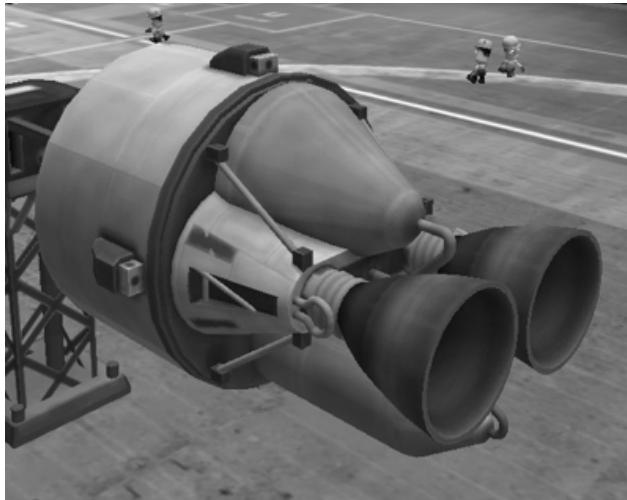
-from top to bottom-

Due to budget cuts, BDB chose to re-use PROMETHEUS-II launchers rather than develop a new medium-heavy lifter. Upgrades include the options to add either a BELLE upper stage or the new METIS Transtage, and large 1.875m strap-on solid rocket motors. As a result of the increased complexity, BDB's graphic design department has included exploded views of the launcher.

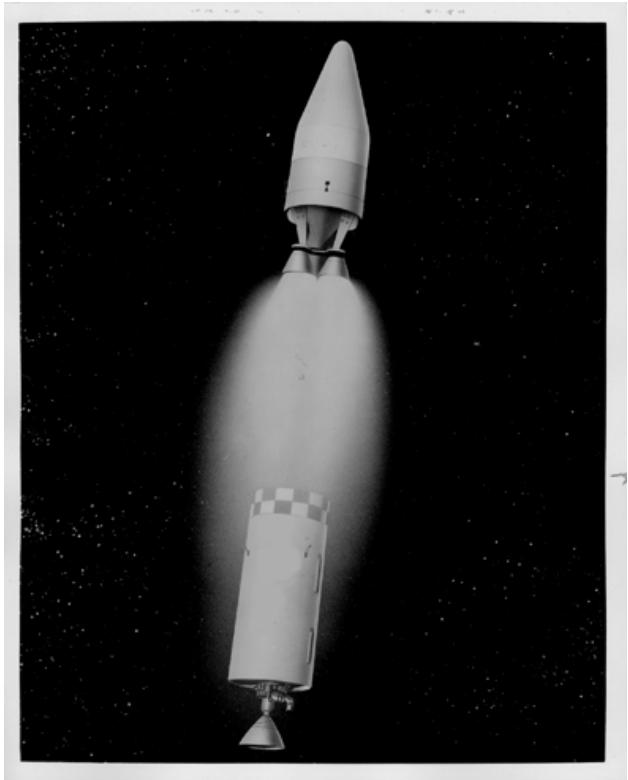


METIS TRANSTAGE DETAILS

Additional views of the METIS TRANSTAGE. It uses a unique design where the fuel tanks are side by side, rather than stacked vertically. By extending down on either side of the uprated ALPHASTAR engines, the fuel capacity remains roughly the same while overall length is reduced. It includes monopropellant and RCS thrusters.



View of the "Metis" liquid engine.



Transtage getting in action

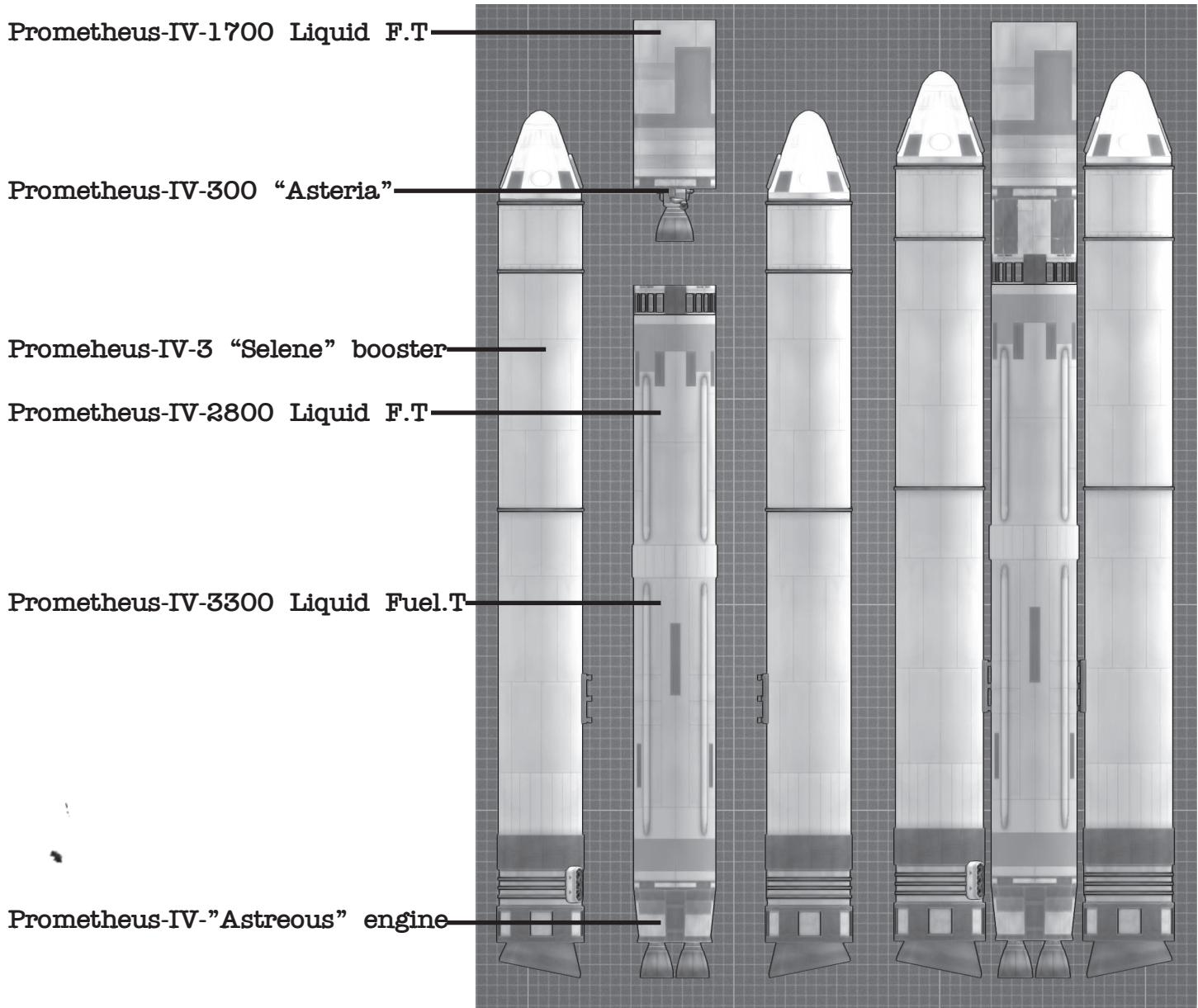


THE PROMETHEUS FIRST STAGE ENGINES HAVE SHROUDS WHICH CAN BE DISABLED WHEN NOT USING STRAPS OR WHEN BEING USED AS AN UPPERSTAGE

2.9 PROMETHEUS IV

-from top to bottom-

Demand for an even more capable PROMETHEUS launcher led to the development of the PROMETHEUS-IV. It features uprated engines and fuel tanks, and new strap on SRMs. Useful for launching large probes into deep space. Typically the SRMs are ignited on the ground, and the first stage engine is ignited 10 seconds before SRM burn out, effectively lifting the entire rocket stack into the upper atmosphere before the main engines are even used !



APPENDIX A: REAL NAMES

The following appendix lists the various part series in BDB, followed by their corresponding real life names.

MANNED SPACECRAFT

Hermes : Mercury
SPICA : Gemini

LAUNCH VEHICULE

Viklun- Vanguard
Alpha- Able
Alphastar- Ablestar
Etoh- Redstone/ Juno I
Vicenza- Baby Sergeant
Rosuette- Diamant
Chryslus- Jupiter/ Juno II
Muo- Atlas
Belle- Agena
Inon- Centaur
Fenris- Thor
Daleth- Delta
Dioscuri- Castor
Prometheus- Titan

APPENDIX B: NAME ORIGINS

The following appendix describes the origins of some of the names used in Bluedog Design Bureau, for those curious. This is by no means exhaustive, as it does not even begin to cover the names of many of the individual engines and other parts. However it should provide insight into the kind of inane logic that comes into generating names for BDB parts. As a general rule of thumb, most parts that need a “name” in their description, get a name based on the first interesting word on their Wikipedia page.

Hermes - Hermes is the Greek name for the Roman god Mercury. The name was chosen by PassingLurker, who originally made the Bloeting Corp parts.

Spica - The brightest star in the Virgo constellation. Name chosen by Beale, who made the Spica parts.

Viklun - Named after former Overkill composer Simon Viklund. Appropriate for a Viking rocket.

Alpha and Alphastar - An ‘A’ name was needed to correspond to ‘Able’. ‘Alpha’ was cool enough.

Etoh - The Redstone missile was powered by liquid oxygen, and ethyl alcohol mixed with water. Ethyl alcohol’s structural formula is often abbreviated to ‘EtOH’.

Vicenza - The 30th Field Artillery Regiment, based in Vicenza, Italy was one of the users of the MGM-29 Sergeant missile, on which the Baby Sergeants used for Juno 1 and 2 were based.

Rosuette - Phonetic name derived from the word ‘Rose’, which seemed appropriate for a romantic language and a rocket with red stripes.

Chryslus - The Jupiter rocket was manufactured by the Chrysler company. Chryslus is a fictional equivalent from the Fallout universe.

Muo - Derived from the name of the MUOS satellites, which were launched on Atlas V rockets.

Belle - The Agena upper stage was powered by an engine from Bell Aerospace.

Inon - Centaur did not have a good name forthcoming, and eventually was named after Inon Zur, composer for the Fallout series among other games.

Fenris - Also known as Fenrir, a giant wolf from Norse mythology.

Daleth - Delta is the fourth letter of the greek alphabet. Daleth is the fourth letter of the Hebrew alphabet.

Dioscuri - Another name for the star Castor.

Prometheus - In greek mythology, Prometheus was one of the Titans, specifically the one who gave man fire. All the Prometheus parts are named after Titans, or phonetic alterations to the names of the Titans after BDB ran out of Titan names.