# PACK
KOUROU–CSG v3
with ELA 1-2-3
for Orbiter 2006

Built by Papyref and Mustard
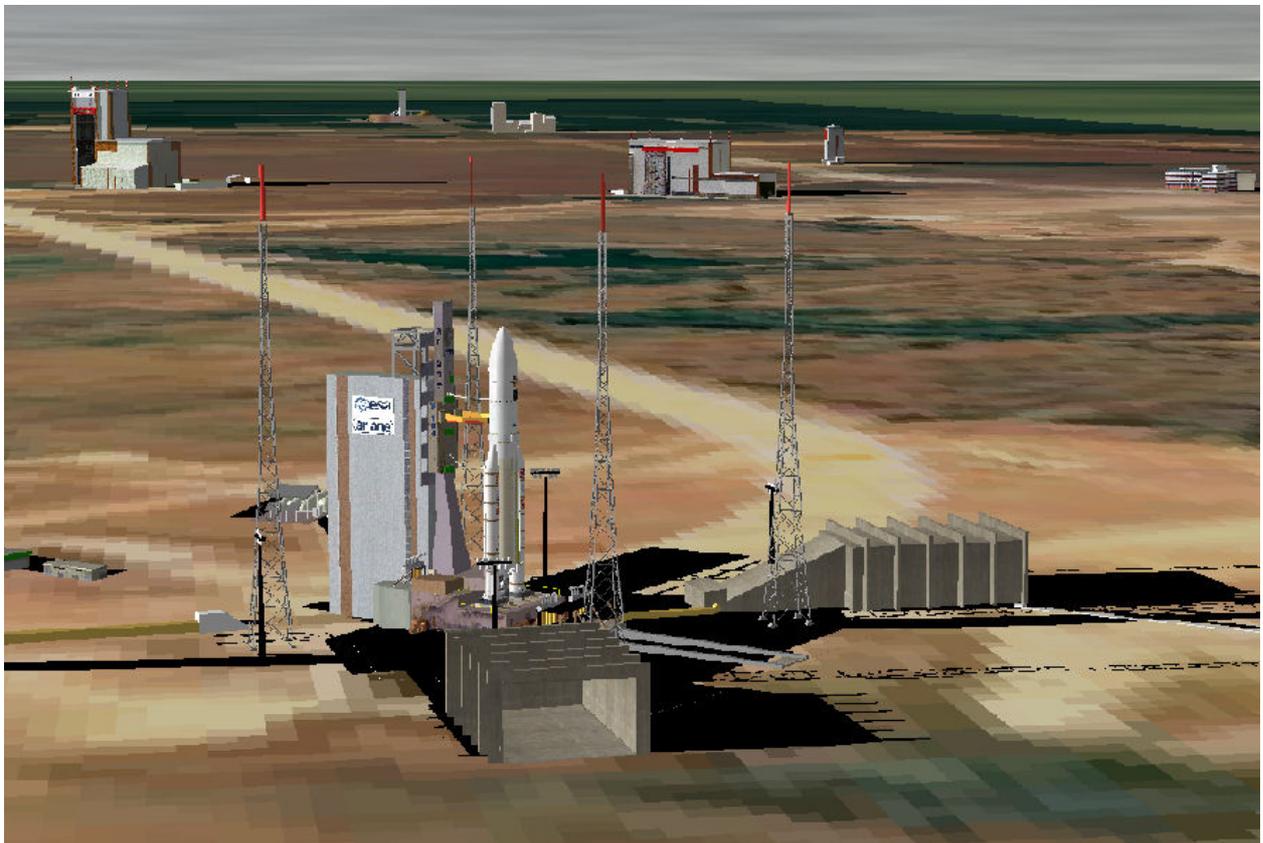
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INTRODUCTION

The pack Kourou–CSG was created to have in Orbiter a realistic model of the CSG "Guyana space Centre" localized in French Guyana. It's th eeuropean space port.

The space port have 3 mains launch pad named ELA (Ensemble de Lancement d'Ariane – Ariane launch complex). Each complex is composed by a assembling area and launch area (ZL - Zone le Lancement) .

The future area ELV for th elauncher Vega is canceled because the pad is on the same place and similar to ELA1. For ELS, the pad for Soyouz launcher, it will be realize later when the real pad will be finish.

THE CSG CENTRE

On this aerial picture, you can see the mark of each area and facilities modelized in this pack.
Below, you can see a small description of the aim of each facilities and pictures (real on the left, modelized on the right).

The centre contain 3 mains area : ELA1, ELA2, ELA3.
-ELA1 was used by the launchers Europa and Ariane 1-2-3. I twas dismantle since 1981 and will be rebuild soon for the futur launcher Vega.
-ELA2 was used for the launch of the lastest Ariane 3 and principally for Ariane4. Since 2003 the launch pad was abandoned and dismantled.
-ELA3 is only used for Ariane5. It's always in activity. In opposite of ELA1-2 it stretch a large part of the centre.
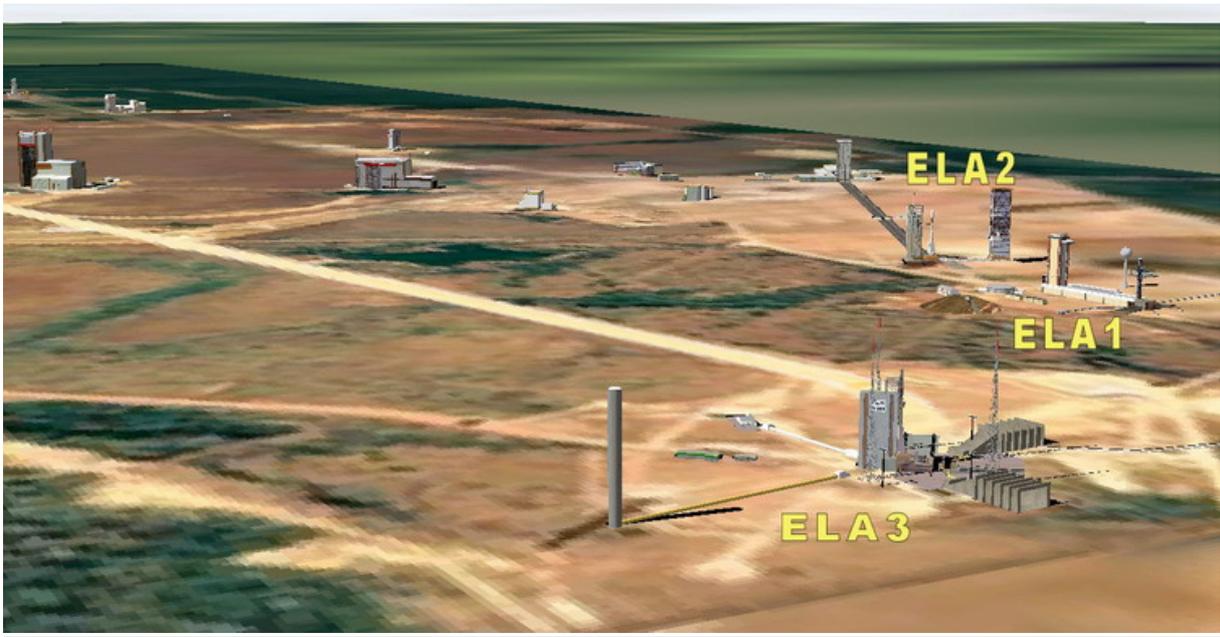
I) ELA 3

1 – ZL3 (Zone de Lancement N°3- Launch area #3)

Usually named ELA3 (ensemble de lancement 3) .It's the launch pad of the rocket Ariane 5.

2 - CDL (Centre De Lancement - Operation control Centre)

It's an armored facility, This centre included 2 operation rooms for the flight control. It's not the main flight room "Jupiter".

3 – BIL (Bâtiment d'Intégration Lanceur- Building integration launcher)

Here, the launcher is assembling before the final step (BAF)


4 – BAF (Bâtiment d'Assemblage Final – Final Assembly Building)

It's the last step of the assembling. Here the Payload are mounted into the launcher before moving to the launch pad ZL3

5 – BIP (Bâtiment d'Intégration Propulseur – Booster Intergation Building)

In this facility the boosters are assembled. After the booster go into the BII or BEAP.
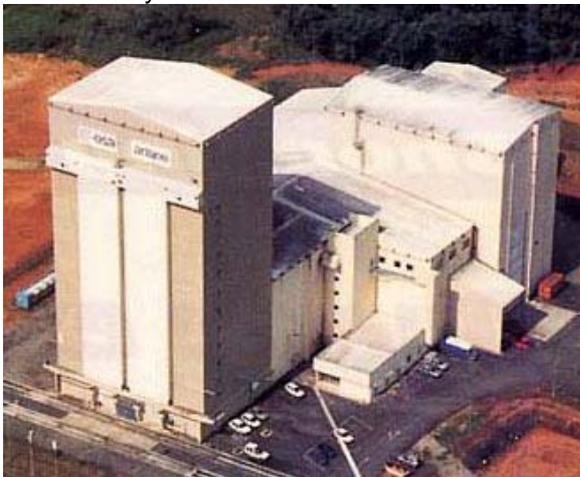
6- EAP (Bâtiment de Stockage des Propulseurs – Boosters Storage Building)

Localized between the BIL and the BIP, it used for store until 4 boosters for manage the assembling.

7 – BEAP (Banc d'Essai des Accélérateurs à Poudre – Booster Test Building)

It used for test the boosters and can resist a thrusth of 320 tons

8 – UPG (Usine de Production des Propergols Guyanais – Gayana Propellant Factory)

Localized at 1km of the BIP and BEAP, this large complexes of 40 facilities build the material for the booster. There are also a factory for the storage of liquid hydrogen and oxygen.
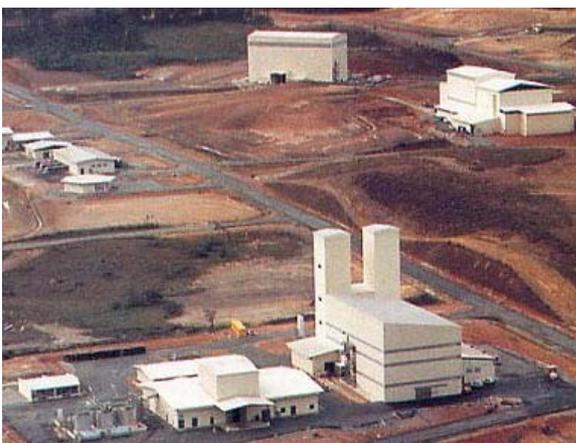
9 –EPCU S5 (Ensemble de Préparation des Charges Utiles – Payload preparation building)

Here there the preparation of the payload, before a tranfer to the BAF
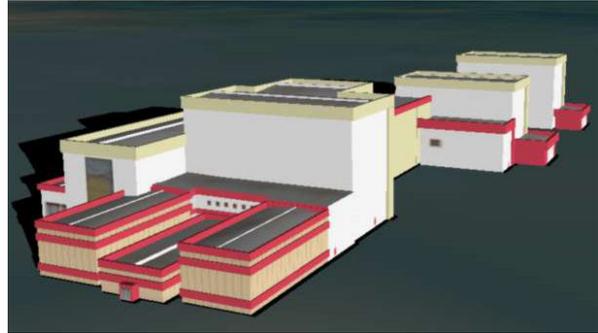
II) ELA 1

10 – ZL1 (Zone de Lancement N°1- Launch area #1)

Usually named ELA1. It's the laund pad for Ariane 1, 2, 3.
We can see the bunker included the Flight Control (on the right), the cooling central (round building), the water tower, and annexes.

11 – EPCU S3 (zone de préparation des charges utiles – Payload building area

This area include some building where the payload are prepare for assembling on the rocket. The payload are install in fairing in the building on the pad. This building move until the rocket for preparing the installation and the rocket.

Three building are realized:

- the S3A building which use for final assembling of the payload and their own thrust intended for the launchers Ariane 1,2 et 3

- the S3B building is use for final assembling of payload an down thrust intended for Ariane 4

- the S3C is th etechnical building (note the car that you can move for visite the centre)

III) ELA 2

This complex was used for the last Ariane 3 and for the Ariane 4's familly.
It constutuded by a launch pad (ZL2) and a assembling area.

-The assembling area is a big complex for assembling and rise the rocket on his launch table, without his fairing and payload which are mount in the tower of service.

- the launch pad is composed by the tower of service and the ombilical tower.
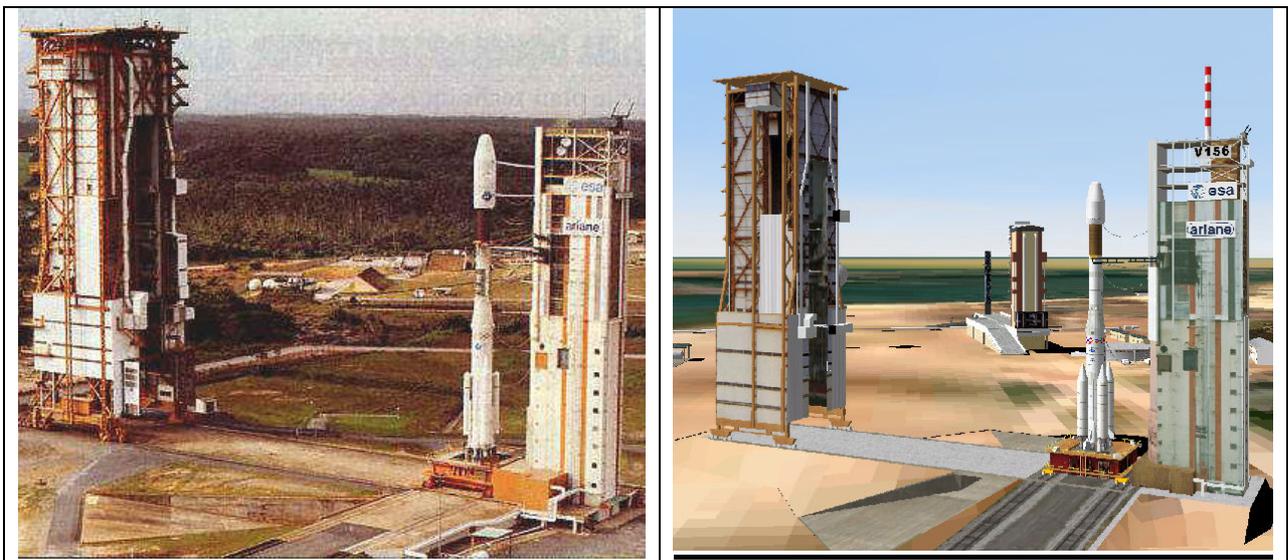
The tower of service is the big building localized on the left on this pictures. It's a moving tower and it come to cover the rocket to install the payload and the fairing on the top.
The ombilical tower is on the right on this pictures and is used for communication and supplying with the rocket until the take off.

Between the launch area and the assembling area, a long railroad allow the transfer of the launcher.
Around this complex we can find some annexes.

<div style="background-color:green; color:white; text-align:center">**THE PACK**</div>

Installation

- Unzip the pack on your directory of Orbiter 2006
- This addon requier the Spacecraft3 by Vinka (included in this pack)

⚠️ **IMPORTANT**

This pack work only with ORBITER 2006 and require this launchers used in the scenario files:

Ariane_1/2/3_v3 by **Xosema** avalaible on **OrbitHangar** (http://www.orbithangar.com)
Ariane 4 and **5** by **Well & No Matter** avalaible on the website of **Mustard** (http://orbiter.mustard-fr.com)

Please, read their manuals for a best using (launch, guidance, payload, etc)

Keys for animation:

1. for ZL3 (ELA3)

With the F3 key, if you select the arm of the launch tower named "Zl3arms" you can activate 2 actions:

- Open the arms and fall of the cables with the key G
- Switch on the light on the pad with the num key + ("CTRL +" for keep switch on, and * for switch off)
- Key 0/suppr of the num pad (Hover) for open/close the Stream on the cable

2. for ZL2 (ELA2)

With the F3 key, the tower named "Zl2arms" you can activate 3 actions :

- Open the arms and fall of the cables with the key G.

- Switch on the light on the pad with the num key + ("CTRL +" for keep switch on, and * for switch off)

- Key 0/suppr of the num pad (Hover) for open/close the Stream on the cable

With the F3 key, The building named Zl2tower, 2 actions are possibles :

- Open/close the door of the building with the key G.

- Move to front the building to the pad with the key K. The move to back is by CTRL+Shift+K Yoçu can stop the moving by the key K

3. <u>for ZL1 (ELA1)</u>

With the F3 key, the tower named "Zl1arms" you can activate 3 actions :

- Open the arms and fall of the cables with the key G.

- Switch on the light on the pad with the num key + ("CTRL +" for keep switch on, and * for switch off)

- Key 0/suppr of the num pad (Hover) for open/close the Stream on the cable

With the F3 key, The building named Zl1tower, 2 actions are possible :

- Open/close the door of the building with the key G.

- Move to front the building to the pad with the key K. The move to back is by CTRL+Shift+K Yoçu can stop the moving by the key K

4. <u>for the car</u>

With the F3 key, The car named « Zl1auto » (if defined in scenario) can do 2 actions :

- Forward and backward with keys + or – (with CTRL if you want), like a thrust control.

- Turn in mode RCS rotation with the keys 1 and 3 of the num pad.

The car is park on the CDL3, you can use it for visit the centre.

The stream effect on the cable is avalaible for the 3 pads. By default this stream is off because it caused long freeze of the FPS in acceleration time (>x1000). To activate it you must juste select by F3 « ZL#arms » (# is the number of the launch pad used). Then, keep down the key « 0 » of th enum pad until this stream reach the maximum. Use « . » of th enum pad to reduce it until his extinction.

<div style="background-color:green; color:white; text-align:center; font-weight:bold">TECHNICALS DATA NEEDED FOR THE SCENARIOS</div>

Some scenarios are avalaible in the pack to test and realise your own scenarios.

ATTENTION !

If you build your own scenarios you **<u>must absolutly</u>** include like ships the parts Zl1arms, Zl2arms, ZL3arms, Zl2tower and Zl1tower with the good positions. In more Zl1arms, Zl2arms and Zl3arms must have fuel if you want use lights and stream effects. If you don't do that the launchs pad will be incomplete or non functional.

In option, you can include the car named ZL1auto for visite the centre CSG.

With a text editor, check the join scenarios, pick up the coordonates of this « ships » and place it in your scenario

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If you want a good position on the launch pad you must define that in the scenario file. See this example using Ariane 5 by Well and No Matter

> **Ariane5:W-ariane5\ar**
> **STATUS Landed Earth**
> **POS -52.559628 5.060049   ;position correcte**
> **HEADING 130.00   ;orientation correcte**
> **PRPLEVEL 0:1.000 1:1.000 2:1.**

<u>NOTA :</u>
It's possible to define the altitude over the pad by two way depending of the model used :

If the model use the CVEL library you must include in the scenario file the line HEIGHT=xx (in meters and we can use – or +)

If the model use the module Spacecraft.dll by Vinka, you must edit th efile .ini of the launcher in the repertory Config/Spacecraft/xx.ini and add the parameter:

        [MISC]
        COG= xx
 (COG is the altitude over the ground)

For information, the coordonates of the CSG are -52.53 +5.03

THANKS

We thanks everybodies which help us :

- Olivier Sanguy from Espace magazine (Press) for all the pictures of reference.
- CAPCOM for his great website, with lot of details and information about the CSG:
        http://www.capcomespace.net/dossiers/espace_europeen/
- Momo for the aerial picture of the CSG.
- Vinka for his great module Spacecraft3 (included in this pack) which provide the moving part on the launch pad (arms and cables).
- Brian Jones for lights method
- Xosema for the series Ariane 1, 2 et 3
- David Henderson for his Ariane 5 CVEL which was very usefull for the tests
- NoMatter and Well for Ariane 4 and 5 (Vinka module)
- and, of course Martin Schweiger for the awesome Orbiter.

Also, you can find all informations about the future extensions on this forum of the french community and on the website of Mustard where the pack is hosted

- Forum of Dan Steph   http://orbiter.dansteph.com/
- Website of Mustard   http://orbiter.mustard-fr.com

We thanks too all others persons that we could have forget.

Links:
Orbithangar: http://www.orbithangar.com/
David Henderson website: http://www.aibs.org.uk/orbiter/
Orbiter official website: http://www.orbitersim.com

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