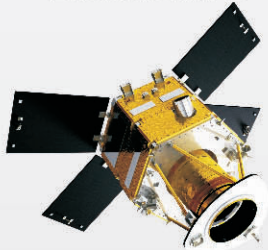


## DNEPR CLUSTER MISSION 2013

### LAUNCH OF 24 PAYLOADS



#### DubaiSat-2



SC mass: 300 kg



حكومة دبي  
GOVERNMENT OF DUBAI

الإمارة العامة للعلوم والتكنولوجيا  
EIAST



Emirates Institution for Advanced Science and Technology (EIAST), UAE

DubaiSat-2 is a second Earth Observation satellite of UAE. The SC is designed to provide electro-optical imagery with a spatial resolution of 1 m PAN (panchromatic) and 4 m MS (multispectral) from an orbit of 600 km altitude.

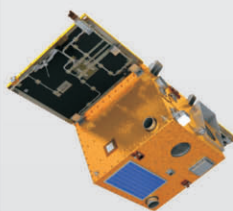
#### BPA-3



State Space Agency of Ukraine, Ukraine

The Advanced Avionics Unit (BPA-3) is an experimental instrumentation designed for application in navigation systems of civilian aircraft, spacecraft and launch vehicles. BPA-3 is a non-separable payload that remains attached to the LV Space Head Module after separation of all spacecraft.

#### STSAT-3



SC mass: 170 kg



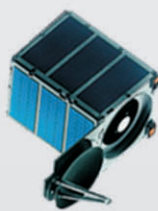
KARI



Aerospace Research Institute of Korea (KARI), Republic of Korea

SC is intended for astronomical observation, galaxy imaging and relict infrared imaging for scientific purposes as well as for infrared and hyperspectral Earth imaging for environment research, ground classification and water quality control.

#### SkySat-1



SC mass: 90 kg



Skybox Imaging Inc., USA

SkySat-1 is a commercial earth imaging satellite that will provide 1-4m imagery on the international market.

#### UniSat-5



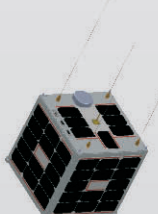
SC mass: 31 kg



Group of Astrodynamics for the Use of Space Systems, Italy

UNISAT-5 SC purpose is to release CubeSats (PUCPSAT, HumSat-D, I-CUBE, Dove-4) and PocketQubes (Eagle-1, Eagle-2, QBSout, Wren) in orbit (approximately one month after the SC separation from LV) using PEPPOD and MRFOOD deployer systems.

#### AprizeSat-7,-8



SC mass: 14 kg



SpaceQuest, USA



AprizeSat-7 and AprizeSat-8 are communication satellites designed for receiving and transmitting of short data packages from fixed and mobile assets, and to track the location of ships at sea.



#### XPOD Systems

Space Flight Laboratory  
Institute of Aerospace Exploration at Toronto University, Canada



WNISAT-1 - is a scientific mission for monitoring the Arctic sea ice conditions and carbon dioxide content in the atmosphere.



BRITE-PL - is intended to study oscillations in the light intensity of the most luminous stars (brighter than magnitude + 3.5).



GOMX-1 - is an experimental satellite for technology demonstration.



#### ISIPOD Systems

Innovative Space Logistics BV,  
The Netherlands

14 CubeSats



The CubeSat series are civil, scientific and educational satellites, mainly intended to test equipment in space conditions, to gain experience in performing real space missions as well as to improve engineering and management skills.



9 ISIPOD systems (designed by ISIS, Netherlands) are used to deploy 14 CubeSats:



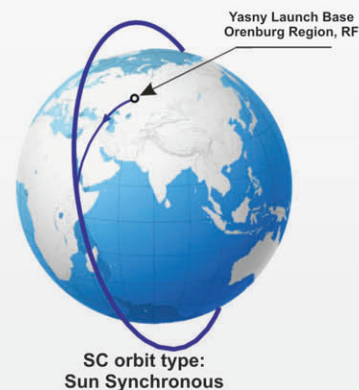
HiNCube, FUNcube-1, ZACUBE-01, First MOVE, UWE-3, VELOX-P11, NEE-02 KRYSAOR, CubeBug-2, Triton-1, KHUSAT-02, KHUSAT-03, Delfi-n3Xt, OPTOS, Dove-3



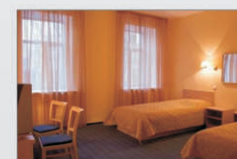
## YASNY LAUNCH BASE



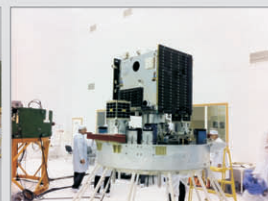
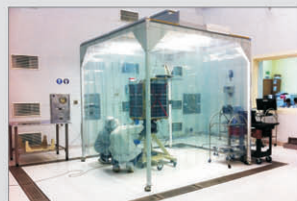
Cluster Mission pre-launch processing and SC integration with Dnepr Space Head Module (SHM) were performed at Yasny Launch Base (LB), town of Yasny, Orenburg Region, Russia. Yasny Assembly, Integration and Test Building (AITB) is a high-tech complex housing a SC processing clean room, a SC/SHM integration clean room, and a SC fueling station with its own clean room. The AITB is furnished with the modern systems and utilities for spacecraft pre-launch processing.



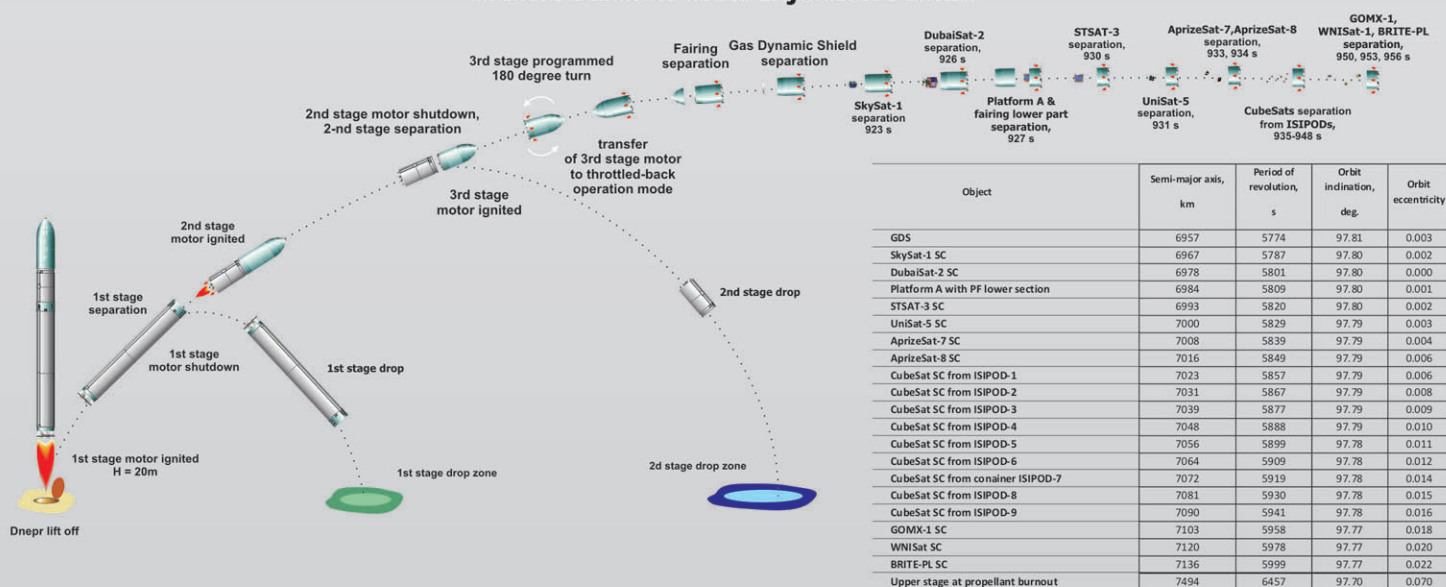
### Assembly, Integration and Test Building and Admin/Hotel Complex



## SC processing in AITB



## Cluster Mission Orbit Injection Profile



Object	Semi-major axis, km	Period of revolution, s	Orbit inclination, deg	Orbit eccentricity
GDS	6957	5774	97.81	0.001
SkySat-1 SC	6967	5787	97.80	0.002
DubaISat-2 SC	6978	5801	97.80	0.000
Platform A with PF lower section	6984	5809	97.80	0.001
STSAT-3 SC	6993	5820	97.80	0.002
UniSat-5 SC	7000	5829	97.79	0.003
AprizeSat-7 SC	7008	5839	97.79	0.004
AprizeSat-8 SC	7016	5849	97.79	0.006
CubeSat SC from ISIPOD-1	7023	5857	97.79	0.006
CubeSat SC from ISIPOD-2	7031	5867	97.79	0.008
CubeSat SC from ISIPOD-3	7039	5877	97.79	0.009
CubeSat SC from ISIPOD-4	7048	5888	97.79	0.010
CubeSat SC from ISIPOD-5	7056	5899	97.78	0.011
CubeSat SC from ISIPOD-6	7064	5909	97.78	0.012
CubeSat SC from container ISIPOD-7	7072	5919	97.78	0.014
CubeSat SC from ISIPOD-8	7081	5930	97.78	0.015
CubeSat SC from ISIPOD-9	7090	5941	97.78	0.016
GOMX-1 SC	7103	5958	97.77	0.018
WNI Sat SC	7120	5978	97.77	0.020
BRIT-PL SC	7136	5999	97.77	0.022
Upper stage at propellant burnout	7494	6457	97.70	0.070

### SC Nominal Orbit Parameters