

JAXA IXO status report

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Contents

1. History of mission studies
2. Conceptual Design of IXO
Old(XEUS)/Current study
3. Possible area of Japanese contribution
EOB
Cryogenic
HXT/HXI
Detectors
4. Team members

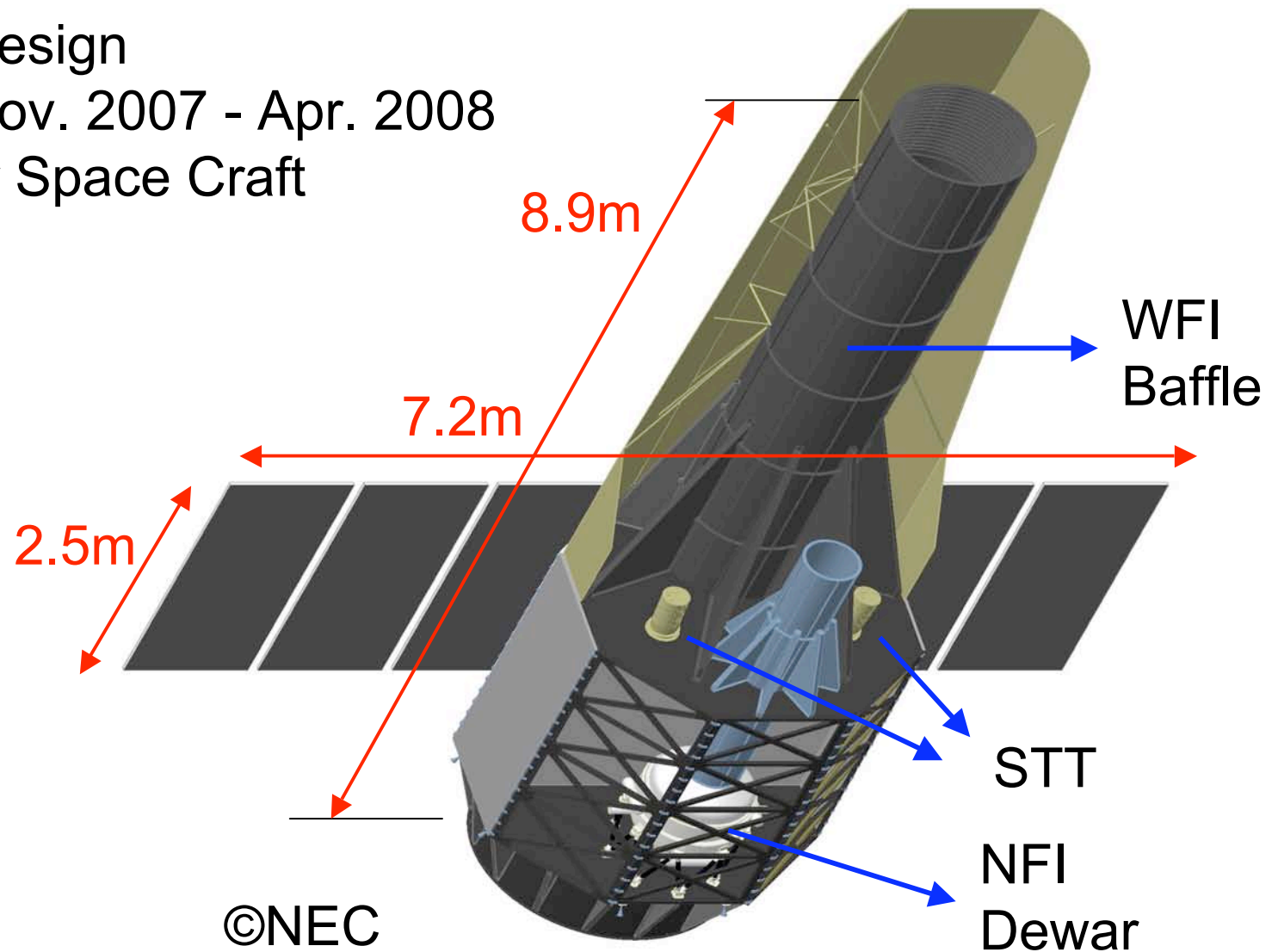
1. Schedule

Approval of CV-L	Oct. 2007
XEUS mission study	Nov. 2007 - Apr. 2008
XEUS steering	Mar. 2008
XEUS steering	May 2008
EOB design study	May-Jun. 2008
IXO Boston meeting	Jun. 2008
XEUS steering	Jul. 2008
IXO Conceptual design	Aug.-Oct. 2008
IXO-CG	Sep. 2008
IXO CDF(ESA)	Nov.-Dec. 2008

Red: Japanese activity

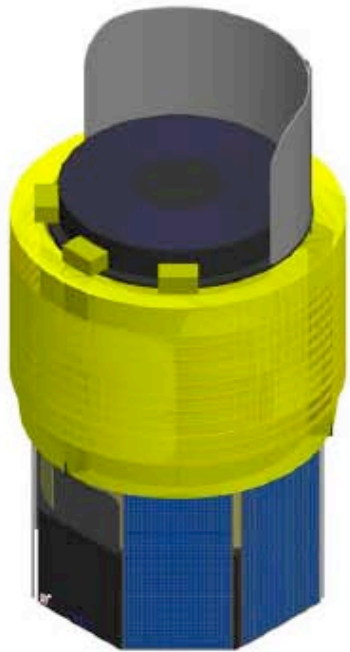
i) Conceptual Design of XEUS DSC

XEUS Design
Nov. 2007 - Apr. 2008
Detector Space Craft

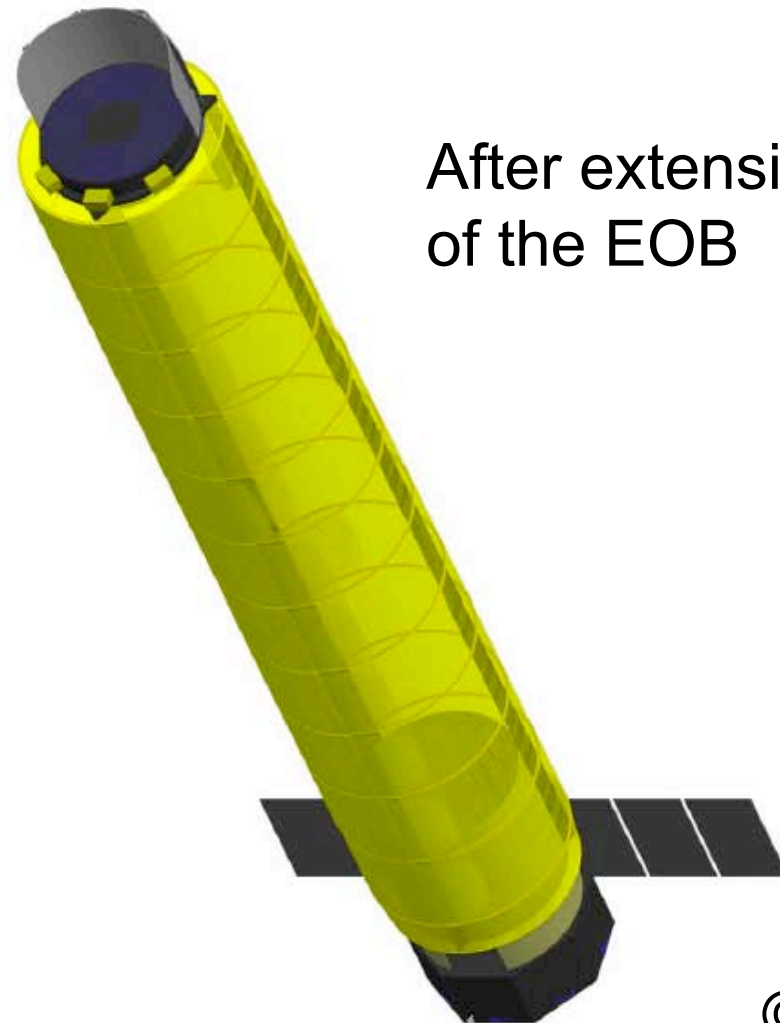


ii). Conceptual Design of IXO

Current Study
Aug. 2008 --



Launch configuration



After extension
of the EOB

2. Possible areas of Japanese contribution

Mission Design

EOB

Cryogenic

HXT/HXI

Detectors

(1) EOB development in Japan

i) History

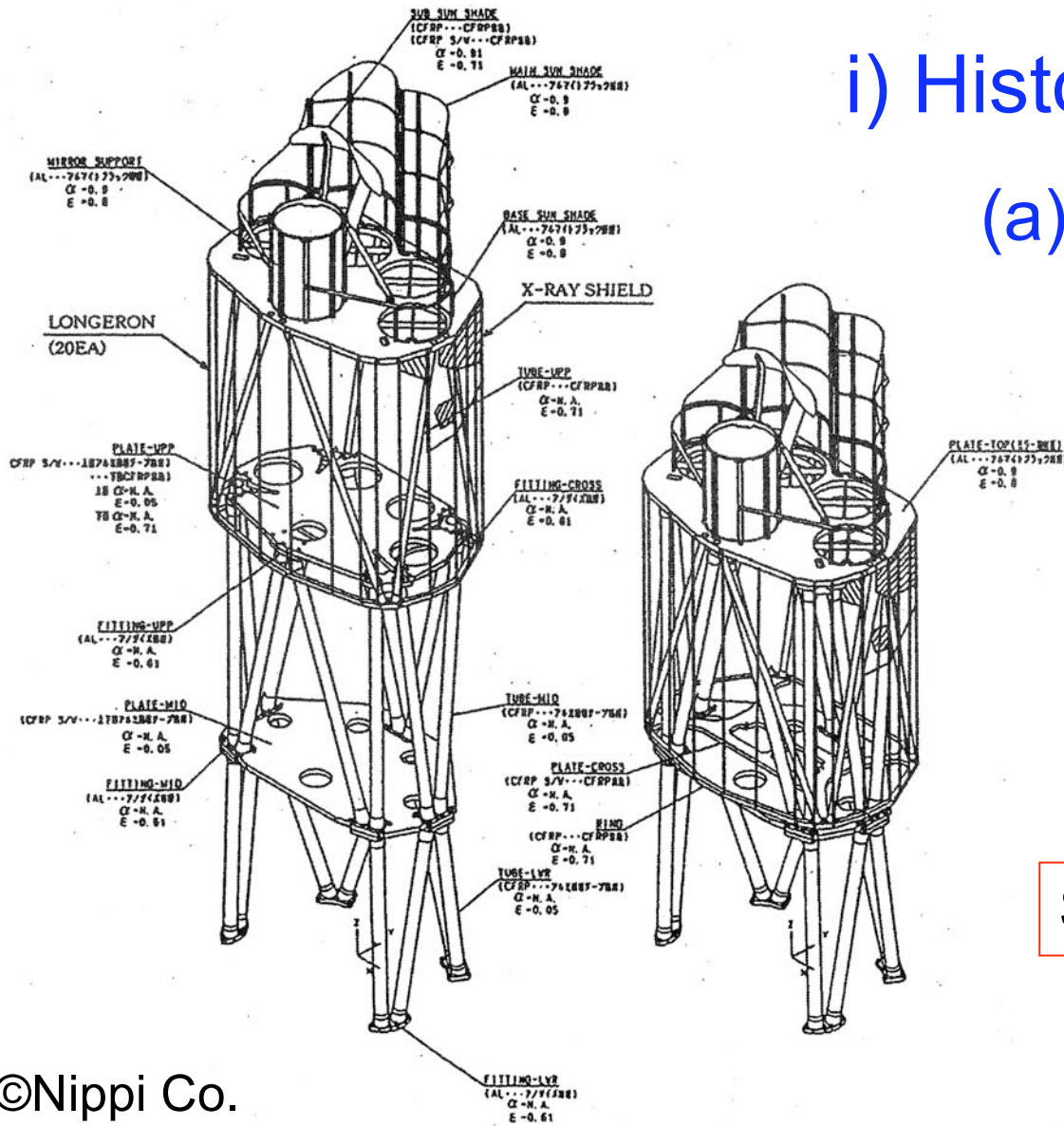
(a) Telescopic-type

ASCA(1993)

1m extension

Suzaku(2005)

1.5m extension



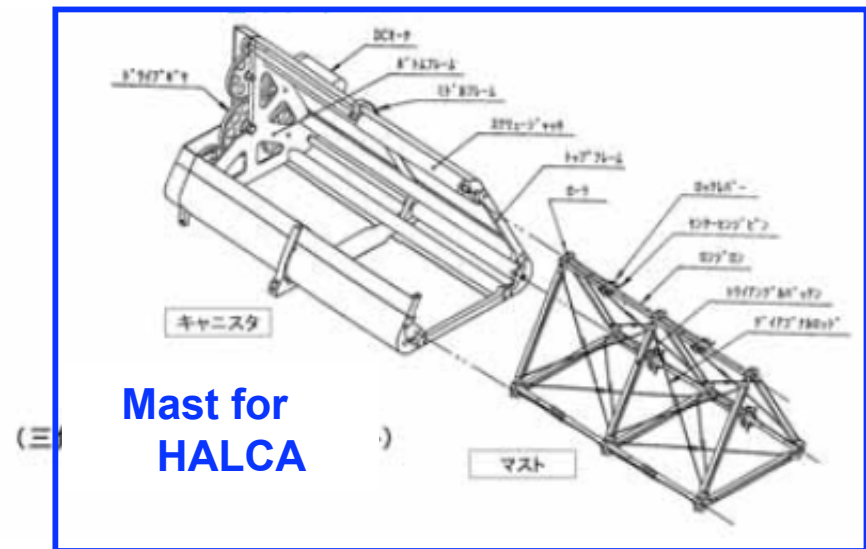
Suzaku EOB

i) History

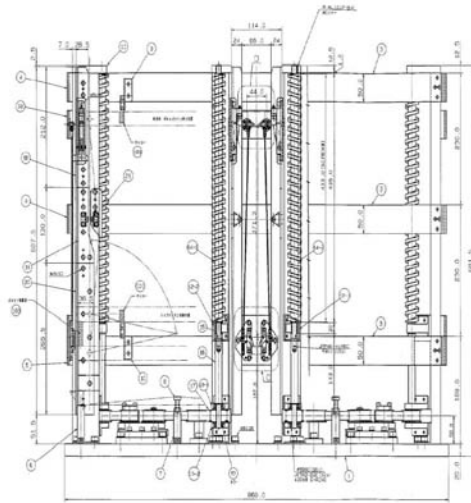
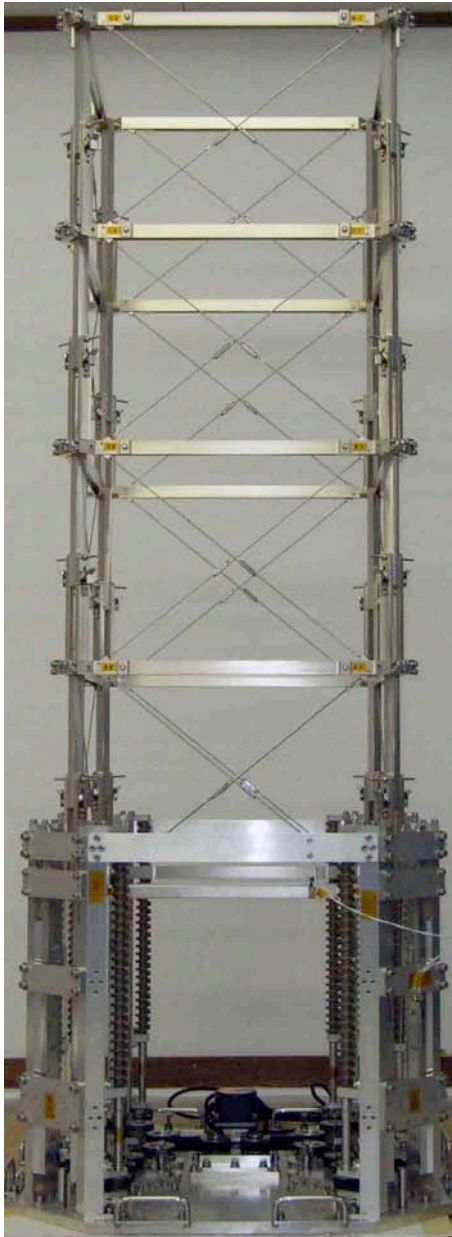
(b) Mast-type

- Booms (1970-90) : Probes of magnetosphere
- HALCA (1999) : 8m Φ radio antenna
- Astro-H (2013) : 6m extension of detectors

HALCA antenna



ii) Engineering model of the mast-type EOB



1/2 scale model

L=50cm (→1m)

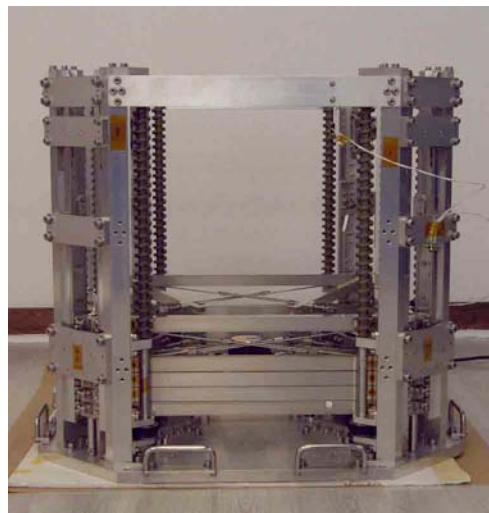
4 stages (→8 stages)

Aluminum (→SFRP)

Repeatability

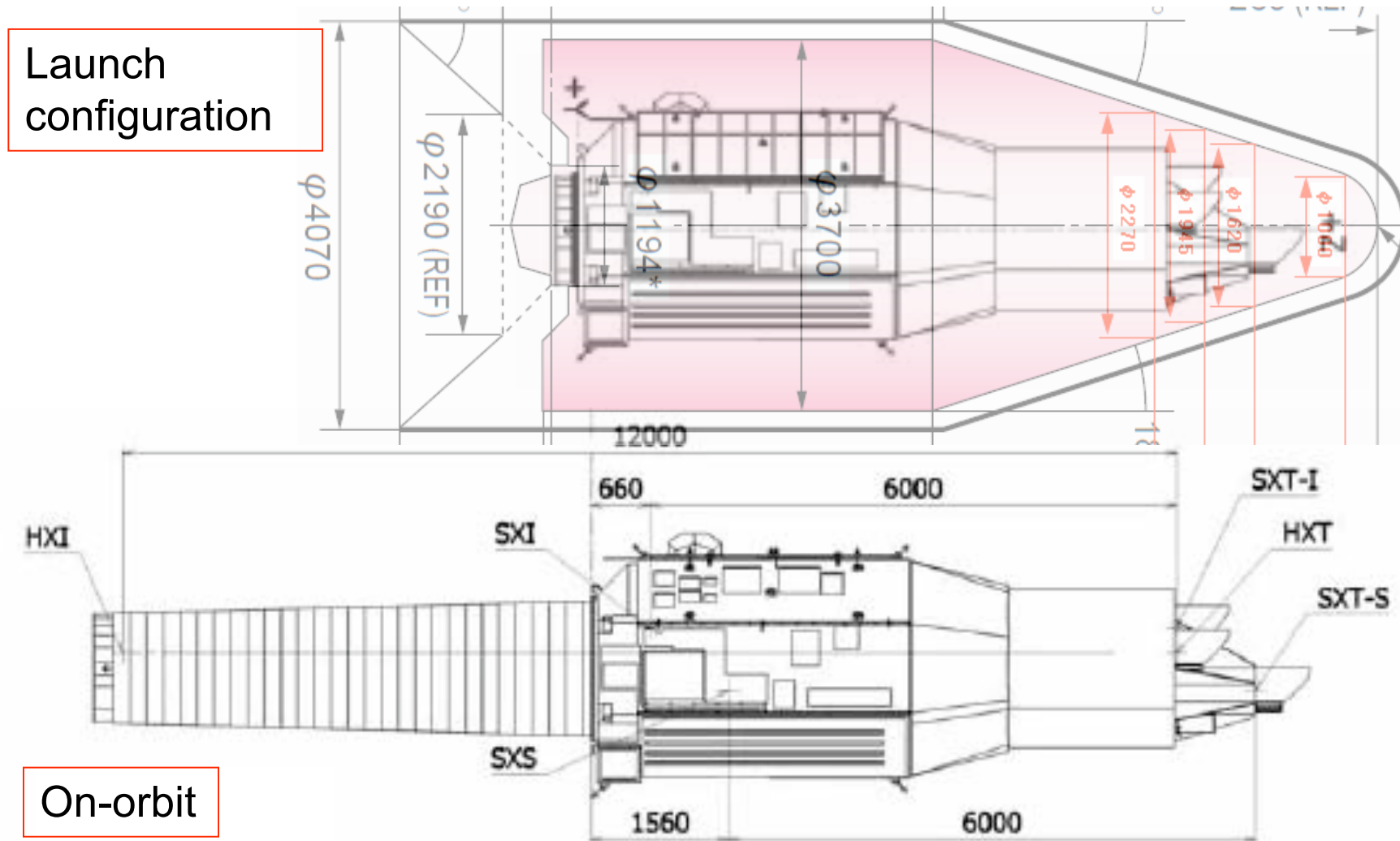
Characteristic $F_q \sim 1\text{Hz}$

Stiffness

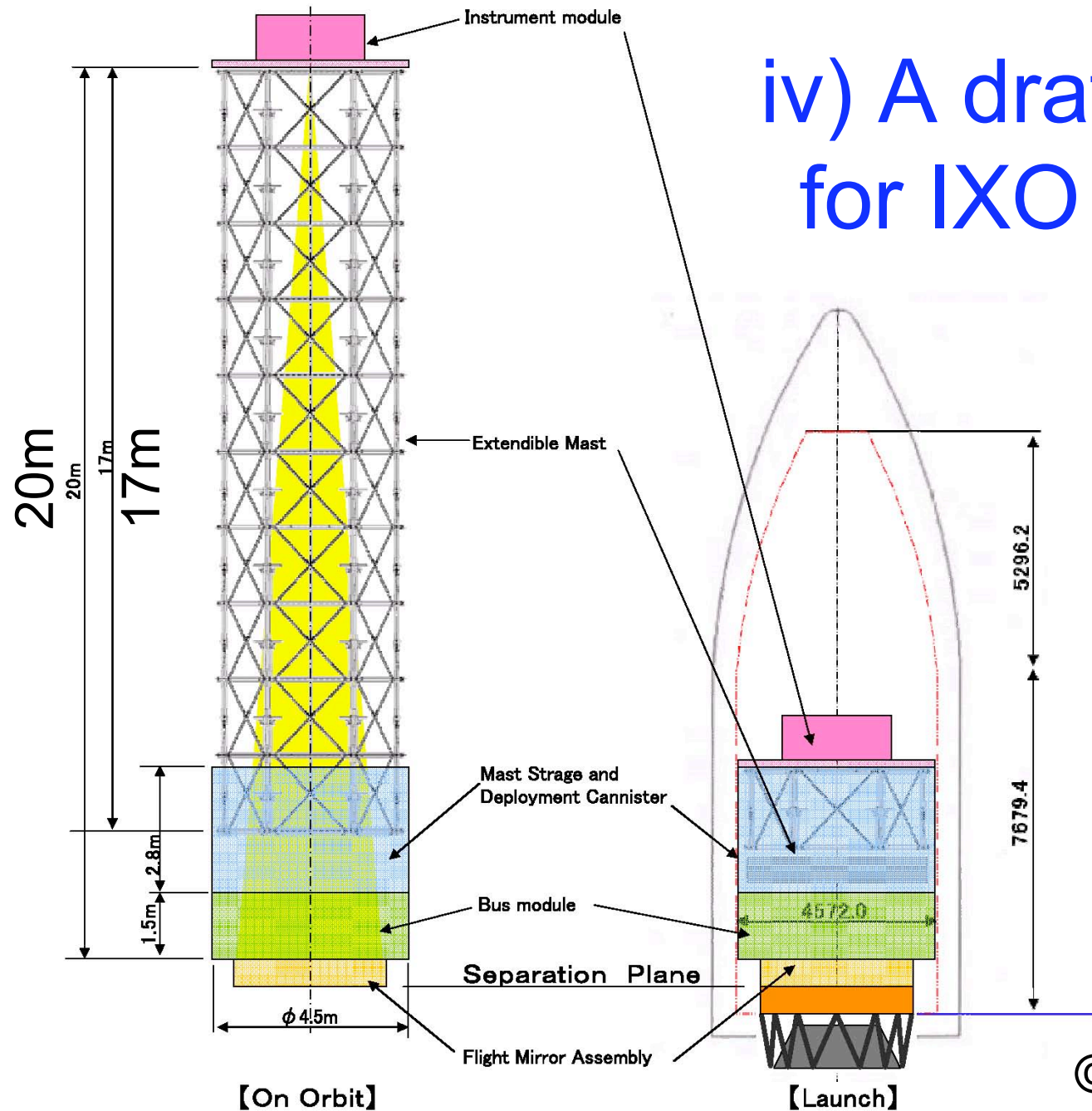


Made by Nippi Co.

iii) Astro-H EOB configuration






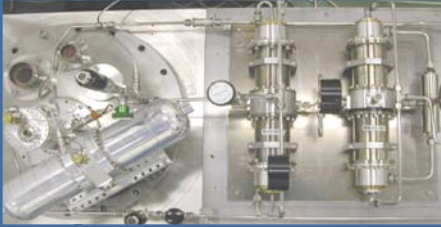
iv) A draft plan for IXO EOB



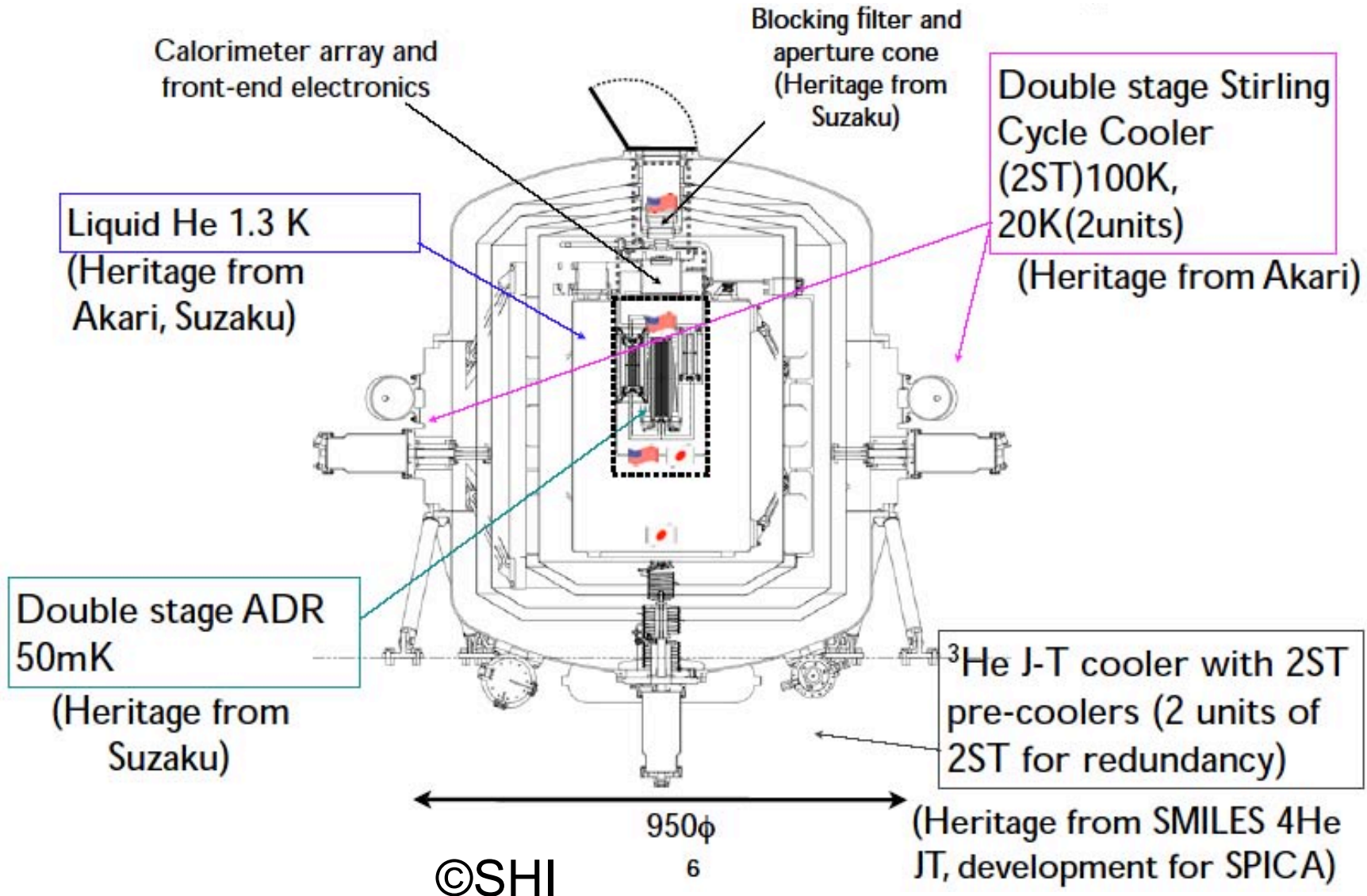
Hexagonal
mast-type
EOB

(2) Mechanical Cooler development in JAXA

i) Current status

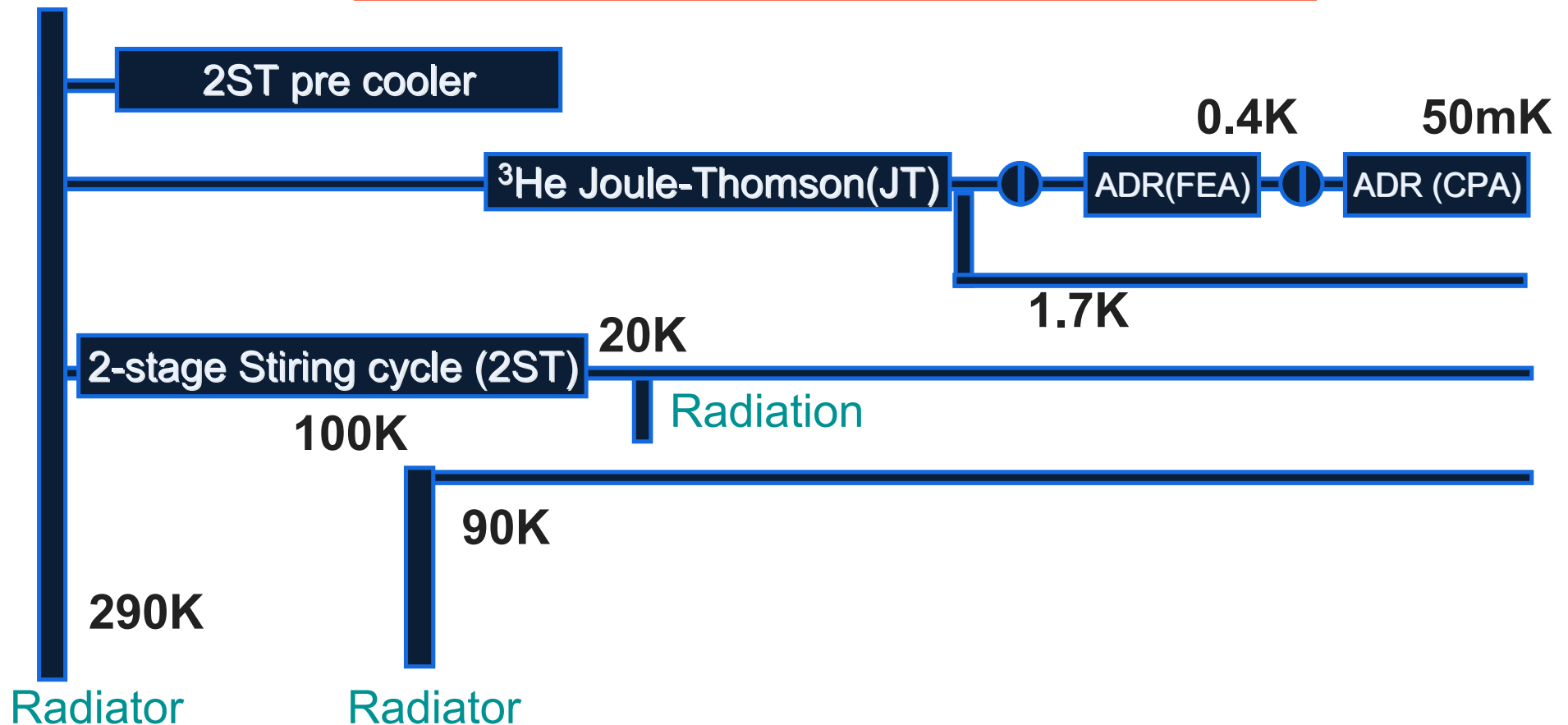
Cooler	1ST (100K)	2ST (20K)	2ST+ ⁴ He JT (4K)	2ST+ ³ He JT (2K)
				
Specification	2W@80K 50W, 4.2kg	325mW@20K 90W, 9.5kg	20mW @4.5K 120W, 23kg	<u>16mW@1.7K</u> 190W, 25kg
Ground test status	Life time test > 5 yr (still running)	Life time test > 4 yr (still running)	1 year test was done. A new lifetime test in preparation	Lifetime test in preparation
Mission status	Suzaku, in orbit 3.1 years	Akari, in orbit 2.5 years	FM for SMILES assembled	EM for SPICA & Astro-H(NeXT) assembled

ii) Cryogenic system of Astro-H



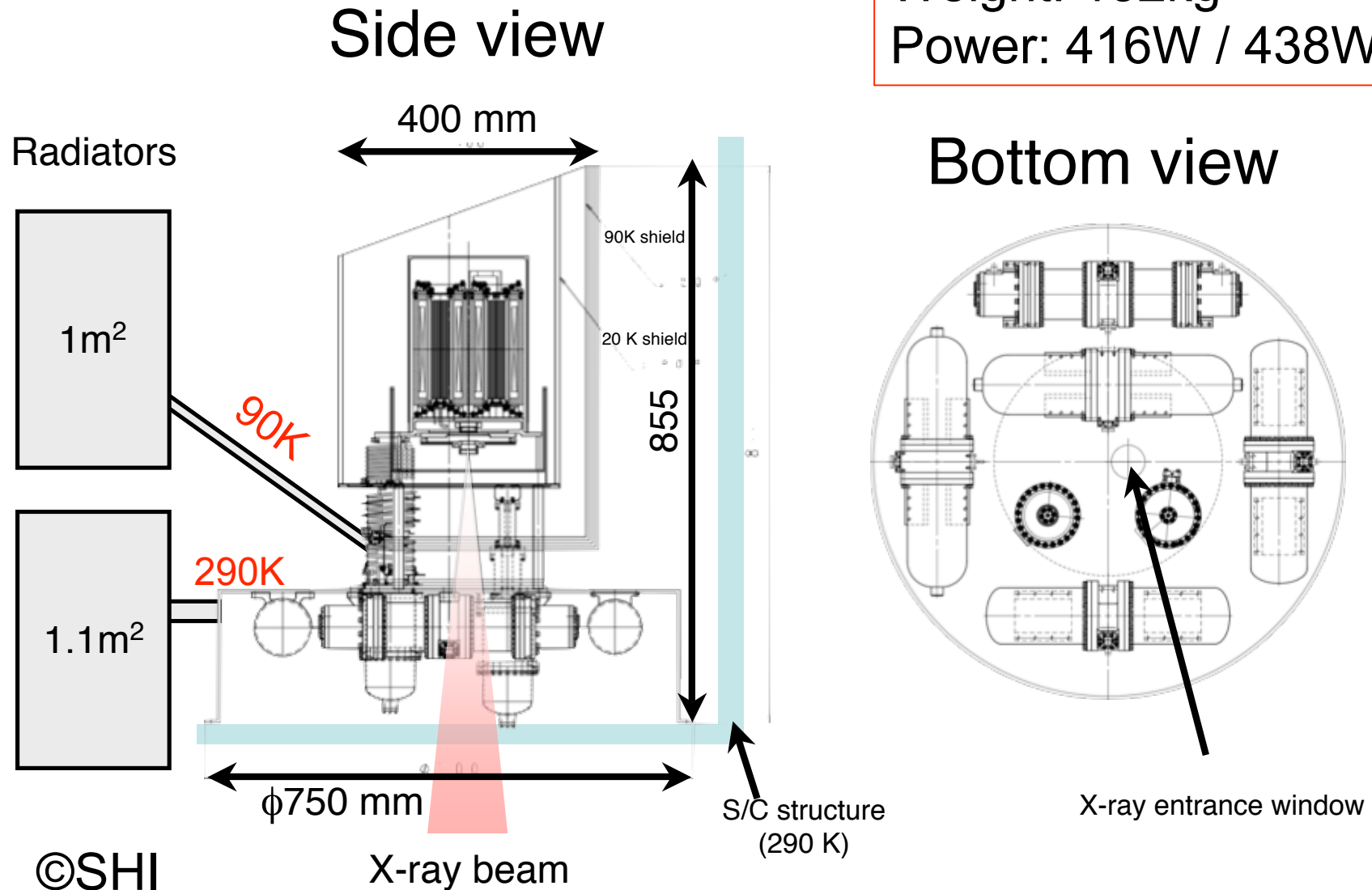
iii) Cryogenic system for IXO: cooling chain

Heat-load from detector to 50mK : $0.4\mu\text{W}$
Heat-load from FE electronics to 1.7K : $100\mu\text{W}$



iv) Cryogenic system for IXO: a draft plan

Weight: 132kg
Power: 416W / 438W



3. Team Members

IXO-CG	Kunieda, Takahashi, Mitsuda, Ohashi (Dotani)
TWG	Kunieda
XAWG	Ueda, Ohashi,,,,,
XPWG	Takahashi, Mitsuda, Tsunemi,,,,,