

Student Project: International Offset for Space

- Offsets Enable Planetary Probe Technology Exchanges Internationally

T. Le, San Jose State University, One Washington Square San Jose CA 95192; le.tina@yahoo.com

A. Baklashov, San Jose State University, One Washington Square San Jose CA 95192; alexbaklashov@gmail.com

J. Grady, Alliance of Commercial Enterprises and Education for Space, 175 Montalvo Road, Redwood City, CA 94062; jgrady@alliancespace.net

Dr. Periklis Papadopoulos, San Jose State University, One Washington Square San Jose CA 95192; ppapado1@email.sjsu.edu

A definition: "...offset is where an international seller is required to compensate for the perceived, or actual, loss to the economy of the purchasing country. . ."

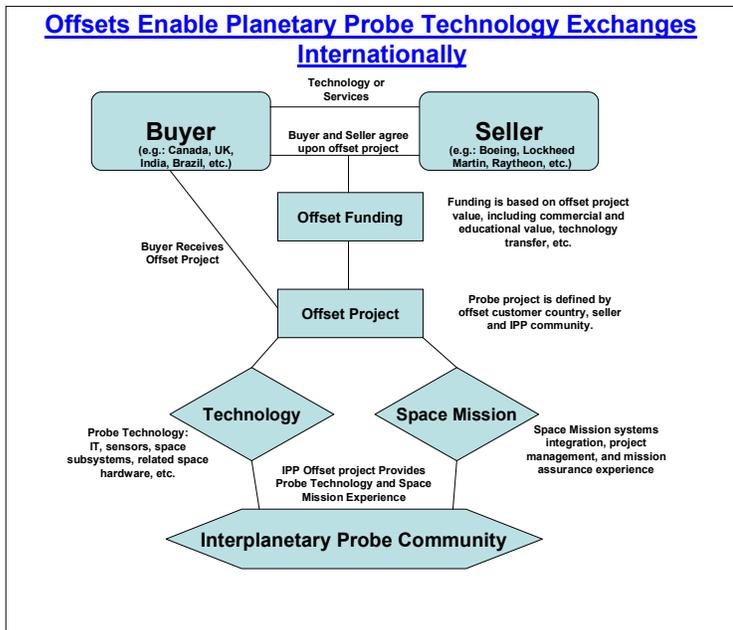
Offset associations (GOCA, DIOA, DMA, etc.): "... Offset accounts for about **12% or \$1 Trillion of world trade** (based on world trade at \$8T/year). . ."

Examples of International Offset for Space

The Svalbard, Norway ground station offset project used NASA's polar Gravity Probe B satellite as an anchor client. EOS and other NASA programs were Svalbard customers on a commercial basis.



Kongsberg (of Norway) and Lockheed Martin formed a joint venture (KLM Space Data Systems) to develop the Svalbard ground station on Spitsbergen Island. The enterprise value (the value for offset credit for the F-16 contract) was approx. \$50M. The enterprise has grown, as shown in the photo above.



Offset is Increasing in World Trade

Examples:

South Korea to buy 21 F-15 jets from Boeing to boost defense US\$2.3 billion,

BOEING \$11 billion

Boeing, Air India Celebrate Order Agreement for 68 Jets; Largest

Commercial Airplane Order in India's Civil Aviation History

Order includes 777s, 787s and 737s for fleet renewal and expansion

Boeing commits to investing in maintenance, repair and overhaul base, and training facility in India

Lockheed Receives \$1.4 Billion Contract for 17 C-130J's for Canada



** Winter 2009, planned *
International Offset
Conference in Hawaii*



Re: May 12 issue of Countertrade and Offset, on Industrial Role for Offset in Malaysia - "...Malaysian Defense Minister, Najib Tun Razak: . . . I am glad to say that the astronaut offset program has brought about much benefit to the nation. Experiments and scientific research related to the offset program have paved the way for Malaysian scientists to be involved in scientific programs to space."

Malaysian astronaut; launch October 2007



As an offset project for the Sukhoi jet, the Russians flew a Malaysian astronaut to the International Space Station.

See quote from offset magazine at bottom left.

First Malaysian Astronaut To Visit Space Station

The Malaysian and Russian governments have agreed to send Malaysia's first astronaut to Russia's section of the international space station in late 2007 as part of a contract offset relating to the Royal Malaysian Air Force's purchase of Sukhoi fighter aircraft. Russia's Roscosmos will send the astronaut to the station.

Re: Space News May 29, 2006



The "Reality of Money" in the Aerospace Industry



LOCKHEED MARTIN, BOEING Dominate the Space Industr

>The "reality of money," the "core," the "focus of CEOs" for the aerospace industry is **not space**, and especially **not NASA, JAXA nor ESA**

Rank	Company	2005 Space Sales	2004 Space Sales	Total 2005 Sales
1	The Boeing Co.	\$9,100	\$10,310	\$54,645
2	Lockheed Martin Corp.*	\$9,010	\$8,592	\$37,200
3	Northrop Grumman Corp.	\$4,058	\$4,573	\$30,721
4	Raytheon Corp.*	\$3,834	\$2,296	\$21,900

Annual Sales: **\$144.7B** Total Aerospace Sales, **\$26.9B** Space Sales

> Offset deals directly with this "reality of money"

> Space related offset projects provide an **opportunity to access/ influence/ take advantage of this "reality"**

>Space, mostly military and comsats, is less than 19% of the aerospace business. NASA, JAXA and ESA are only a few percent.