



Aerospace Scientist Program

Working Paper

The Malaysia Young Astronaut Program

**Assessment of Young Astronaut Training Programs in Russia, China, USA
and Europe**

**Recommendations for Consideration of Selection of Collaborative
Educational Partnerships**

Prepared For

Honorable Menteri Datuk Ahmad Razif Abdul Rahman

By

**Dr. Joseph A. Resnick, Professor Emeritus
Senior Research Fellow
University of Malaysia Terengganu
Institute of Marine Biotechnology
Terengganu Darul Iman Malaysia**

Overview

In continuing the vision of the State Government the Honorable Menteri Datak Ahmad Razif Abdul Rahman has engaged and tasked the University of Malaysia Terengganu to identify and to recommend appropriate colleges and universities which might serve as possible educational collaboration partners for the anticipated Malaysia Young Astronaut Program (“MYAP”).

In meeting Menteri Datak Rahman’s directive, Prof. Dr. Effendy Moh Wahid, Deputy Vice Chancellor (Research and Innovation), University of Malaysia Terengganu, tasked ¹Prof. Dr. Joseph A. Resnick, Senior Research Fellow, Institute of Marine Biotechnology, University Malaysia Terengganu, to i) undertake an assessment of current (young) Astronaut training programs (which required a ‘global perspective’ and requisite knowledge base); to ii) identify such programs, policies and participation guidelines; and iii) to recommend several universities that might serve as qualified educational collaborative partners for the anticipated MYAP initiative.

Determination of requisite educational criteria leading to elevated learning and retention by MYAP participants, along with analysis of current international educational programs that included exposure to fundamentals of space sciences, aeronautics, astronautics, mathematics and human space flight rigors, was left to be determined by Dr. Resnick based on his expertise in such areas and current state of global space education programs.

¹ ¹ Prof. Dr. Joseph A Resnick is a recognized expert in earth and space systems and served as a Scholar and Consultant to NASA for more than thirty years, see: <http://drjosephresnickcurriculumvitae.weebly.com/>

Consideration of collaborative (university)² educational programs that would most likely encompass space and engineering sciences that could also be geared to foster, produce and sustain new generations of Muslim aerospace scientists were paramount in this initiative. Universities and affiliated agencies that are best suited to assure that MYAP will produce graduates highly trained by the world's leading scientists and educators and, more importantly, allow participants to maintain and embrace their deep roots in the teachings and learning based on the fundamental ideals of the Holy Quran, are identified.

Introduction

In 2007, Malaysia and Russia sent the first Malaysian, Sheikh Muszaphar Shukor, to the International Space Station as part of the Angkasawan program for the Malaysian National Space Agency and the Russian Federal Space Agency (Roscosmos). It was a project facilitated through a government-to-government offset agreement. The program has produced positive outcomes for all stakeholders and working relationships between Russia and the Malaysian governments have remained amicable since that time and continues to this day.

A "Malaysia Young Astronaut Program" ("MYAP") has been the subject of much consideration by the Malaysian government and the Ministry. The University of Malaysia Terengganu has been tasked to identify a number of foreign universities that might be considered suitable academic partners in constructing a framework under which creation and stand-up of a new MYAP could be implemented and maintained at UMT's Terengganu Campus.

² Educational universities were desired/designated to be located in Russia, China, Europe and the USA

Prior to making recommendations to the Malaysian Government and the Ministry, several factors must be considered.

Current Educational Co-Op Candidates and Considerations

Primarily, Russia has been a staunch supporter of Malaysia's space program since its inception. And the (Russian)³'Young Cosmonaut Program', which is administered through collaboration at the elementary school level (grades 4-12) under guidance from Yuri Gagarin Cosmonaut Training Center at Star City in Moscow (see: http://starcity-tours.com/category/blog/2013_02_26/), could serve as a model for the MYAP and a gateway to the Moscow State University and the Gagarin Cosmonaut Training Center. Star City could provide a fertile training ground for MYAP participants.

Currently, Malaysia continues to enjoy good international relationships with Russia. Acceptance of (Muslim) MYAP participants in Russian society is well tolerated and openly accepted. An educational exchange program (in collaboration with Roscosmos in collaboration with Angkasa) could be well received and garner considerable (financial) support from Russia. Thus, outreach and modeling of Malaysia's contemplated MYAP to Russia's present Young Cosmonaut Program is certainly a major consideration. And collaboration with the astronaut training facility at Star City (Moscow) is feasible. If it is decided to approach Russia regarding providing training for MYAP candidates, the logical POC will be the Director of Educational Outreach Programs at Star City and⁴Roscosmos.

³ <http://news.google.com/newspapers?nid=1817&dat=19850111&id=WjodAAAAIBAJ&sjid=7qUEAAAAIBAJ&pg=2301,1996505>

⁴ Dr. Resnick maintains a close working relationship with Dr. Murad Ismailov, former Director of R&D and Propulsion Systems, Roscosmos, Cosmodrome, Uzbekistan. Dr. Ismailov has offered to act as Liaison for Dr. Resnick/UMT with Roscosmos if requested to do so.

The United States, through the National Aeronautics and Space Administration ('NASA'), has instituted the “Global Young Astronaut Program” (GYAP) and the “STEM” (Science, Technology, Mathematics, Education) program, both of which have received substantial funding for both ongoing and future international educational collaboration initiatives from the US Congress. Currently, NASA has affiliations with virtually every public university in the USA with laboratory facilities, testing and training centers in most major metropolitan areas. NASA maintains affiliations with universities, e.g., UCLA (Berkeley), the University of California, Jet Propulsion Laboratory in Pasadena, CA, MIT (Massachusetts Institute of Technology), Stanford, Harvard, University of North Carolina, University of Texas (Texas A&M) and the University of Florida. NASA openly encourages international student exchanges (from grades 4 through 12) and educational programs for secondary school-age students with the majority of such programs offered at little or no cost to program participants. All NASA facilities and affiliated institutions are required by law to ensure compliance with non-discriminatory practices and policies laws which prohibit discrimination on the bases of gender, race, religion, physical disabilities or national origin.

NASA facilities and programs available to international educational exchange programs include:

- NASA Jet Propulsion Laboratory, Visual Optics Laboratory; Pasadena, CA (UCLA)
- NASA Johnson Space Flight Center, Houston, TX (Univ. of TX/Texas Tech)
- NASA Space Operations Command Center, Kennedy Space Center FL (Univ. of FL)
- NASA Underwater Training Laboratory, ⁵“NEEMO”, Key West, FL (Univ. S.FL)
- ⁶Aquarius Undersea Laboratory , Key West, FL

⁵ <http://en.wikipedia.org/wiki/NEEMO>

⁶ http://en.wikipedia.org/wiki/Underwater_habitat

NASA also offers educational training opportunities to families, groups, corporations and educational institutions through its contractor, *SpaceCamp.Com*, at one of four “⁷Space Camp” facilities in the USA. Financial support for MYAP participants from NASA’s collaborative educational grant programs and other US educational programs, e.g., ⁸USAID, is also a distinct possibility. The USA is on friendly terms with Malaysia, with President Obama having recently visited Kuala Lumpur where he offered US assistance to Malaysia in several forms. Dr. Resnick maintains a working relationship with NASA at this time and has access to its various (scientific and educational) programs, departments and personnel.

The European Space Agency (“ESA”) does support educational endeavors by ⁹teachers who sponsor limited projects and propose sponsorship of students for attendance at conferences and programs for some levels of Internships. However direct financial support for foreign space education programs directly from ESA is not available under any current ESA programs or initiatives. However, Dr. Resnick has an affiliation with Dr. Claudio Bruno, a former astronaut in the Italian Space Agency which is part of the ESA (European Space Alliance) administered by a private corporation named, Thale Salinia Corp. Thale Salinia Corp. does maintain an astronaut training facility in Cologne, Germany (See: http://www.youtube.com/watch?v=o1pxM_OwkQ4&feature=youtu.be) and same is accessible to MYAP participants through Dr. Resnick’s affiliation with Dr. Bruno, the University of Bologna and the University of Cologne. As mentioned above ESA does not provide direct support to educational programs. But like NASA and Roscosmos, most training (to students) is provided at a low cost or no cost.

⁷ <http://www.spacecamp.com/about>

⁸ <http://www.usaid.gov/partnership-opportunities/bring-us-your-ideas>

⁹ http://www.esa.int/Education/Conference_opportunities_for_sponsored_students

The ¹⁰China Space Agency does not openly solicit participation in multinational educational programs at this time. Thus, the likelihood of garnering financial support or collaboration with China for Malaysia's YAP is extremely remote. However, China is a party to current United Nations treaties and is a current member of UNOOSA of which Malaysia is also a member. Despite the facts that China does not support foreign educational exchange programs nor make financial grants to international educational programs, it may be possible for Malaysia to utilize the stand-up of its YAP to provide new cooperative educational and economic gateways leading to new international relationships with China through a mutual 'Student Exchange Program' in which Chinese students (and Advisors) would have the opportunity to interact with ¹¹UMT program faculty, departments, and affiliated parties.

Recommendations

Based on the above analyses the following recommendation is submitted for consideration.

Formation of Educational Exchange Programs

- 1. Yuri Gagarin Cosmonaut Training Center (Star City), Lomonosov State University
Moscow, Russia**
- 2. NASA "NEEMO" Underwater Training Center, University of South Florida,
Key West, FL USA**
- 3. ¹²European Space Agency, University of Cologne, Cologne, Germany**
- 4. China Space Agency (POC TBD) <not recommended at this time>**

¹⁰<http://www.cnsa.gov.cn/n615709/n620683/n639518/index.html>

¹¹ Prof. Dr. Joseph A Resnick is a recognized expert and consultant to NASA for more than thirty years, see:
<http://drjosephresnickcurriculumvitae.weebly.com/>

¹² Alternatively, through Dr. Resnick's affiliation with Dr. Claudio Bruno, shallow underwater astronaut training and ground control training may be undertaken at the University of Bologna, Bologna, Italy

END

Respectfully Submitted,

Dr. Joseph A. Resnick, Professor Emeritus
Senior Research Fellow
University Malaysia Terengganu
Terengganu Darul Iman, Malaysia