ROYAL ASTRONOMICAL SOCIETY

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Advancing Astronomy and Geophysics

From the Executive Secretary

Professor Frank Close
Chair of the BNSC Working Group on
Space Exploration
Exeter College
Oxford
OX1 3DP

27th February 2008

Dear Professor Close,

RAS response to the report of the BNSC Working Group on Space Exploration

I have pleasure in attaching the response of the RAS to the report of September 2007 following its consideration by Council.

Yours sincerely

David Elliott

Copied to
Dr David Williams
Director General of BNSC

The RAS welcomes the report and is grateful for the considerable effort put into its production. Space exploration is an issue of key concern to the fellows of the RAS, many of whom are either actively involved in this field and / or depend on investment in space science to carry out basic research. However further space exploration involving the UK must be financed by ADDITIONAL funds and that funds allocated to those aspects of exploration that require a scientific justification are allocated solely on the basis of scientific excellence

1. Pursue a programme of space exploration in which an active role is played in both the robotic and human elements of the Global Exploration Strategy (GES).

   The RAS supports UK participation within the GES, with some reservations around full participation in Human Space Exploration (HSE). The Society would not wish to see funds diverted to HSE at the expense of basic research. However, the Society believes that the UK can only be a full partner in the GES with at least some sustainable level of HSE activity in aspects of strategic importance to the UK.

2. Develop a strategy for exploiting the substantial, wider benefits of space exploration to science, education, commerce and culture. This should include co-ordinated, properly funded and sustained programmes of public engagement and science.

   The RAS welcomes this proposal. Many Fellows of the RAS are already engaged in a variety of outreach programmes such as lectures, teaching, workshops and creating resources for schools. The Society also has an active Education Committee which considers how best to use astronomy and space science to engender pupils' interest in the physical sciences. The RAS would welcome increased efforts to help reverse the decline in uptake of science subjects.

3. Maintain leading UK involvement in planetary science within ESA Programmes and, where appropriate, in collaboration with other international partners. This must include continued involvement in the robotic exploration of Mars, especially through ESAôs Aurora programme.

   The RAS supports this recommendation. In particular (and as one of the few optional ESA programmes that the UK subscribes to), the Society believes that Aurora is of great scientific importance. Participation in Aurora demonstrates UK commitment, capabilities and leadership, and helps make the UK an attractive place for talented scientists and engineers to work.

4. Initiate a targeted UK robotic lunar programme based on the use of low cost satellites, rovers and resulting operational services, ideally in collaboration with other partners while keeping control of some key technologies.

   The RAS wholeheartedly supports this recommendation, providing it facilitates opportunities to pursue world-class science.

5. Identify and exploit opportunities for mutually beneficial, bilateral activities with NASA and other prospective partners. The Global Exploration Strategy and the recently signed NASA-BNSC Joint Statement of Intent create narrow windows of opportunity during which agreements of high value might be secured.

   UK space science has benefitted from vigorous bi-lateral programmes but a lack of resources has sometimes left it unable to take advantage of new opportunities. The recent CSR settlement for STFC does not address this issue. The RAS believes that some aspects of space exploration (e.g. satellites) would benefit from recognition as 'facilities' for basic science in the same way as ground-based facilities such as the Rutherford Appleton Laboratory and the European Southern Observatory.

6. Take appropriate early steps to prepare for a future role in human space exploration efforts by securing flight opportunities for British astronauts within the next decade to conduct science research and advance science education.

   The RAS supports this recommendation provided that the extra costs of a human spaceflight programme are not attributed to those parts of the government budget responsible for science and science education, and that any science justification for these missions is based on a long-term cost benefit comparison with robotic missions.

7. Build capacity in relevant UK scientific and technological communities by funding and establishing academic chairs, fellowships, post-doctoral and doctoral positions at UK centres of excellence. These positions should cover the full range of life and physical sciences relevant to the exploration programme, and would expand upon the success of the existing Aurora Fellowship scheme.

   If implemented, the RAS believes that this proposal would be of great benefit to the astronomy and space science community. Further, the Society believes that Government funding of these posts would partially offset the decrease in volume of research resulting from the CSR settlement to STFC. The RAS believes that this support would allow astronomers and space scientists to take full advantage of the opportunities resulting from the GES.

8. Engage with research and industrial communities across a broad range of sciences and technology to assess the opportunities that may be raised in the new era of space exploration. This should extend beyond the existing BNSC core partners (DIUS, STFC, and NERC) to include MRC and EPSRC and industrial sectors such as mining, prospecting, media and entertainment.

   The RAS supports this recommendation and believes that commercial development of space should be encouraged, as it is represents the best opportunity to reduce costs in the long term.

9. Investigate the current opportunities offered by a modest focused subscription to ESAôs life and physical sciences programme (ELIPS) which could facilitate UK access to ESAôs microgravity facilities in order to build up the UK life and physical sciences microgravity community in preparation for the longer term opportunities that will arise from participation in the GES.

The RAS believes that the absence of UK participation in this area of research is anomalous. It therefore supports this recommendation and recognises that it could provide an opportunity for high value participation in HSE.

10. Initiate a substantial and sustained national technology R&D and demonstrator programme focused on those areas of technology which underpin the UKôs goals within the GES and strengthen the UK position in related ESA programmes. Knowledge exchange opportunities should be embedded in the programme from the start.

    The RAS believes that such a programme would be of great importance to the UK and that much of our success in space research is based on past technological developments. However, funding of further development in this area has been restricted in recent years and the Society believes that as a result there is a high risk that the UK will lose its advantages in this area. For this reason, the RAS strongly supports this recommendation.

11. Survey and identify customer commitments, and quantify value added business for the exploration-related services identified in this report ï from near term (e.g. lunar communications relay) to long-term (e.g. exploitation of planetary mineral rights).

    The RAS supports this recommendation on the basis that it would facilitate technological and commercial developments that may enhance capabilities and opportunities for science.

12. Review and update the UK licensing regime to encourage high value added activities such as space tourism and related activities such as inexpensive, regular and reliable launch of scientific payloads and small spacecraft which build on existing UK strengths and support proposed UK efforts in exploration.

    The RAS would welcome any opportunities for science or science education or engagement that may arise from this recommendation.

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