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COMMITTEE ON THE PEACEFUL USES OF
OUTER SPACE

Scientific and Technical Subcommittee

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Agenda item 6

Implementation of the
recommendations of UNISPACE III

**Implementation of the recommendations of UNISPACE III:
Report of the Action Team on Near-Earth Objects (recommendation 14)**

V.06-51569 (E)



Report on the activities of the Action Team 14 which addresses the subject of Near Earth Objects in the context of implementing the recommendations of UNISPACE III

1. Many groups around the world have contributed to the necessary work required to improve the understanding and risk reduction of the threat related to NEOs. Members of the action team and amateurs alike have contributed to progress in discovery and follow-up on NEOs while many governments have accepted the need to consider NEOs as a risk alongside other natural hazards and so find they can apply existing procedures to this more recently quantified threat represented by NEOs. The action team has exchanged information on specific activities and plans for furthering the understanding and resolution of the NEO issue. While some of the represented countries are well advanced in their activities others still have to overcome the giggle factor associated with the embarrassment experienced by some individuals when first presented with information on the NEO issues. The 2006 draft report of the NEO AT14 addresses this and other important issues as a way of extending the experience of the action team more widely; first to the COPUOS and then to the whole UN family.

2. In its multi-year work plan 2006 is the year for reports from Member States and international organizations on their Near Earth Object activities, including missions, search and follow-up, as well as plans for future activity. The Action Team recognizes that it is important to allow for the consideration of the way forward and, specifically, the possible need for further activity to be carried out nationally, regionally or through international cooperation. The Action Team noted with interest that the NASA Authorization Bill (1 Jan 06) will require renewed effort by NASA for detecting and characterizing the hazards of near-Earth objects with an update to the current Spaceguard Survey target (moving to a target diameter of 140m from the original 1km). This will help to more fully determine the threat posed by such objects that can still cause widespread destruction and loss of life. It was also noted, at the more detailed level, that the NASA Administrator has been directed to plan, develop, and implement a Near-Earth Object Survey program to detect, track, catalogue, and characterize the physical characteristics of near-Earth objects equal to or greater than 140 meters in diameter in order to assess the threat of such objects to the Earth. The Action Team acknowledges the leadership that the USA has demonstrated both with the original Spaceguard Survey, and with this new initiative, and recognizes that in order to complement the activities of the USA and play an effective role in the international effort to address this global issue, it is important that other countries understand how NASA plans to implement this new activity. Accordingly, the Action Team will seek to coordinate with NASA to keep apprised of US plans in this area. With regard to the report from the International Astronomical Union (IAU) it was noted that while it is willing to continue the coordination of the archiving and information services for NEOs as part of the operation of the Minor Planet Center serious international consideration and support will be required to enable it to meet the increased workload that will go with the new Spaceguard target.

3. Details of important missions and their results will continue next year along with the presentation of recommendations for further activity and the detail of new targets that will be appropriate for international consideration and endorsement. While individual nations can set and agree to follow whatever goals they consider reasonable and within their funding abilities when it comes to an international issue such as NEOs it will be essential to have both international understanding of the issues involved and the need for agreement, at the international level, of a process to deal with any necessary action. The former is part of the remit related to the current work plan. For the latter activity we could accept that if a significant risk of an NEO impact were to manifest itself then such agreement of process and procedures to deal with the event would need to be agreed in a timely manner. If COPUOS members are so inclined after hearing of the

preparatory work that has been undertaken then a further activity to formalize such new search targets and threat reaction procedures internationally could be initiated and taken forward soon.

4. As with disaster management issues, more generally, the matter of NEOs can be dealt with at a basic level by current procedures already put in place by national civil contingency or disaster management organizations (where they exist). Work in this area was reported last year and resulted from the activity of the OECD Global Science Forum. As in other areas of disaster management the initial problem was to enable the users of NEO threat information to let the information providers (typically astronomers) understand their needs. Orbits, velocities and albedo were not of direct use to the disaster management community just as EO remote sensing data streams are of little use to the rescue organization sent into a flooded area whose objective is to find survivors and take them to safety. For NEOs the plus point was that unlike space debris an impact corridor, date and time can often be estimated well in advance of a potential impact. The next point of interest and value to the disaster management groups was to know the size of the impact crater and the area subjected to damage. With this information they could classify the event and inform relevant organizations of likely casualty levels and then invoke evacuation or other mitigation activity as appropriate.

5. We are currently working in the hope that we find any potentially Earth impacting NEO in time to divert it and thus avoid the need for ground based mitigation. However, if space based mitigation procedures were to be required the issues covered by this Subcommittee would need to be understood and some level of prior agreement to the necessary international effort would need to be in place if an appropriate and timely response were to be mounted. The AIAA and other international organizations have already addressed this issue but to move that work from consideration to international agreement would require this Subcommittee to take the initiative.

6. Current scientific missions are preparing the way and currently planned missions will improve our understanding of the threat in general and the nature of specific NEOs in particular. Agreeing in advance that these planned missions should also add to the understanding and planning necessary for any mitigation mission, should it be required, would increase the value of those missions and increase our level of preparedness. If we were to decide on such a strategy, by requesting all future missions to take NEO impact preparedness into account, then it would be logical to also start planning for how we would use the UN to endorse any required mitigation activity. In making this decision we should also understand that such a mitigation activity could plan to use conventional propulsion and deflection techniques

7. The experience of the action team and member states covers all the issues discussed and the OECD Global Science Forum has taken them forward in a particular context. It is planned to make a report covering all the issues brought forward to the Scientific and Technical Subcommittee available well in advance of next years meeting to allow delegations to come prepared to consider the issues and take appropriate action in line with the draft recommendations. These recommendations will draw on the work of specialist groups and international organizations active in this field in order to place before the Subcommittee the accumulated work of over a decade. It has been said before that we should not allow ourselves to follow the fate of the dinosaurs, we have access to space and so we can attempt to control our destiny by mounting a mitigation effort if it should be required.