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An update on the MoonLite Lunar mission

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In December 2008 the UK BNSC/STFC announced that it would undertake a phase-A study of the proposed 4 penetrator lunar mission, MoonLITE. A status report will be given which includes: a brief science overview; technological assessment (including some results of the first impact trials) and identification of critical areas; organisation and plans for the phase A; longer term plans given a successful phase A; and role of international collaborations.

Background:
The MoonLITE mission involves implanting 4 penetrators globally spaced at impact speeds of ∼300m/s and is aimed for launch in 2014 and operate for 1 year. Each penetrator is designed to come to rest a few metres under the lunar surface to provide a solid emplacement for an effective seismic network and for geochemical and heat flow investigations. Polar emplacement will also allow an exciting ability to characterize the presence of water-ice currently indirectly inferred in the permanently shaded craters. They will also allow investigation of the presence of other volatiles, possibly including organics of astrobiologic interest.
MoonLITE can also provide strong support for future human lunar missions including seismic detection of large quakes of surface regions which may dangerous to the construction of lunar habitation or observation facilities; and the possible presence and concentration of water which is important to support future human missions.

Potential International Collaboration:
The timing of this mission may allow arrangement of coincident impacts of other spacecraft which are at the end of their natural mission lifetime, to provide strong artificial seismic signals to allow probing the deep interior of the Moon. Perhaps no better way to end an otherwise very successful mission ?

In addition, the presence of multiple Lunar orbiting spacecraft may allow the possibility of inter-communication between different missions to enhance telemetry rates from the lunar surface and provide mission fault tolerance.