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IS A SPECIAL LEGAL REGIME FOR PLANETARY DEFENCE MEASURES NECESSARY?

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The potential impact of a sufficiently large asteroid or other Near Earth Object (NEO) on the planet Earth could inflict massive destruction and cause planet-wide disaster. (1) There is a possible need to take possible defensive measures into account. Several different defence measures are therefore being discussed for such a case. (2) Amongst other options, one such possible defensive measure could be to detonate a nuclear warhead (3) on, above or slightly beneath the surface of the asteroid, in order to deflect and/or destroy that NEO threatening the planet Earth (see also: http://qz.com/274242/the-us-is-keeping-nuclear-weapons-around-for-planetary-defense/ - last accessed 2015-03-27).

Asteroid impact mitigation techniques

- Kinetic impactor: A spacecraft (the impactor) crashes into an asteroid at very high velocity. The momentum is transferred to the NEO and changes its trajectory slightly.
- Gravity tractor: A spacecraft is hovering near a NEO using the small gravitational attraction between the two to alter the pair's centre of gravity, affecting the asteroid's course.
- Blast deflection: That technique is employing a nuclear explosive near the asteroid causing its outer layers to evaporate thereby acting like rocket fuel and thereby altering the asteroid's trajectory.(4)
- Destruction of the NEO through a nuclear or conventional explosion.(5)
- Other methods: e.g. employing lasers to boil off materiel from the asteroid's surface; alternatively using large lenses to concentrate the sun's energy onto an asteroid.(6)
- Which method to employ may depend on the circumstances, such as the time to prepare a certain measure to counter the threat.
- Especially when faced with large objects and only little warning time, the nuclear option might be the only feasible one.(7)

Arguments for a special legal regime

Although, as stated above, the existing legal provisions allow for nuclear planetary defence measures, there remain some areas of unclarity, especially concerning the definition of nuclear weapons, the terms "placing in orbit", "installing on celestial bodies and "stationing in outer space".
Clearly defined legal provisions on that matter might facilitate planning and execution of planetary defence missions.
Political support for nuclear planetary defence measures might be more easily generated, as they would be explicitly allowed by international law.
A certain consensus over key aspects of planetary defence could be found well before a situation arises where respective measures have to be taken.
Some scepticism in the general public could be countered with the same argument.

Legal Questions concerning Nuclear Planetary Defence Measures

- Would the employment of nuclear warheads against NEOs violate Art.IV OST?
- Would the employment of nuclear warheads against NEOs violate Art.I §1 lit a PTBT?
- Could a nuclear warhead that is employed against a NEO be considered a weapon of mass destruction?

http://cdn01.dailycaller.com/wp-content/uploads/2012/12/asteroid-earth-public-domain-by-Donald-Davis-e1360264611778.jpg

. http://www.thepublicdomain.net/2012/01/delta-iv-medium-rocket.html|jpg

Arguments against a special legal regime

Too many regulations might hinder space activities.
Although a higher degree of legal clarity can be helpful, there is a certain risk that some important aspects could still be overlooked.
It could be very difficult to find consensus on several matters, especially those involving nuclear warheads. The questions of costs and liability could also be stumbling blocks for consensus.
The public opinion holds great reservations against the development and deployment of nuclear warheads.
It might be nearly impossible to deal with the question of command and control over the nuclear warheads at times when no planet-threatening crisis is imminent.

(1) Nina-Louisa Remuss, Space and security, in: Brünner/Soucek, Outer Space in Society, Politics and Law. Vienna New York, 2011, 547
(2) Secure World Foundation, Near-Earth Objects: Responding to the International Challenge, Secure World Foundation 2014, 3
(3) Ibid
(4) Clement, et.al., Impact Hazard Mitigation: Understanding the Effects of Nuclear Explosive Outputs on Comets and Asteroids, Los Alamos National Laboratory. Advanced Maui Optical and Space Surveillance Technologies Conference, September 2009, 2
(5) ibid
(6) Remuss, Space and security, 553
(7) ibid

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