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APPRAISAL OF OUTER SPACE REGIMES ON THE EXTENT OF ITS USE

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Abstract The freedom of exploration and use of outer space is an established principle in the space regimes. Space users are encouraged to explore and use the resources of space for the benefit of mankind. However, and as would be seen in this work, the use in which countries like the United States of America, Russia and China have put the pristine environment and its resources to raises questions as to the extent or limit (if any) to which space resources should be put. The attitude of these countries with respect to placement and use of weapons in space together with exposure of the environment to debris prompts a mind to ponder on the acceptance of such acts. The intention of this work is to analyze the extent of the use for which Outer space and its resources is to be put. In other words what should Outer space resources be used for? This would enable the paper to identify any restrictions (if they exist) on the use of space and the effectiveness of such limits. A qualitative legal research methodology is adopted; and at the end of the work, appropriate recommendation is made based on the findings

Keywords: Outer Space, Outer Space Regimes, Freedom of Exploration, Environment

1.0 Introduction According to the provision of the Outer Space Treaty 19671 , the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.2 Outer space, including the moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.3 Deducible, Outer Space is free to be used by all for the benefit of mankind. Space based technology has been adopted for * Senior Lecturer, Department of Jurisprudence and Public Law, Faculty of Law, Kwara State University. Malete, Nigeria. khafayat.olatinwo@kwasu.edu.ng. 1 (The "Outer Space Treaty", adopted by the General Assembly in its Resolution 2222 (Xxi)), opened for signature on 27 January 1967, entered into force on 10 October 1967, 98 ratifications and 27 signatures (as of 1 January 2008) www.oosa.unvianna.org/oosa/spacelaw/outerspace.html>accessed on 7 January 2022 2 Outer Space Treaty 1967, Art. 1 3 Ibid Journal of International and Comparative Law (JICL) Vol.9 2021 2 various technological advancement in recent times from communication, 4 transportation, environmental, navigation, earth monitoring and weather forecasting services through satellites launched in the Geo Stationary Orbit.5 The need to encourage State to utilize space based resources is responsible for the open access regime in the space treaties. The International legal framework on the use of outer space, opens up the ‘freedom of exploration and use of outer space’ for any state, individual and international inter-governmental organizations capable of utilizing the space resources. However, some actions of space actors in the use of outer space in terms of space weaponization which further result in debris creation suggest that the space regimes have given a blanket freedom on the use of the environment without limit. The issue which this paper seeks to analyze is the use for which the outer space is to be put to i.e. what should outer space be used for? The findings would assist in identifying act that could be

term as the wrong use of space resources and then what can be done to prevent further acts, contrary to the intent of the space regimes 2.0 The Use of Outer Space The provisions on the freedom of exploration and use of outer space can be said to be similar to the 'shadow of many colours'- from the provision on the freedom of access to all areas of outer space, the use of outer space for the benefit of mankind and in the interest of all countries, to that of freedom of scientific investigation6 which should be opened to other states, upon request, for observation. 7 Accordingly, article III of the Outer space Treaty provides that 'States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining 4 United Nations Office for Space Affairs. http://www.unoosa.org/oosa/en/benefits-of space/communication.html>accessed on 10 January 2022 A geostationary orbit is one in which the speed at which a satellite orbit the Earth coincides with the speed that the Earth turns and at the same latitude, specifically zero, the latitude of the equator. This does not mean that the Satellite and the Earth are travelling as the same speed, but rather the satellite is travelling fast enough to so that its orbit matches the Earth's rotation. A Satellite in the area appears to remain in the same spot in the sky all the time and very high up at about 35,850 Km above the Earth. http://satellits.spacesim.org/english/anatomy/orbit/geostati.html,http://m.wisegeek.org/whatis geostationary- orbit.htm,> accessed 1 February 2022. See also Kelso T.S, 'Basics of Geostationary Orbit' (2000) Satellites Times accessed 1 January 2022 and Geostationary Orbit: Are satellites faster than the space shuttle? (2011) Physics Central. Physics buzz Blog http://physicsbuzz.physicscentral.com/2011/geostationary-orbit-are-satellites.html> accessed 1 February 2022 6 'There shall be freedom of scientific investigation in outer space, including the moon and other celestial bodies, and States shall facilitate and encourage international co-operation in such investigation.' See Article I & X OST 1967 7 See Art. XI Journal of International and Comparative Law (JICL) Vol.9 2021 3 international peace and security and promoting international co-operation and understanding.' While trying not to assume the intent of the Outer space Treaty in providing that 'the moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes', 8 the Treaty does not describe what peaceful purposes is, making the issue subjective. In the absence of the provision on the meaning of 'peaceful purpose' this work is therefore constrained to draw its meaning from what is 'restrained' within the ambit of the surrounding provision. 3.0 The Use of Outer Space for Military Purpose As absolute as the freedom of exploration and use seem, the Outer Space regimes frowns at what could be described as 'weaponization or militarization of Outer space as the presence of weapons in space may jeopardize the inherent benefit of outer space for mankind while the peaceful use of outer space may be marred if the area is allowed to be used as war field. States parties are allowed only to use military personnel for scientific research or for any other peaceful purposes as well as the use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies. However, the establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers on celestial bodies is forbidden. In addition, it provides that States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.9 Deducible from the provision on non-militarization and non- weaponization of Outer

space, and in the absence of any definition, the term ‘peaceful purpose’ could mean non-military (and acts of weaponization) activities as military activities in outer space cannot be said to bring peace or to be peaceful. Though on another thought, it can be said that military activities are peaceful as long as they are non-aggressive.10 The provision would have been much appreciated if it went ahead to state clearly such activities that may be deemed peaceful or not. Streamlining the acceptable military activities in Outer Space to just scientific 8 See Art. IV OST and Art. 3 of the Moon Treaty 1979 9 Ibid. See Art. 3(3) MT 10 Manfred Lach, ‘The International Law of Outer Space’ (1964) 113 Recueil des Cours De L’Academie De Drit International, 33; C.Q. Christol, The Modern International Law of Outer Space (1982) 30(03) Netherlands International Law Review, 5; Vlasic L, ‘Disarmament Decade, Outer Space and International Law, (1981) 26 McGill Law Journal 135-206 Journal of International and Comparative Law (JICL) Vol.9 2021 4 research and any other peaceful purposes is quite dangerous. This leaves room for a situation where a state engages in a military activity it viewed as peaceful while other States view it otherwise. This is also applicable to the list of military activities that are forbidden. Is the list exhaustive- ‘military bases, installations and fortifications, the testing of any type of weapons and the conduct of military maneuvers?’ As this may mean any other type of military activities not specifically mentioned as forbidden are allowed. Ram11 categorized space weaponization into three forms to wit (i) space strike or orbital bombardment weapon systems (ii) anti-satellite (ASAT) weapon systems launched for the purpose of interfering, destroying or degrading other satellites and (iii) ballistic missile defence (BMD) weapons system.12 The provision, does not mention forms of weapons except for nuclear weapons or any other type of weapons of mass destruction and a further reading of the article suggest that even these weapons are not banned to be ‘placed’ in Outer Space but the object carrying such weapons. The saving grace of the provision from being misinterpreted are the words ‘install’ and ‘station’ such weapons’ and not the object carrying the weapons this time around. Well this may depend on the difference or similarity between these words with the word ‘place’ The use of words, integral part of treaties, is very important in drafting agreements. In this circumstance, except where install and/or Station are interpreted to include the word ‘place’, then the provision would be open to many absurd interpretations as to affects its compliance. While the words install and station suggest a sense of permanence, placing could be temporary or for a certain period. Still on interpretation, what is the meaning of ‘any other kind of weapons of mass destruction’ because, the Treaty makes no definition for it. The notion of weapons of mass destruction connotes weapons capable of harming a large number of lives and property and these weapons could include not just nuclear but biological, chemical or radiological weapons which may have serious and damaging effect like that of nuclear weapon.13 11 Ram Jakhu, Associate Professor, Institute of Air and Space Law, Faculty of Law; the Director of the Center for the study of regulated Industries; McGill University, Montreal, Canada 12 Ram J, ‘Legal Issues Relating to the Global Public Interest in Outer Space’(2006) 32 (1) Journal of Space Law 31-110 13 Title 18 USC §2332a defines weapons of mass destruction as (a) any destructive device as defined in section 921 of this title (b) any weapon that is designed or intended to cause death or serious bodily injury through the release, dissemination, or impact of toxic or poisonous chemicals, or their precursors (c) any weapon involving a biological agent, toxin, or vector (as those terms are defined in section 178 of this title or) (d) any weapon that is designed to release radiation or radioactivity as a level dangerous to human life http://www.law.cornell.edu/uscode/text/18/2332 > accessed 23 April 2022 Journal of International and Comparative Law (JICL) Vol.9 2021 5 Obviously, the intention of the provision is to

cover whatever type of dangerous weapons not only in existence but future weapons capable of mass destruction. Now, here is the research's grudge with this provision. What is the determinant for mass destruction? At what point of destruction can this provision be made applicable. This is because of the possibility of a space-weapon to kill or cause significant damage to a few people or animals or property even though such weapon falls within the prohibited weapons. On this same note, what would be the position of article IV where a mass destruction, as envisaged, has been occasioned but unfortunately by a space object not regarded as a weapon or by a weapon not regard as weapon capable of mass destruction. COSMOS 954 14 was not viewed as a case of weaponization even though the destruction and re-entry of Russia's nuclear power satellite caused radioactive debris to be present in Canada's territory. This calls for the need to balance the provision of the particular article of the Outer space Treaty. The urge of the world community to make the area of outer space a sanctuary free of weapons and military acts can be very well traced to the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water 1963. 15 The Six-articled Treaty was drafted at the dawn of space exploration for the purpose of keeping space free of nuclear force, nuclear pollution, nuclear explosions for both testing and non-testing purposes. The need to put such measures in place became more imminent particularly when the United States and The Soviet Union in 1952 and 1953 respectively exploded hydrogen devices which raised concerns as to the possible radioactive fallout. Succeeding event by the United States in 1954 in exploding an experimental thermonuclear device led to an accidental contamination of a Japanese fishing Vessel named Lucky dragon causing its crew to suffer from radiation sickness.16 14 Cosmos 954 is a Soviet nuclear power Satellite launched in on the 18th September 1977. This Satellite showed signs of abnormal behavior and on the 23rd January 1978 at about 6:53 Eastern Standard Time, before the startled eyes of a few Northwest Territory residents, it re-entered the earth atmosphere to the north of the Queen Charlotte Islands and disintegrated. This caused radioactive debris to scatter over portions of Canadian territory, particularly along a strip of land starting near Great Slave Lake and continuing north eastward toward Baker Lake. See Settlement of Claim between Canada and the Union of Soviet Socialist Republics for Damage Caused by "Cosmos 954" (Released on April 2, 1981) < http://www.jaxa.jp/library/space_law/chapter_3/3-2-2-1_e.html> accessed 22 April 2022. Bryan S & Mark L.B, 'After The Fall: Analysis of Canadian Legal Claims for Damage Caused by Cosmos 954 (1982) 27 McGill Law Journal 678- 680 15 Also referred to as the Partial Test Ban Treaty or the Limited Test Ban Treaty). Signed by the original parties [Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America] Moscow 5th August 1963 entered into force 8th August 1963. 105 signatories and 126 States parties as at 6th June 2016 16 'Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water' Bureau of Arms Control, Verification and compliance. Narrative accesses 06 January 2022 accessed 13 March 2022. See Article I III 30 See art. II 31 See art. VII. See also Narrative of the Interim Agreement Between the United States of America and the Union of Soviet Socialist Republics on Certain Measures with Respect to the Limitation of Strategic Offensive Arms. 1972 by the U.S Department of State http://www.state.gov/t/isn/4795.htm#narrative accessed 15 March 2022 32 Strategic Arms Limitation Talks (SALT II), signed in June 1979 but never entered into force as a result of U.S refusal to ratify same 33 The announcement on the refusal was made in 1981 34 Lindsey M, 'SALT I AND II' The Cold War Museum-FCAC.ORG, Fairfax Public Access: Community Media. http://www.coldwar.org/articles/70s/saltiandii.asp accessed 15 March 2022 35 Treaty Between the

United States of America and the Union of Soviet Socialist Republics On Strategic Offensive Reduction (START 1) Signed on 31 July 1991 and entered into force on 5 December 1994. The Treaty had fifteen (15) years duration with an option for extension for another five years where all parties agree. The Treaty expired on 5th December 2009.http://www.nti.org/learn/treaties and-regimes/treaties-between- the-united-states-of-america-and-the-union-of-soviet-socialist republics-on-strategic-offensive- reductions-start-i-start-ii> accessed 16 March 2022 Journal of International and Comparative Law (JICL) Vol.9 2021 10 as a result of the break-up of Soviet Union in late 1991. As a result of the break-up, four post Soviet Union States (Russia, Belarus, Kazakhstan and Ukraine)36 and the United States were parties to the Treaty which made extensive provisions on the reduction and limitation of offensive arms on deployed ICBMs and their associated launchers, deployed SLBMs and their associated launchers and deployed heavy bombers and warheads attributed to deployed ICBMs on mobile launchers of ICBMs to certain numbers37 Parties are further restrained from producing flight-test or deploy heavy SLBMs, produce, test or deploy mobile launchers of heavy ICBMs.38 As a result of its exhaustive provision which maintained it value till it lasted, the Treaty has been blamed for been too cumbersome, complicated and expensive to maintain39 which led to its replacement40 in 2010 by the NEW START.41 The NEW START limits or reduced the number of deployed weapons as contained in the previous arms limitation Treaties, though not limiting, it monitored non-deployed ICBMs and SLBMs with provision for continuous information on their locations with on-site inspection for confirmation of compliance.42 Currently, there are no weapons of mass destruction or aggressive military activities in outer space, what is however imminent is the prospect with the rate at which the United States, 36 Except for Russia, the other three States were obligated to joined the Non-Proliferation Treaty (NPT) as non-nuclear States 37 See Art. II-IV 38 Art. V 39 http://www.nti.org/learn/treaties-and-regimes/treaties-between- the-united-states-of-america-and-the union- of-soviet-socialist-republics-on-strategic-offensive- reductions-start-i-start-ii> accessed 16 March 2022 40 And ofcourse there is the Treaty Between the United States of America and the Union of Soviet Socialist Republics On Strategic Offensive Reductions (START II) (meant to complement the first START II) which was signed by the two parties in 1993, ratified by the U.S senate in September 1997 and Russian in April 2000 and declared by the Russian Federation to be null and void in 2002 on withdrawal on the basis of U.S refusal to ratify the …..Treaty and its withdrawal from the ABM Treaty earlier noted. So the Treaty has no effect. . http://www.nti.org/learn/treaties-and regimes/treaties-between- the-united-states-of-america-and- the-union-of-soviet-socialist-republics on-strategic-offensive- reductions-start-ii> accessed 16 March 2022 41 Treaty Between the United States of America and Russian Federation On Measures For the Further Reduction and Limitation of Strategic Offensive Arms (NEW START). Signed April 8, 2010 in Prague, entered into force February 5, 2011. The treaty repealed the 1991 START 1 and superseded the 2002 Strategic Offensive Reduction (SORT). http://www.armscontrol.org/factsheets/NewSTART> accessed 23 February 2022 42 See Art. II. For article-by-article explanation of the Treaty see http://www.state.gov/documents/organisation/142041.pdf> accessed 23 February 2022. See also Amy F.W, 'The New START Treaty: Central Limits and Key Provisions' (2016) Congressional Research Service Report (Prepared for members and committees of congress) 7-5700 R41219< http://www.crs.gov> accessed 23 February 2022. See also, some other International Agreements on arms control applicable to Outer Space like Article 35 of the Nairobi Convention 1982 which prevent parties from causing harmful interference to radio services and Communications.(Entered into force 1984), Hotline

Agreement of 1963, EnMod Convention (Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques) 1977 entered into force 1980 and the non-treaty based coalition regime on control of Missile (Missile Technology Control Regime of 1987) and general International customary law on arms control. Journal of International and Comparative Law (JICL) Vol.9 2021 11 Russia and China are developing anti-satellite missiles capable of being programmed for more destructive purpose. Many of the military satellite present now are more for the purpose of surveillance, communication, meteorology and reconnaissance. Russia and China have engaged in series of anti-satellite missile test in anticipation of US's secret plan to dominate outer space. In 2007, china launched an anti-satellite missile to destroy its weather satellite to which the US responded to in 2008 by destroying its malfunctioning military satellite with an anti-ballistic missile.43 Since 2007 up till date,44 china has engaged in series of ground-based anti-satellite kinetic weapon such as the one tested in July 2014 claimed to be for the purpose of peaceful missile defence and scientific experimentation to which the US isn't buying as it believes that China is still 'testing to missile' for the period. The same is applicable to the Government of Russia and India. Russia is engaged in advancing its ability to 'approach, inspect and destroy satellites in orbit. It has recently, included three unidentified payload in its commercial satellite launches such that small object is observed flying with much distance with its deployed commercial satellite and later turned and fly back. The purpose of this accompanying object is still not clear, though stated to be programmed to service and refuel the satellite, the US still feels it may have a hidden and sinister purpose. The United States stance towards militarization of Outer Space is more alarming. While Russia, China and India make excuses for their development of Space weapons as protective and defensive measures against US's anticipated offensive military prowess, the United States is more focus on dominating Outer space to the exclusion of other countries. In its 'US Space Command's Joint Vision for 2020,45 the US states its principal intention which to (a) to dominate the space dimension of military operations to protect its interest and investment and (b) to integrate space power through military operations which would require its ability to control outer space.46According to Jonathan and Craig,47 ' the US is moving ahead with its 43 Lee Billings, 'War in Space May Be Closer Than Ever: China, Russia and the US. Are developing and testing controversial new capabilities to wage war in space despite their denial of such work (2015) Scientific America accessed 23 February 2022 44 In 2013, china launched a missile as high as 30,000 kilometer above nearing strategic geosyncronous satellite. it also tested another on July 2015. http://www.scienticamerican.com/article/war-in-space may-be-closer-that-ever/> accessed 23 February 2022 45 The United States Space Command Advocacy 'Vision 2020' issued January 2002< http://www.spacecom.af.mil/usspace/> accessed 27 February 2022 46 This is reiterated in its 'Long Range Plan (LRP) of US Space Command Online http://www.fas.org/spp/military/docops/usspac/irp/toc.htm > accessed 27 February 2022 47 Jonathan Granoff, President, Global Security Institute accessed 27 February 2022 and Craig Eisendrath, senior fellow, center for international policy and Journal of International and Comparative Law (JICL) Vol.9 2021 12 plan to use Outer space as the venue for missile defence as it is considering developing a constellation of orbiting kinetic kill micro-vehicles designed to destroy enemy intercontinental ballistic missile in their boost phase'48 The US is also held to be developing amongst other weapons the Near-Field Infra- Red Experiment Satellite capable of tracking and destroying missiles and satellite, 49 the long-rod penetrator of high speed into earth atmosphere to penetrate bunkers and large facilities,50 the Evolutionary Air and Space Global Laser Engagement (EAGLE) to destroy missiles51 and the

bombardment satellites capable of hitting enemy target from low orbit.52 It is quite obvious that it is this same intention of the Unites State to dominate Outer space that led to its vote against the 2004 Resolution on arms race arguing that since arms race in outer space does not exist yet, it is unnecessary to take any action on prevention of arms race but rather prevention on placement of weapons in outer space, while many other countries sees more reason to vote in favour of negotiating treaties on the Prevention of Arms Race (PAROS)53 With all these acts of possible militarization and weaponization of outer space, the question to ask at this stage is, are the series of treaties and efforts of the UNCOPOUS and member States54 on prevention of arms race recognized and effective at all? Can the world community chairman, Project for nuclear awarenesshttp://www.thenewpress.com/authors/craig-eisendrath accessed 27 February 2022 48 Jonathan G & Craig E, 'United States-Masters of Space? The US Space Command's ''Vision For 2020'' (2005) Global Security Institute accessed 27 February 2022 49 David Barton, 'Report of the APS Study Group on Boost-Phase Intercept systems for National Missile Defence' (2004) 76 Rev. Mod.Phys, 425 http://www.journals.aps.org/rmp/article/10.1103/RevModPhys.76.S1 accessed 27 February 2022 50 Theresa Hitchens, 'Weapons in Space: Silver bullet or Russian Poulette' Center for defence Information. April 2002 Pg 7 51 Noah Schachtman, 'Pentagon Preps for war in space' Febraury 20 2004 http://www.wired.com/news/technology/0,1282,62358,00/html > accessed 27 February 2022 52 Jonathan G & Craig E, 'United States-Masters of Space? The US Space Command's ''Vision For 2020'' (2005) 53 Processes and Proposals so far include 'Prevention of Arms Race in Outer Space (PAROS)', Draft Treaty on the Placement of Weapons in Outer Space, the Threat or use of force against outer space objects (PPWT), a joint effort of the State of China and Russian presented to the Committee on Disarmament in 2008, Transparency and Confidence-building measures (TCBMs) A/62/114 and A/62/114/Add.1, Group of Governmental Experts (GGE)a result of TCBMs, International Code of Conduct for Outer Space Activities (ICoC) an initiation of the European union. See Outer Space, Online article on Reaching Critical Will http://www.reachingcriticalwill.org/resources/fact sheets/critical-issues/5448-outer-space accessed 27 February 2022 54 United Nations Committee on the Peaceful Uses of Outer Space (UNCOPOUS), the committee is comprised of two subcommittee (the scientific and Technical Subcommittee and the Legal Subcommittee) established in 1959 by the to oversee the exploration and use of outer space for the benefit of mankind, for peace, security and development. Part of the committees efforts creation of the five major space regimes and principles. See www.unoosa.org/oosa/en/ourwork/copous/index.htm > accessed 20 February 2022 Journal of International and Comparative Law (JICL) Vol.9 2021 13 guarantee a non-response from other space actors to the US activities in its quest to dominate Outer Space and deny others of it? 4.0 Conclusion The space regimes did not identify, specifically, what outer space should be used for. However, from the discussion it can be said that military use of Outer space is not contemplated within the meaning and scope of freedom of exploration and use of outer space as enshrined the Outer Space Treaties. The weaponization and military use of outer space is specifically banned even though the provision on the ban are not restrictive enough. It is therefore recommended that a stricter provision on a complete ban on the military use of outer space be inserted in the Outer Space Treaty or a complete regime on the military use of Outer space be adopted. Despite the series of space militarization and weaponization regimes and bilateral agreements, acts of eventual militarization in outer space are imminent. This paper suggests that it is expedient to consider putting in place a strict provision in the outer space

regime or whole strict space militarization regimes (legally binding), with a complete ban on the military use of outer space and its celestial bodies and placement of whatever kind of weapons. Although such strict provision has the tendency of not gaining much political support especially by the United States as seen with the Moon Treaty, it is nevertheless needful to sustain the environment for future use and allay the fear of space becoming domain of war. The use of anti-satellite weapons should also be discouraged particularly where it would destroy, damage or interfere with the peaceful use of outer space by other space users. This will of course reduce the numbers of space debris and prevent its subsequent creation. Efforts of the UNCOPOUS would be very much appreciated if a verification, control and monitoring system could be adopted. In this wise, upon notifying the secretary general of United Nations in respect of any space object launch, a requirement of Article iii, iv & v of the Registration convention, the Secretary General should convey the information to the scientific committee of UNCOPOUS who shall mandate its members to search in order to verify if such a space object is intended for any military use or capable of causing adverse changes in the outer space environment or that of the earth. It is further recommended that a central monitoring system be adopted by the UNCOPOUS for the purpose of overseeing activities in outer space irrespective of the state involve.