

Civil Liability in the Nuclear Legislation and it's Implementations in Jordan

“A Comparative Study between the Rules of Civil Liability in the Jordanian Civil Law and Provisions the Vienna Convention in 1963 on Civil Liability for Nuclear Damage”

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Abstract

Nuclear law function is to promote the optimum use of nuclear technology and the protection of the human rights and the environment from the risks of nuclear radiation and to prevent non-peaceful uses of nuclear energy and radioactive materials. The problems for Jordan in dealing with nuclear energy and related material derive from the lack of scientific development on the subject of nuclear energy, insufficient ability of the judicial system or the legal structure to deal with issues that may arise from damages that occur from nuclear reactor or related materials and nuclear waste.

Keywords: International Atomic Energy Agency (IAEA), Nuclear Damage, Jordanian civil law, The Provisions of International Treaties, Civil Liability.

Introduction

Nuclear energy as defined by the Jordanian Atomic Energy Actⁱ for the year 2007, is the energy that is generated as a result of interactions of nuclear fission or fusion or any other nuclear reactions that produce energy used for different purposes such as electricity generation, water desalination and the production of radioisotopes for medical applications, industrial, agricultural and others. As for the nuclear law in general is a group of legal rules organized scientific use by natural persons or legal entities of nuclear energy generated from radioactive materials, and the importance of the legal regulation of this activity comes as a necessity because of what could use that energy from the effects may be negative on the environment and rights.ⁱⁱ

The subject of civil Liability resulting from damage that associated with nuclear accidents must take a high degree of attention to the legal subject of a direct connection to deal with this serious damage, which lies on humans and the environment as a result of nuclear accidents. But in reality, we find that the Jordanian laws relating to nuclear technology may go out the organizational aspects in the creation and management of the nuclear reactor, as well as there are some texts exist to organized criminal Liability for tampering or illegal use of nuclear material.

But even to complete the national legal system for dealing with nuclear activities for peaceful purposes, it must find a clear legal rules to regulate the conflicts that be basis of the damages related to nuclear accidents .In order to the state able to -especially developing countries - establish the objective of the establishment of nuclear projects cannot do so without the technical and financial assistance from developed countries, and the last one which is put the formulas and conditions of international treaties governing for the civil Liability that resulting from nuclear damage.

There is consensus among the International treaties and national laws even receive countries that are planning to possess nuclear energy for peaceful purposes. International treaties such as Vienna and Paris treaties have been organized by the International Atomic Energy Agency (IAEA) and under the supervision of developed countries, and this agency created to monitoring the objectives of the countries that use or on the way to the use of nuclear energy and the compatibility of national legislation with international laws. For Jordan it is a binding international treaty governing civil liability, whether signed or unsigned, because Jordan is a member of International Atomic Energy Agency (IAEA) and all treaties related to atomic energy are complementary to the work of the IAEA and operate under its umbrella, and thus are binding on all Member States of the Organization. In relation to Jordan, it is committed to the provisions of international treaties must be issue a specific legislation to deal with civil Liability for nuclear damage on the format of the contents of those treaties and that is not enough to rely on public legal rules, in national legislation to regulate the legal important in the establishment of nuclear facilities.

At the same time cannot be denied that many of the rules of civil liability in Jordanian civil law valid in part to deal with the issue of civil Liability for nuclear damage, but may conflict with international rules such as those have been clarified earlier, or may be limited to achieving the internationally agreed goals to regulate the issue of liability nuclear, such as setting an upper limit for compensation.

Today it has spread the use of technology to generate nuclear energy as an inexhaustible source of energy, especially with the increasing need for energy to keep up with industrial development and the establishment of large industries that require large amounts of electric power, continuously and at low cost.ⁱⁱⁱ

The importance of nuclear energy that can produce a large amount of energy using a small amount of radioactive materials, has reached the percentage of global reliance on nuclear power to generate electricity up to 14% of the energy produced and that in the world there are about 440 nuclear power plant.^{iv} In order to limit use nuclear power to the benefit of humanity and for the peaceful uses of had to be find a number of understandings and international agreements to search for a legal mechanism to use this energy in the fields of peace, rather than used in wars and the destruction of the world, and it was the most important international agreements Treaty on the Non Proliferation of Nuclear Weapons to organize peaceful use of nuclear energy. And has been declared in Article IV of the Treaty mentioned that inalienable right of all States Parties and the inalienable right to obtain nuclear technology used in various peaceful applications. As a result has become one of the constants in the international law right of states to possess nuclear energy for peaceful purposes and the same time it was necessary for States to develop a package of national legislation to regulate the use of that right in collaboration with international organizations, especially the International Atomic Energy Agency (IAEA) and in conformity with all international treaties related to organize the various aspects that related to use of nuclear technology.^v One of the most important aspects that need to be organized is the subject of civil Liability that may arise from nuclear accidents have existed several treaties for the organization was notably: Vienna Convention on Civil Liability for Nuclear Damage of 1963, And Paris Convention on Third Party Liability in the Field of Nuclear Energy of 1960.

It has been selected to write on the subject of civil Liability for nuclear damage in the framework Jordanian legislation especially the general rules of civil law of the tort Liability in light of the existence of international treaties governing subject, because there is no explicit provisions in the Atomic Energy Act of Jordan to deal with this important aspect. This research aims to clarify viability of general rules in the Jordanian civil law to resolve disputes relating to civil Liability for nuclear damage that may result from the imbalance in the work of a nuclear reactor to be created in Jordan and the resulting nuclear waste, and to clarify the extent of consistency between the rules of civil law relating to tort Liability and international rules that provided in several international treaties.^{vi}

But for the Jordan laws and relating to the establishment of a nuclear reactor and the debate on this subject, the focused on the technical side in establishing and dealing with the nuclear reactor, and where it could reach if that project has been established. Where we find that the Jordanian Nuclear Energy law came to organize the construction of a nuclear reactor and his management but it did not mention the organize how to deal with legal civil Liability for nuclear damage in the presence of several international treaties organized all civil Liability for civil damages.

And in the jurisprudential aspect it have not been touched enough on the legal side and that should be discussed thoroughly in order to contribute in creation the legal culture, which will we need to handle civil Liability that must be consistent with international law and are implemented through national laws in the case of raise the conflict because of the damage resulting from the work of the reactor and nuclear material. It is noted that most of the literature study was written by Western writers unanimous that the laws of developing countries are unable to deal effectively with international and national Liability arising from the establishment and dealing with nuclear reactors.

1. Types of liability in Jordanian legislations

Legal Liability is generally based on the various provisions of the law which are divided into three main types: administrative Liability, penal Liability and civil Liability. For administrative Liability it is organized through the texts of administrative laws for efficient management of government facilities and determines the duties of the public employee, their rights and how to deal with them when they prejudice to the duties of public office. However, the administrative liability is not going to be analysed in this paper, because it is not a sources of civil liability for damages related to nuclear damages.

Through the revision of some books on the civil Liability, we find that most of the studies have dealt with the Liability as a source of commitment and cause for compensation through the application of the general rules in civil law. Legislation generally requires exist the damage to verify Liability for tort but some are required to be accompanied between damage and the tort of distinctive conscious, but the Jordanian civil law and in accordance with Article 256 of the Civil law did not require tort on the side of causing damage to verify Liability. Thus, the civil Liability still stands in the right of committed an act resulted the damage to others party,

though not a distinctive or not an injured mistake that gives the right to claim an equitable compensation.^{vii} Thus the Jordanian Supreme Court goes to require the tort in the criminal Liability have to be really serious, but the civil Liability the person ask about the tort in all its forms, there is no contradiction if the court verdict that not have the Liability of the penal for the person and despite sentenced by the civil compensation. If the penal judgment has approved there is no Liability for complainant in an accident, it does not affect in the right of aggrieved by reference to compensation for the damage,^{viii} while, the Egyptian civil law where it is required for Liability the detrimental tort occurred for other part by conscious person of what he had done.^{ix}

The civil Liability - the subject of this research - aims to reduce the damages that fall on others as a result of breach of an obligation, that result from law or the will, which has been divided in two types: contractual Liability & tort Liability. And for tort Liability or Liability of the detrimental act – and its basis of is the subject of this research - is accountability for nuclear damages others and the environment. The Tort Liability content include breach of legal obligation, which provides no damage to other parties and every breach of this obligation may arranges Liability for crowbar and demands on this basis to return the case to how it was and / or and compensate the injured for everything that was happened by the damage. The primary objective of this requirement is to clarify the intended penal Liability and civil Liability because of their direct contact with the subject of civil Liability for nuclear damage, according to Jordanian law and to serve the subject matter without entering into various jurisprudential theories which related to the Liability. The following discussion explains the penal liability and the tort liability as the legal basis for civil liability in Jordanian civil code.

1.1 The Penal liability

The legal basis for penal Liability that there is neither punishment nor penalty except which existence in the text of law, and this kind of Liability has organized through texts that punish various crimes and contained within the law penalties and other penal laws and penal provisions contained in any other law.

Crime has been defined as all wrongful conduct released by the will of penal, which the law arrange for it a punishment or a precautionary measure,^x the primary objective of the penal provisions to protect the community from crime through enjoined the criminal and deterrence to others in order to do not repeat the occurred crimes.^{xi} Public right and the right of society in punish the criminal is the Liability of the Public Prosecution and acting on behalf of the community in prosecuting criminals and demanding from the judiciary to provide them punishment by penal texts.^{xii} The penal punishment shall be according the type of crime, whether a crime or a misdemeanour or violation and punishment ranging between execution, imprisonment, and a fines.

In order to be a criminality decision purely true, it has to be the availability of three elements of the crime: a physical element, legal element, and mental element. And physical element is unlawful activity which led to result the direct crime or was the reason that result. The legal element is the legal text makes that act criminality as defined: there is neither punishment nor penalty except which existence in the text of law. For the mental element are the knowing and the will to commit the person for criminality act. The mental element is essential for the make any act criminality and the court takes it from the facts of each case depending on the circumstances of the commit the criminal act and the unavailability of the mental element to commit the act will prevents the punish of actor according to the penal provisions.

As result it must the availability of the three elements of crime combined in order to be the criminal correctly, and if one of these Elements upset may punish the defendant. But in the case of commission of an offences by mistake, the actor in this case is not punishable in most cases, but he will in some cases such as murder by mistake. An imbalance in one of the elements of crime does not mean that the actor has become free of any Liability, but possible that the civil Liability stands for the same act if it leads to material damage for victim, it has been confirmed by the Jordanian Court of Cassation that the ruling not to the defendant responsible for the criminal accusation cause the lack of evidence of an error, it does not affect the right of aggrieved to reference for the actor to compensate for the damage. If the person who have decided not responsible for the charge of impact is considered by Article 912 of the magazine as an direct actor not causing the damage, he will consider civilians responsible, whether intentional or unintentional harm on the grounds that the direct underwriter and that he does not deliberately on the considering that the direct is underwriter and weather did not deliberately. And in the civil rules that in the case of the participation of two people were causing damage, is not one of them be solely responsible for compensation, compared with what stand in Article 915 of the magazine.^{xiii}

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In other words that the person may be prosecuted on the basis of civil Liability and he being claim for compensation for damage to others for occurred he did act or omission inadvertently the damage.

Where the absence of penal Liability for a nuclear accident does not prevent a tort Liability because of nuclear damage that occurs to individuals and their property and the environment by of nuclear energy and radiation emitted from nuclear reactors or from their waste without the presence of offense penalty, and the subject of tort Liability will be discussed as an independently part from this topic. But in the case of the elements were completed of the crime and proof penal Liability, the offender shall be punished according to the punitive

texts and at the same time may entail personal rights to the victim which is called civil incision or personal right and this incision is dealt through the right of the injured physically and morally compensation by the damage to the as a result that the culprit did.

If the victim did not demand compensation, the court does not judge by itself because this right is a Private and haven't claim it will be considered a waiver of by the victim or his family for his own rights. To deal with the penal Liability for crimes related to nuclear materials and their impact on humans and the environment as enough as, it have to the many laws that related with this subject especially Atomic Energy Act and Environmental Protection Law to include explicit provisions criminalizing acts that will be outcome of acts harmful to humans or the environment through the use of radioactive material in a non-legitimacy way, or the breach of the legal requirements in the use of these materials and not focus only on administrative affairs.

1.2 The Tort Liability

Legislations different among themselves in the theories that are built on the basis of tort Liability or what it is called in the Jordanian civil law (Tort) as one of the commitment sources and which lead to civil Liability. The tort Liability required existence the damage to put the Liability on who has already harmful and after verification of the damage it will search for elements and other conditions may even to prosecute who responsible for the damage and demanding compensation.

Legislation different in bases which built on it the tort Liability, some of them have required that only the injury, including the condition of the injury with an error by the administrator at the same time. The error involves two pillars, one a physical: infringement act, and the other a moral: cognition. And cognition means the actor is a distinctive for his actions, for example, a little kid has no Liability in some of the laws for his actions harmful to others for lack of his cognition.

For example, we find that Egyptian legislation resides tort Liability based on the damage and error from claimed compensation or his representative so that a caused of the damage does not adhere to compensation only if he had in his actions, which he does not have the action right to avoid the negative result on the others when he aware of his behaviour harmful.^{xv}legislation Jordanian Civil resides tort Liability basis on a achieved negative result or damage to the victim even if it isn't from the person in charge an error and this is what has been introduced in Article 256 of the Civil Code, which provides that "every harm to others is required from perpetrator, even though in an uncharacteristically by ensuring the damage".

As stated in the explanatory memorandum in civil law of Jordan, "This article memorize in a concise and clear word the Liability for tort in the three elements; the arrangement compulsory by compensation (on every damage) where that damage requires action or lack of action from which the damage arises, and so Must the availability of the act or the lack of act, means (positive or negative), and the damage and causal relationship between them"^{xv}

It's clearly that the Jordanian Civil law did not require the error or intention required for resides the civil Liability in the right person who commits an act resulting injury damage result to a positive or negative behaviour regardless of the indistinguishable and understand, this is increase in the right protection of the of the injured that requiring compensation from the actor.^{xvi} The Court of Cassation's decision, which required to be wrong which requires a serious penal Liability, but in civil Liability a person will be asked for error in all its forms.

There is no contradiction in the decision's court if it judge for person by doesn't penal Liability and judge him by civil compensation in the same time. If the penal Liability decide on defendant from an accident shock because he was not neglected or few precaution, that does not affect on the right of aggrieved to refer it to compensate for the damage.^{xvii} (33)

If we look at the Jordanian legislation for the protection of nature and the laws of the organization to deal with radioactive materials and the work of nuclear reactors, we find that it did not deal with civil part of damage that has caused to individuals and the environment, That means it must use the general rules of civil law to report compensation in order to amend the damage. While we find that some countries such as the United Arab Emirates has initiated a special law applicable only to civil Liability arising from the Nuclear Damage.

The law came very closely to the Vienna Convention on civil Liability for Nuclear Damage. The importance of the existence the special law of civil Liability in the nuclear damage is to out of the litigants and the courts from the cycle of research and proof its elements and general conditions in the civil law to judge compensation for nuclear damage. Because these damages have privacy in effects resulting from the nature of it, and the difficulty of evidence and the time it may take for the emergence of the damage and this is different between the damage caused by traditional harmful and the damage that often appear directly or after a short period.

2. Nuclear damage as a condition for civil liability

Damage in general is the harm that takes by person in his money or his body or in his passion and feeling. And

the various legislation agreement it must exist the damage because of the harmful act to compensate the suffered injured from damage.^{xviii} The damage is the any actually damage occurred or may happen in the future, like Someone who is exposed to a high proportion of nuclear radiation and it certainly scientifically it will be become a permanent disability in the future, If the certain damage that will happen in future is easy to estimate it immediately, then the competent court have to judge but it have option to leave the judge until the damage will happen, or judge by the temporary compensate, while the right retaining to the victim to claim a full compensation if the damage actually happens.^{xix}

In other words, the damage is a pillar that is indisputable as the cornerstone for the tort Liability, which should 1st available thing to be looking for the next step: who did it?, If we look at the same time to the international principles that dealing with civil Liability for nuclear damage we find that they took damage as a basis to verify tort Liability and they did not require to proof of the existence of the mistake by the operators of nuclear stations or the countries that belong it those stations.

Another requirement when verification the damage is the availability of causal relationship between the behavior of responsible for compensation or his representative and the damage that happened, this relationship as an element of Liability means that there is a direct relationship between the mistake of who is responsible for the damage and whose other have harm.^{xx}

Causal relationships in accordance with Article 257 of the Jordanian Civil Law are either to real proceed with that the damage has been a direct result of the negative or positive act of who is responsible for the damage. The causal relationship may also on the cause basis, which means the damage was not a direct result of the act, but the act was the basis that led to the occurrence of the damage, This is evident through the following decision by the Court of Cassation that the text in the meant that the civil Liability for tort requires that there be an act or omission and that there is damage to others parties and that there be a causal relationship between the damage caused and the act.

(Therefore, if the electricity company extended the electrical line of high pressure over the street and in accordance with the technical standards makes the death as a result for someone lifted pipe metal length of six meters, where touched the wire line of high pressure which led to shock him by electricity and death as a result of his act not by the direct electricity. And that the act for which committed by him come out for the ordinary person's behavior because he did not take the necessary caution means and in accordance with the provision of Article 258 of the Civil Law, which necessitated that the provision is added to the act and the elements tort Liability were unrealized against the electricity company.^{xxi}

The damage is harm to the natural or legal person and the harm will be materially if it gets the financial equity or body and will be morally or psychologically, if it affects in his passion and a natural human feeling, and may the damage meets as a result of a one harmful reaction,^{xxii} That's where the physical damage, which affects the financial equity that occurs to its owner a financial loss. For example, each harmful will prejudice to the rights financial of the person as usufruct & right of owning. Then it may consequences of this prejudice some diminish of the financial advantages that conferred rights to their owners. but for the moral damage or non-the financial damage as some call it, means damage that does not affect the financial equity, but only causes pain psychological and moral cause of what it involves of prejudice to the sense and emotions and reputation and social status for the injured.

That's where the moral damage is contrary the physical damage does not affect the financial interest of a person, but it affects in the non-financial interests, and likeness of body mutilation, scratched of honor, and the attack of the reputation, and the denigration of dignity. We find that Jordanian civil law has decided of the right to compensation for moral damage in expressly text of Article 267 which provides in the sense that deals with protect the moral right damage as well as, Each exceeded for the others in freedom or honor or reputation or social status or on the financial consideration it makes infringer liable for warranty.

And nuclear damage is results by radioactive pollution due to leakage of radioactive materials to one of the components of the environment like water, air and soil, The radioactive pollution is the most dangerous types of pollution being known by human in our time, where it did not see nor smell and feel, and can easily access to living organisms everywhere without any resistance and at the same time is easy to figure out and it existence does not leave any trace in the first instance, When the radioactive material reach to the cells of the body it will occur internal & inwardly damage, often it will be a casual of death, according with the first article of the Vienna Convention.^{xxiii}

Nuclear damage is death or personal injury or any loss or damage to property arising from the radioactive contamination resulting from the properties of radiation or a combination of properties and radiation toxic or explosive properties or any of the hazard characteristics that the nuclear facilities characterize by it, and what contain the nuclear fuel or products or waste or nuclear material from a nuclear facility.

Also the first article of the Vienna Convention adds to nuclear damage any death, injury or loss of or damage that associated with the facility or cause of nuclear radioactive substances emitted from another radiation source inside the nuclear facility and the law in the competent court was stipulated, and in case the a source of

the harm is nuclear reactors and their associated energy and radioactive materials where may cause damage property in the surrounding environment and products of agricultural & animal.

The aim of the compensation in such cases is the reparation of compensate the financial loss that occurred, and compensate injured for what they infected in his body as it is in the case of injury leading to permanent or temporary disability or inability to work for a specific or permanently period, The harm occurs as a result by exposure to radioactive materials and energy outgoing from nuclear reactors, where it exposure the body of human may occurred a different of types disabilities, infertility, or loss of eyesight, And the purpose of compensation in this case is the injury compensation of harm disabled from work and the cost of treatment and the cost of future care.

And we can take advantage by the idea of moral damage in the event of nuclear radiation injury to compensate for the psychological damage that infect injured as a result of changing the position in society from production person to unemployed person and what the deal of this resulting cases for frustration and mental anguish , fear and constant worry.^{xxiv}

3. The international Interest in the regulation for civil liability related to Nuclear Damages

Acquiring the nuclear technology has become the most prominent elements of the growth of many countries in this period because of its scientific, political and economic benefits. That's where nuclear energy as is well known, can be a tool of mass destruction and the same time may be a tool to solve the world's problems resulting from the growing demand for energy. In fact, the nuclear power had been using in war as a weapon, as happened to Japan during World War II, and there are nuclear damage occurred for non-military reasons, as happened during the earthquakes in Fukushima when leakage of radioactive materials and the attendant negative effects on humans, animals and the environment. The problem in the nuclear energy using lies in the difficulty of reconciling between the interests of countries that have monopolized that energy and at the same time its keenness to should not use such technology by misused states, and between interests of the developing countries that seeking to have such energy to be used in peaceful purposes.

So that in 1957 it was establishment of the International Atomic Energy Agency to carry out the majors function,^{xxv} the most important to stop the nuclear arms racing and preventing the spread of nuclear weapons and guidance of States and assist them in the peaceful use of nuclear energy,^{xxvi(43)} As well as its attention to the regulation and encourage the peaceful using of nuclear energy and also interesting to organize civil Liability in the event of damage to persons or property or the environment, because the error or tampering or failure to take the necessary procedures and precautions for dealing with radioactive materials, nuclear waste and energy storage methods learned from these materials.

In order to mitigate the negative effects for dealing with nuclear energy it has been formulation several international treaties and other regional in order to create a basis binding legal for States and for those who deal with the nuclear industry when it can the use of such technology to damage for persons and the environment and private property.^{xxvii}

The most important of these treaties; The Treaty of Paris for compensation for nuclear damage to property and persons (Paris Convention on Third Party Liability in the Field of Nuclear Energy of 1960), the Brussels Treaty of 1963 to complement the Treaty of Paris in 1960, the Brussels Treaty of 1963 concerning the Liability of the operators of nuclear ships, the Vienna Convention of 1963 on Civil Liability for Nuclear Damage, (Vienna Convention on Civil Liability for Nuclear Damage of 1963), And the Treaty on Civil Liability in the field of Shipping transport of nuclear materials ("the the Brussels Treaty of 1971"), which was adopted in 1971 under the care of the International Atomic Energy Agency nuclear and the Organization for Economic Cooperation and Development and the International Maritime Organization (IMO).

Between the many treaties and that the above mentioned or not mentioned is the Treaty of Paris and the Treaty of Vienna, one of the most important international organization documents to the issue of civil Liability for nuclear damage, especially after the entry of the private sector to invest in nuclear energy. The Treaty of Paris included constants upon which rest nuclear Liability of the establishment and management of nuclear facilities toward others.

The Vienna Convention also, which has been supported by the International Atomic Energy Agency nuclear, came along the lines of the Treaty of Paris with the addition of several Principles based on the basis of the report of the nuclear liability and compensation for damage caused. After the Chernobyl reactor accident in 1986 in Ukraine,^{xxviii} which resulted in the leakage of large amounts of radioactive materials and the attendant adverse effects have become a necessity for the international community to be modified laws governing Liability for nuclear damage.

It was the first step to make amendments to the Vienna Convention and the Treaty of Paris in order to address the deficiencies in those treaties^{xxix (46)}. Note of that there will be a thorough clarification of the fundamentals upon each of the Treaty of Paris and Vienna later this search. And attention to organize the dealing and cooperation in the field of nuclear energy has also led to the formulation of a large number of multilateral

and bilateral regional conventions to lay the foundations upon which the legal regulation and cooperation for the peaceful uses of nuclear energy. There are, for example, the Egyptian-Russian Convention and Jordanian Chinese Convention of 2008, and the Convention of Jordan Spanish cooperation in the use of basic and applied research and development of peaceful uses of nuclear energy for water desalination and power generation, the cooperation agreement between the United States and the United Arab Emirates in 2009, the agreement between France and Kuwait in 2010.^{xxx}

At the interior national level, we find many countries have initiated national laws in different ways to organize the construction of nuclear facilities and the peaceful use of nuclear energy whether by private companies or state-owned enterprises, That's where these laws came in mostly compatible with international conventions texts and it have formed the regulation major part for civil liability in many of those laws.^{xxxi}

For example, there has been legislation by New Zealand issued in the seventh 1945 the first national legislation in the world, aims to develop a legal regulation of the use of nuclear energy, this law was marked by the nature of preventive and supervisory framework, where these law had been authorized the universities and research centers, the possibility of testing on certain quantities of uranium, and ensure that fines and penalties up to five years imprisonment for a term if the happened illegal use for these materials.^{xxxii}

In 1964 the United States issued the Nuclear Energy Act, this law has developed the foundations of the organizes nuclear activity inside the United States of America, it was replaced by the 1954 Act of nuclear energy, This law is considered a primary source of the most of the national nuclear legislation in the world, That's where this law has regulated activity of the nuclear, it put all aspects of this activity in terms of licensing, prevention and the liability, to keep up with a large developments in the areas of nuclear reactors. In 1946 a law of control the Canadian Atomic Energy was passed and the Atomic Energy Law of England in 1964.^{xxxiii}

In 1959 a law of Atomic Energy German was passed and the law public protection from the dangers of radiation in 1958 in Belgium, and the law of radiation protection ionizing in Austria in 1985, and labour law about hazards of the radiation ionizing and prevention No. (59) in 1960 in Egypt, and the law of the peaceful uses of energy Atomic Italy in 1962, while France has embarked on approach to passing a partial legislation to regulate nuclear activities, such as law No. (575) for the year 1970, the protection and control of nuclear materials, and law No. 663 of 1970 on the division of nuclear materials from an environmental perspective, and the public Health Act in 1952 contains some articles on the activity and nuclear energy.^{xxxiv}

As a result, the recognition of the most countries in the world by international agreements and developed of bilateral agreements to regulate cooperation and investment in nuclear power has enjoined on those States that make their national laws that relating to the generation and use of nuclear energy consistent with the international norms and laws on the subject.^{xxxv}

By extrapolation some national legislation that relating to the use of nuclear energy it was found they contain some elements and objectives as the following:

- A. Providing a legislative framework to regulate the use of nuclear energy to achieve the public interest taking into consideration the international commitments which arising from international agreements that States undertaken it through these agreements.
- B. Development of nuclear activity and leave the details of this practice to manufactured by administrative regulations depending on the circumstances of each institution and the state.
- C. Develop the supervisory structure that authorized the executive power to supervise and effective control over the nuclear activities.
- D. Organize the civil liability for nuclear damage, while providing financial protection against any damage caused by any nuclear accident and that are likely to result from this incident.
- E. Radiation protection and regulatory control on the uses of radioactive materials and other sources of ionizing radiation as well as environmental protection.
- F. Safety transportation for the radioactive materials and physical protection for nucleus's materials and facilities.

The following discussion in the next topic will be for the subject of analysis of some of the basics underlying Vienna Convention and the Paris Treaty in dealing with the issues of civil liability for civil damages.

4. The rules of Paris Treaty and the Vienna Treaty in the report of the civil liability for nuclear accidents.

The international legal framework and constants governing the subject of civil liability for nuclear damage have been agreed upon internationally through the most important treaties:

The Treaty of Paris in 1960 for compensation of nuclear damage of property and persons, which was adopted in Paris under the auspices of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development; And the Vienna Convention 1963 on Civil Liability for Nuclear Damage (the Vienna Convention), which was sponsored by the International Agency for Atomic Energy, where was modified each of the two treaties several times in order to make them wider and more comprehensive in the application

commensurate with the high risk related in dealing with radioactive materials used in power generation nuclear.

The treaties were working independently for each other, as the result for that is weakened their usefulness because of the lack of even though a one member of both state and because of the potential conflicts that may arise if applied together by the same state.^{xxxvi}

In 1988 and based on the initiative of each of the International Atomic Energy Agency's nuclear and Nuclear Energy Agency of the Organization for Economic Cooperation and Development (OECD) has been drafting a protocol to amend the Vienna Convention and the Treaty of Paris in a single document called "Joint Protocol" because of the similarities between the objectives of those treaties To mitigate the differences between them and expand their applied.^{xxxvii} The amendment became effective on April 27, 1992, and thus becoming treaties are working together to organize the civil liability arising due to any nuclear accident.^{xxxviii}

Other amended was issued on the Treaty of Vienna in 1997 and dubbed the Protocol Amending the Treaty of Vienna of 1963 on Civil Liability for Nuclear Damage ("the Amending Protocol for the Vienna Convention"). Followed it another amendment was the Treaty of Paris in 2004 in order to expand the application of the treaty in terms of geography and increasing the types of damage and increase the amount of compensation that can be claimed by, and increasing Length period which can stay at the case to claim compensation.^{xxxix}

The fundamentals of the Treaties of Paris and Vienna can be summarized including as the following:

- A. They are clear and strictly system that obligate the operator an exclusive Liability for nuclear damage without requiring the availability of the mistake from his side, and allow him to claim compensation for nuclear damage.^{xl}
- B. Include a limited number of exemptions from liability provided in the both treaties, such as the exemption if the incident arising from an act of armed conflict or fighting or civil war or insurrection, or the serious natural disaster of an exceptional nature.^{xli}
- C. Damage in both treaties including the loss of life or personal injury and loss of property and environmental damage and pure economic loss arising from the nuclear damage. As stated in Article I and II of the Protocol amending the Treaty of Vienna of 1997 as well as the protocol amendment the Treaty of Paris that damage includes:
 - I. Economic loss arising from loss or injury to persons or property.
 - II. The costs of measures to restore the situation in the environment distorted.
 - III. Loss of income resulting from the economic interest resulting from substantially distortion of the environment.
 - IV. The costs of measures prevention
- D. Both of treaties were bearing a maximum limit for the amount of compensation that can be paid for damage caused by a nuclear incident.
- E. There are many restrictions on the duration of which may apply for compensation. Under the Treaties of Paris and Vienna procedures should walk in compensation during the 10 years of the date on which the damage or become the Liability of the operator to become known or ought reasonably to become known to the party who has suffered damage.
- F. There is uniformity in the jurisdiction, which gave the national judiciary for the State that is the nuclear accident at its land competence in the dispute, if the event of a nuclear accident outside the jurisdiction of any member State of the treaties, or in a place cannot be determined, the jurisdiction should be for the courts of the State that followed by nuclear facility.^{xlii}

5. The International Standards for Civil Liability of Nuclear Facility Operator

International treaties on Civil Liability for Nuclear Damage have made jurisdiction for national courts, to investigate of the disputes that relating to liability for nuclear damage, In terms of the litigation and implementation and appeal of the final decision. In the case of disputes about nuclear damage and compensate the injured found that the international treaties have taken differ trends from the general rules in the proof of damage in national laws.

The nuclear facility operator was carrying liability as long as the damages have been caused by a nuclear reactor and its associated materials and tools, so as to prevent the nuclear facilities operator from evade the liability and that because of the scientific difficulties, which are required to prove nuclear damage.

The national laws provide that who claimed have to prove the evidence for his claiming, which means the burden of proof is on the plaintiff unless if there is a legal presumption in his favour. Otherwise, the judged will dismissal the case.

At the same time there is indirect Liability rests with the State which the nuclear facility be, like ignoring the responsibilities prescribed in international treaties, especially the failure to provide adequate financial guarantees. In other words, the state that follows the nuclear facility will be delinquent if it did not initiate consistent laws with international laws and apply it, or direct apply of international laws.

For example, Principle 13 of the Rio Declaration provides that States have a duty to develop their

national laws in a manner proportionate to the nature of the liability for damage on the environment and in conformity with international laws to assess the fair compensation.^{xliii}

However, the Liability of the operator is still the basis to assess liability for compensation, and the most important constants contained in the in international treaties to assess such responsible are: absolute liability or substantive, and exclusive liability, and determine the value of liability, which will be clarified in the following discussion:

5.1 The Absolute or Substantive liability

According to the text of Article III of the Treaty of Paris, Article IV of the Treaty of Vienna, The liability of nuclear facility operator will arise by demanding compensation for damage to lives or personal injury or damage in the money as long as the evidence proved that the damage was caused by a nuclear accident associated with runs of a nuclear facility, and contain materials or the result of the transfer of nuclear materials and the waste products to or from that facility.

International principle that was agreed upon was drafted in the similar articles mentioned in other treaties is the Absolute or Substantive liability for operator nuclear facility and this means not taking the idea of error as an aspect for a nuclear liability, and came consistent with the direction taken by the Jordanian civil legislation in dealing with tort liability.

The reason for not taking the international treaties the idea of error as an aspect of the tort liability for nuclear accidents is that it supposed who deals with the dangerous activities have to be more careful and be ready to take Liability for what is happening to others resulting by these activity and must be protect them and assess the appropriate compensation for them.^{xliv}

Nuclear liability that may exist as soon as the damage from nuclear activity was happened and the existence of a causal relationship between the accident damage and the activity that led to the occurrence, which means attribution of damage to its source, and there is no chance for taking by a traditional corner of Liability the presence of Mistake or negligence by the operator of the nuclear facility. But there are many cases have been removed from liability framework of the nuclear facility operator as stated in Article IX of the Treaty of Paris, which is that nuclear damage caused by armed conflicts or civil wars or revolutions or natural disasters.

5.2 The Exclusive Liability for the nuclear facility operator

The exclusive liability meant be directed the lawsuit for Nuclear Damage to one destination, which means nuclear facility operator, without being inconsistent with the duty of states to ensure that the operator and it is providing insurance or other financial security covering his responsibilities.^{xlv} The operator is the specified or recognized person by the competent national authorities, even though if the damage occurred during transportation to or from a nuclear facility,^{xlvi} and Through a review of international agreements and national laws that relating to the use of nuclear energy, it has been the introduction of the principle of focus the liability for damages lies on the exploiter of nuclear facility,^{xlvii} Also we find that amendment protocol for the Vienna Convention of 1997 and through Article 3 it has been expanded in application to include the damage that occurs by a non-signatory states for this Convention.^{xlviii}

It has been taken the principle of exclusive liability for the operator to avoid entering into maze of complex the liability and which will take us to the duration lengthen the conflict,^{xlix} That's where the damage may be resulting by prejudice parties haven't relation with the facility or belonging to the operator or by defect goes back to imperfections in materials or manufacturing equipment used, or a error in the process of transportation or storage, If were allowed to prosecution all those injured, it enters in a legal maze and may need more expenses and time, which is in desperate need of compensation, As well as lead to a prolongation of the conflict, which may go the intended benefit of compensation that could have been the victim obtained in the case of shortening the time. And exclusive liability logically acceptable on the subject of the nuclear damage that the deal with the serious activities it must be ready for the negative results that may occur without intercalation of afflicted damage in that arena,^l that the exclusive Liability of the operator does not prevent him from returning to any other natural or legal person, if this other shares of intentionally or due negligence to damage. But in the case that the operator may conclude an insurance contract on his liability, the injured party may refer directly to the insurance company.^{li}

5.3 The Limited Liability

The compensation is a penalty of existence liability by the rules of civil law in order to repair the damage or fixed it, ^{lii} and determines the total amount of the liability arising from a single nuclear incident; it's to define the amount of liability borne by the operator of a nuclear facility for one nuclear accident.

On contrast, it is the prevailing usages of jurisprudence in civil law that no limits of liability, and who cause damage obliged to give fair compensation for the entire redress or return the position as it was, Under article 266 of the Civil law of Jordan that "an estimated warranty in all circumstances as far as what happened to

an injured from damage and what he lost from earning provided that the natural result of the harmful reaction"

According to the provisions of the Treaty of Paris of 1960, before the amendment was the maximum liability of the specific operation of the facility is 15 million from SDRs.^{liii} And the Vienna Convention provides that the liability of the operation of the facility can be limited, by the State of the facility, including at least five million dollars for any nuclear incident. After adjusting treaties and drafting the Joint Protocol was increased the amount of compensation to the extent commensurate with the nature of the risk ranked materials and nuclear energy, so that it became by the amendment protocol to the Treaty of Vienna in 1997, the upper limit of compensation for each nuclear accident up to no more than U.S. \$ 400 million.^{liv} Although the determine an upper limit on the amount of compensation for damage incompatible with the rules of civil law, but it was no justification for applying this principle because of the special nature of nuclear damage that may not stop at a certain limit, in order to mitigate the severity of absolute liability for a nuclear reactor operator, This is because the operator assumes full liability for all damages arising from the nuclear facility which is managed without the need for the victim to prove the mistake and negligence on the side of the operator. And limitation of liability may find another reason is the lack of exposure in the nuclear sector investment to collapse because of its public importance to all societies.^{lv}

6. The Jordanian Legislations on the Nuclear Energy

Poverty Jordan's energy resources especially oil create a approach in this country towards the adoption of a national plan to find new sources of energy to keep pace with the continuous increase of energy, In order to do not the march of scientific progress and growth be hampered, It was one of the options is the establishment of a nuclear reactor. In order to not be hampered the march of scientific progress and growth, It was one of the options is the establishment of a nuclear reactor. In order to proceed with this project and to obtain international support had to be a Jordanian enact laws that to regulate the use of nuclear technology, and in conformity with international law and as a condition for membership in the International Atomic Energy Agency (IAEA) since 1966.

The Jordanian legislation has begun to deal with the organization of nuclear energy and its related risks since the enactment of the nuclear energy and radiation protection of 1987 which was amended in 2001, then that law was cancelled in 2007, It was objectives for cancelled that law is to regulate how to deal with radioactive materials which are used for medical and research objectives. One of the main goals of this law is to create a formal mechanism to monitor the institutions and individuals who deal with radioactive material in order to protect the environment and individuals from the risk of excessive exposure to nuclear radiation. The legal basis upon which the law is to provide protection from penal raised the illegal use of radioactive materials through the punitive provisions that be applied under the terms of the holds or use of radioactive materials or cause harm to others and the environment through these hazardous materials. There are other Jordanian laws aimed to protect the environment, such as the Environmental Protection Law No. 52/2006, which includes number of texts of the definition of the Ministry of Environment, in addition to some punitive texts of the irregularities that have damaged the environment. But the law did not handles topic of civil liability that consequences of environmental violations and leave it to the general rules of civil law.^{lvi}

In 2007 a law of the nuclear energy was issued under No. 42 to regulate the establishment and management of a nuclear reactor for peaceful purposes. At the same time that texts of this law has not been exposed to the issue of civil liability arising from the Nuclear Damage was referred to as well as to any competent international treaty on this subject, This is considered to refer implicitly to the general rules of civil liability in civil law within the framework of the application needed.

While we find that the UAE has developed a Federal Law by Decree No. 4 of 2012 concerning the civil liability for nuclear damage, It has adopted a decree expressly legal principles which contained in the Treaty of Vienna in more than one subject with regard to the report of civil liability and compensation for damage to persons as a result of the reactors and radioactive materials. The Jordanian law came to organize the Jordanian Authority for Nuclear Energy and objectives of the Authority and how to supervise the construction and management of the nuclear reactor.^{lvii}

Given that international treaties have all agreed that the national courts of the whereabouts of nuclear facility are competent in the considered of disputes related to nuclear damage, and because of the lack of specific legislation or explicit provisions for dealing with civil liability for nuclear damage in Jordan, it was one of the most important objectives of this research is to discuss the adequacy of the rules of civil law for tort liability in dealing with civil liability for nuclear damage in the presence of international treaties regulating.

7. The Contrast between International Treaties and Jordanian Legislation on the application the rules of Civil liability for the Nuclear Damage

As it is steady as that the Jordanian legislation has taken the principle of tort liability as a basis for compensation the injured due to of the harmful acts of others parties, whether the damage was intentional or unintentional, and

was in a mistake, or in non- mistake, If compared to what has been introduced by the Jordanian legislator and the approach that has been adopted by international treaties, we find they are consistent in the principle approach, where the international treaties gave the victim rights to compensation for damages as long as the nuclear damage has occurred, whether it was a make a mistake or not.

On the other hand, we find that the Jordanian legislation related to the generation and use of nuclear energy did not include any regulation of the civil liability resulting from nuclear damage did not refer to any international treaty, and therefore there is no option for the courts except for the application of the general rules of civil law if offered her a conflict because of nuclear damage. but if have been relying exclusively on general rules of civil law, the courts may face some constraints in the application of those rules in light of the texts detailed contained in international treaties on the subject of civil liability.^{lviii}

The following is a summary of the most important points that may need to be reconsidered to facilitate the application of by the courts when the conflict arises on civil Liability for nuclear damage.

7.1 The estimation basis of the compensation for nuclear damage

From the initial terms there are a many of articles that dealt with legal estimate compensation for damage resulting from tort liability which may be based them the courts in the report of the compensation for nuclear damage. the most important of these articles is the article 266 of the Civil Law which decides the bases of assess and report Warranty for tort liability and provided for " the warranty is estimated in all cases, as far as what the happened for the injured from the damage and what he loss of earning provided that this is a natural result of the harmful action ".

And by the application of this article on nuclear damage, it is the right of a natural person who injured by damage as a result of nuclear materials and produced from the rays to the claim for compensation for Financial damages and physical damage, and cost of the expenses for his treatment and what he loss of the gain due to his inability to continue in the usual work or loss the ability to work permanently.

In the case of death, the right to claim compensation goes to the heirs where they have the right to claim compensation for the damage of cause the death of the deceased and incurred expenses for treatment. As well as the injured person may have a moral and that's when accidents of nuclear lead to the destruction the materials and products in his owned, or as a result of decrease in the value of his real estate and materials.

The legislature has authorized in Article 269, depending on the injured circumstances and the nature of the damage that the compensation may to pay a certain amount at once or to pay in instalments or in the form of regularly revenue salary over the life of the injured, and this may be useful in the event of physical injury to an injured if he becomes unable to work in future and compensate the heirs by salary for a certain period. May also be judged to return the case to what it was before the damage if it is possible, and this is useful in the event of damages on property funds. Article 268 authorizes reconsider the amount of compensation in the event of the Court's inability to estimate fair compensation finally.

On the other side must be show the negative side of the application of the general provisions in the estimation of compensation and what may face the courts of difficulties because of the privacy that characterize the nuclear damage in terms of the difficulty discovered the negative effects until after a long time and after undergoing technical expertise and accurate medical examinations; its advanced and expensive.

For example, exposure to small amounts of radioactive material may leads to slowly change in the cells of the body, and after a period may lead to cancer and that may take from three to thirty years to the appearance of the negative result or illness, and after the discovery of the disease has can be diagnosed as happened for other reasons don't refer to nuclear materials.^{lix}the other specificity of nuclear damage which It did not get for one person because of nuclear radiation if spread out, it covered a vast areas and cannot be besieged, and this makes the high value of the damage and at the same time, the international legislation have developed an upper limit of liability for compensation. While Article 266 stipulates that compensation should be the extent of damage and loss of profits which may not put a pre-limit to compensate for tort liability and compensation must be the size of the damage.

The result; if there are a great nuclear accident will leads to damage valued at more than the limit specified in international treaties and this will create a problem of the courts where it is very difficult to reconcile the general rules of civil liability and the rules contained in international treaties, The result; it has to be the presence of explicit provisions for adopting what came to international treaties or explicitly to adopt special provisions for dealing with civil liability for nuclear damage.

7.2 The Basis of Liability when the Multi-Responsible for the Nuclear Damage

by fixed rules to compensation for damage resulting from civil liability, according to Article 265 of Jordanian civil law is that if the multiplicity of those responsible for the tort, all of them asked by his contribution to the tort and the court that divides Liability among them equally, if not possible to determine the contribution of each one.

As clearly from Article 265 and Articles 113 and 114 of the Civil Procedural Law that may an injured to contend whoever was responsible for the damage and the right of the defendant to enter the case if anyone claimed that his right to reference it, such as contributor to the act or the insurance company, as well as any person with an interest in the case and the court to intervene in the case of any person with which any liabilities from the Association of solidarity or obligation does not accept retail.

While international treaties have been taken to the principle of limited liability rests with the operator of the nuclear reactor alone and be an absolute Liability for all damages resulting from the same nuclear accident. For example, if there is nuclear damage during transport to or from the nuclear facility and the damage was caused by malfunction of the carrier, it is, according to the rules of international treaties to be the liability and reality lies with the operator, even if not by the contract of carriage and within the rules of civil law liable for damage, The result is that there is some kind of conflict between the application of the general rules of tort liability and what has been stipulated in international treaties if there is more than one shareholder in a nuclear damage, and there should be explicit provisions to resolve this problem.

7.3 The Statute of Limitations basis for the right to claim Compensation

Statute of limitations in civil rights is a period of time identified by the legislature, according to the different nature of the rights without being prompted after expiration may not be raise the a civil action against the debtor to claim that right,^{lx} Jordanian legislator had provided in Article 449 of the Civil law, the statute of limitations does not fall right, but it drops the right to establish lawsuit which fall the element of liability with survival element indebtedness. And transforms it to a natural debt and the debtor that carry out a naturally debt he may not to claim of return it.

Statute of limitations has proceeded in order to maintain the stable legal centres' and not to leave the debtor under the threat of civil commitment by the creditor for an indefinite period. And it's useful to the owner of the right to demanding the right by legal means, if so it will be considered after a period waived for his stable right in the discharged debtor. Statute of Limitations in Jordanian law has different periods depending on the type of the right and the maximum duration is 15 years, in many cases it do not specify the texts of some rights for less period to its obsolescence, there are some of rights expire the Statute of Limitations after 5 years, for example the rights renewable like buildings wages and rights arising for lawyers and doctors as a result of their work, and , there are some of rights which expire the Statute of Limitations after 2 years like rights merchants in commercial debts.^{lxi}

The Jordanian legislator stipulated in Article 272 that the warranty claim for tort become obsolete after 3 years from the date of the injured aware of the occurrence of damage and after 15 years from the occurrence of the damage in all circumstances. On the other side, we find that international treaties have made the limitation of the right to claim compensation for nuclear damage after 10 to 30 years, and to compatible with the nature of the nuclear damage which may take a long time to discover it.

And that we find here that there is a significant difference in the approved period of limitation in international texts and what has been expressly stipulated in the provisions of the Civil law, and the question arises of any duration must abide by the courts, with the frankly text, the courts must take as stipulated by the Jordanian civil law and must Re the lawsuit raises after 3 years from the knowledge of the owner of the right to compensation for nuclear damage and its Restitution in all cases over 15 years from the occurrence of the damage, and the result to have decision contrary to the explicit international treaties.

Conclusion

The subject of civil Liability resulting from damage that associated with nuclear accidents must take a high degree of attention to the legal subject of a direct connection to deal with this serious damage, which lies on humans and the environment as a result of nuclear accidents. But in reality, we find that the Jordanian laws relating to nuclear technology mostly deals with organizational aspects in the creation and management of the nuclear reactor, as well as there are some texts exist to organized criminal Liability for tampering or illegal use of nuclear material.

In order to improve the national legal system of dealing with nuclear activities for peaceful purposes, it must find a clear legal rules to regulate the conflicts that be basis of the damages related to nuclear accidents .In order to the state able to -especially developing countries - establish the objective of the establishment of nuclear projects cannot do so without the technical and financial assistance from developed countries, and the last one which is put the formulas and conditions of international treaties governing for the civil Liability that resulting from nuclear damage.

It must be also consistency between the International treaties and national laws even receive countries that are planning to possess nuclear energy for peaceful purposes with the support of developed countries and exporting that technology. And international treaties as Vienna and Paris treaties have been organized by the International Atomic Energy Agency (IAEA) and under the supervision of developed countries, and this agency

created to monitoring the objectives of the countries that use or on the way to the use of nuclear energy and the compatibility of national legislation with international laws. For Jordan it is a binding international treaty governing civil liability, whether signed or unsigned, because Jordan is a member of International Atomic Energy Agency (IAEA) and all treaties related to atomic energy are complementary to the work of the IAEA and operate under its umbrella, and thus are binding on all Member States of the Organization.

And to consider any country is committed to the provisions of international treaties must be issue a specific legislation to deal with civil Liability for nuclear damage on the format of the contents of those treaties and that is not enough to rely on public legal rules, in national legislation to regulate the legal important in the establishment of nuclear facilities.

At the same time cannot be denied that many of the rules of civil liability in Jordanian civil law valid in part to deal with the issue of civic Liability for nuclear damage, but may conflict with international rules such as those have been clarified earlier, or may be limited to achieving the internationally agreed goals to regulate the issue of liability nuclear, such as setting an upper limit for compensation.

After the researchers finished this paper they reaches to a number of recommendations may be important in this subject as follow: countries should formulate a special legislation to deal with the civic Liability that resulting for nuclear damage to consistent with international treaties, check out the experiences of developed countries and legislation that related to responsible for nuclear damage, Raise awareness for nuclear damage and may lead to proliferation of nuclear radiation damage to humans and the environment, existence of complementary legislation for nuclear laws organized the rights who works in the nuclear field and protect them because they are the most prone to nuclear damage, existence of the provisions identify places that can be used to create nuclear reactors, A strict and explicit provisions for dealing with nuclear waste and how to dispose of them, And must contain the applicable legislation that related to nuclear activities a provisions criminalizes deterrent penalties in the case of acquisition or tampering or use of nuclear materials illegally.

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